DISIS-2016-001-1

Definitive Interconnection System Impact Study Report

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By SPP Generator Interconnections Dept.

REVISION HISTORY

DATE OR VERSION NUMBER	AUTHOR	CHANGE DESCRIPTION	COMMENTS
1/31/2017	SPP	Initial report issued.	Stability analysis has not been completed yet for groups 2, 6, 8, 9, & 16
2/8/2017	SPP	Report re-issued.	Added stand-alone results for all groups except 9, 15, and 16; stability results for groups 6 and 8. Final stand-alone and stability results are expected to be posted by Feb. 28, 2017.
2/28/2017	SPP	Report re-issued.	Reposted to include final revision 0 results
12/8/2017	SPP	DISIS-2016-001-1 Report revision 0 issued.	DISIS-2016-001-1 Report revision 0 results due to higher queued and equally queued withdrawals. Excludes stability results for group 9 expected to be posted by Dec. 22, 2017.
12/15/2017	SPP	Report revision 1 issued.	DISIS-2016-001-1 Report revision 1 results due cost allocation updates for Group 8. Group 6 stability final report revision to remove reference to 765kV.
12/22/2017	SPP	Report revision 2 issued.	DISIS-2016-001-1 Report revision 2 results for Group 9 stability, Group 8 LOIS correction, and Group 9 cost allocations based on latest TO information.

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1 INTRODUCTION

Pursuant to the Southwest Power Pool (SPP) Open Access Transmission Tariff (OATT), SPP has conducted this Definitive Interconnection System Impact Study (DISIS) for generation interconnection requests received during the DISIS Queue Cluster Window which closed on March 31, 2016. The customers will be referred to in this study as the DISIS Interconnection Customers. This DISIS analyzes the impact of interconnecting new generation totaling 7,656.45 MW to the SPP Transmission System. The interconnecting SPP Transmission Owners include:

- American Electric Power - West (AEPW)
- Basin Electric Power Cooperative (BEPC)
- The Empire District Electric Company (EMDE)
- Kansas City Power and Light Company\KCP&L Greater Missouri Operations Company (KCPL\KCPL-GMO)
- Midwest Energy, Inc. (MIDW)
- Nebraska Public Power District (NPPD)
- Oklahoma Gas and Electric Company (OKGE)
- Southwestern Public Service Company (SPS)
- Sunflower Electric Power Corporation\Mid-Kansas Electric Company, LLC. (SUNC\MKEC)
- Western Area Power Administration (WAPA)
- Westar Energy, Inc. (WERE)
- Western Farmers Electric Cooperative (WFEC)

The generation interconnection requests included in this System Impact Study are listed in Appendix A by queue number, amount, requested interconnection service type, area, requested interconnection point, proposed interconnection point, and the requested in-service date[1]. This cluster study represents the "Stand-Alone" analysis for remaining Interconnection Requests in the DISIS-2016-001 analysis.

Please note higher queued, MISO 2016-FEB-West Phase 2 analysis is not complete at this time. Depending on the results and mitigations assigned in MISO-2016-FEB-West Phase 2, SPP could require a restudy for Group 9, 15, 16, 17, and 18 due to higher queue study assumption changes.

The primary objective of this DISIS is to identify the system constraints, transient instabilities, and over-dutied equipment associated with connecting the generation to the area transmission system. The Impact Study and other subsequent Interconnection Studies are designed to identify required

[1] The generation interconnection requests in-service dates may need to be deferred based on the required lead time for the Network Upgrades necessary. The Interconnection Customers that proceed to the Facility Study will be provided a new in-service date based on the completion of the Facility Study or as otherwise provided for in the GIP.

Transmission Owner Interconnection Facilities, Network Upgrades and other Direct Assignment Facilities needed to inject power into the grid at each specific point of interconnection.

2 MODEL DEVELOPMENT (STUDY ASSUMPTIONS)

2.1 INTERCONNECTION REQUESTS INCLUDED IN THE CLUSTER

This DISIS includes all interconnection requests that were submitted during the DISIS Queue Cluster Window that met all of the requirements of the Generator Interconnection Procedures (GIP) that were in effect at the time this study commenced. Appendix A lists the interconnection requests that are included in this study.

2.2 AFFECTED SYSTEM INTERCONNECTION REQUEST

Affected System Interconnection Requests included in this study are listed in Appendix A with the "ASGI" prefix. Affected System Interconnection Requests were only studied in "cluster" scenarios.

2.3 PREVIOUSLY QUEUED INTERCONNECTION REQUESTS

The previous-queued requests included in this study are listed in Appendix B. In addition to the Base Case Upgrades, the previous-queued requests and associated upgrades were assumed to be in-service and added to the Base Case models. These requests were dispatched as Energy Resource Interconnection Service (ERIS) resources with equal distribution across the SPP footprint. Prior-queued requests that requested Network Resource Interconnection Service (NRIS) were also dispatched in separate NRIS scenarios sinking into the area of the interconnecting transmission owner.

2.4 DEVELOPMENT OF BASE CASES

2.4.1 POWER FLOW

The power flow models used for this study are based on the 2015-series Integrated Transmission Planning models used for the 2016 ITP-Near Term analysis. These models include:

- Year 1 2016 winter peak (16WP)
- Year 2 2017 spring (17G)
- Year 2 2017 summer peak (17SP)
- Year 5 2020 light load (20L)
- Year 5 2020 summer (20SP)
- Year 5 2020 winter peak (20WP)
- Year 10 2025 summer peak (25SP)

2.4.2 DYNAMIC STABILITY

The dynamic stability models used for this study are based on the 2015-series SPP Model Development Working Group (MDWG) Models. These models include:

- Year 1 2016 winter peak (16WP)
- Year 2 2017 summer peak (17SP)
- Year 5 2020 summer (20SP) (groups 6 & 16 only)
- Year 5 2020 winter peak (20WP) (groups 6 & 16 only)
- Year 10 2025 summer peak (25SP)

2.4.3 SHORT CIRCUIT

The Year 2 and Year 10 dynamic stability summer peak models were used for short-circuit analysis.

2.4.4 BASE CASE UPGRADES

The facilities listed in the table below are part of the current SPP Transmission Expansion Plan, the Balanced Portfolio, or recently approved Priority Projects. These facilities have an approved Notification to Construct (NTC) or are in construction stages and were assumed to be in-service at the time of dispatch and added to the base case models. The DISIS Interconnection Customers have not been assigned advancement costs for the projects listed below.

The DISIS Interconnection Customers' Generation Facilities in-service dates may need to be delayed until the completion of the following upgrades. In some cases, the in-service date is beyond the allowable time a customer can delay. In this case, the Interconnection Customer may move forward with Limited Operation or remain in the DISIS Queue for additional study cycles. If, for some reason, construction on these projects is discontinued, additional restudies will be needed to determine the interconnection needs of the DISIS Interconnection Customers.

SPP Notification to Construct (NTC) ID	Project Owner	Upgrade Name	Estimated Date of Upgrade Completion (EOC)
200223	OGE	Tatonga - Woodward District EHV 345 kV Ckt 2	7/1/2018
200223	OGE	Matthewson - Tatonga 345 kV Ckt 2	7/1/2018
200240	OGE	Chisholm - Gracemont 345 kV Ckt 1 (OGE)	3/1/2018
200255	AEP	Chisholm - Gracemont 345kV Ckt 1 (AEP)	3/1/2018
200255	AEP	Chisholm 345/230 kV Substation	3/1/2018
200255	AEP	Chisholm 230 kV	3/1/2018
200360	SPS	IMC #1 Tap - Livingston Ridge 115 kV Ckt 1 Rebuild	11/16/2018
200360	SPS	Intrepid West - Potash Junction 115 kV Ckt 1 Rebuild	11/16/2018
200360	SPS	IMC #1 Tap - Intrepid West 115 kV Ckt 1 Rebuild	11/16/2018
200360	SPS	Cardinal - Targa 115 kV Ckt 1 Rebuild	5/31/2018
200360	SPS	National Enrichment Plant - Targa 115 kV Ckt 1	8/15/2017
200391	OGE	DeGrasse 345 kV Substation	6/1/2017 (RTO Determined Need Date)
200391	OGE	DeGrasse 345/138 kV Transformer	6/1/2017 (RTO Determined Need Date)

SPP Notification to Construct (NTC) ID	Project Owner	Upgrade Name	Estimated Date of Upgrade Completion (EOC)
200391	OGE	DeGrasse - Knob Hill 138 kV New Line	6/1/2017 (RTO Determined Need Date)
200391	OGE	DeGrasse 138 kV Substation (OGE)	6/1/2017 (RTO Determined Need Date)
200220	NPPD	Cherry Co. (Thedford) - Gentleman 345 kV Ckt 1	10/1/2019
200220	NPPD	Cherry Co. (Thedford) Substation 345 kV	10/1/2019
200220	NPPD	Cherry Co. (Thedford) - Holt Co. 345 kV Ckt 1	10/1/2019
200220	NPPD	Holt Co. Substation 345 kV	10/1/2019
200253	NPPD	Neligh 345/115 kV Substation	6/1/2017
200309	SPS	Hobbs 345/230 kV Ckt 1 Transformer	6/1/2018
200309	SPS	Hobbs - Yoakum 345 kV Ckt 1	6/1/2020
200395	SPS	Tuco - Yoakum 345 kV Ckt 1	6/1/2020
200395	SPS	Yoakum 345/230 kV Ckt 1 Transformer	6/1/2020
200256	SPS	Chaves - Price 115 kV Ckt 1 Rebuild	12/30/2017
200256	SPS	CV Pines - Price 115 kV Ckt 1 Rebuild	12/30/2017
200256	SPS	Capitan - CV Pines 115 kV Ckt 1 Rebuild	12/30/2017
200282	SPS	China Draw - Yeso Hills 115 kV Ckt 1	6/1/2018
200282	SPS	Dollarhide - Toboso Flats 115 kV Ckt 1	6/1/2018
200309	SPS	Hobbs - Kiowa 345 kV Ckt 1	6/1/2018
200309	SPS	Kiowa 345 kV Substation	6/1/2018
200309	SPS	Kiowa - North Loving 345 kV Ckt 1	6/1/2018
200309	SPS	North Loving 345 kV Terminal Upgrades	6/1/2018
200309	SPS	China Draw - North Loving 345 kV Ckt 1	6/1/2018
200309	SPS	China Draw 345 kV Ckt 1 Terminal Upgrades	6/1/2018
200309	SPS	China Draw 345/115 kV Ckt 1 Transformer	6/1/2018
200309	SPS	North Loving 345/115 kV Ckt 1 Transformer	6/1/2018
200309	SPS	Kiowa 345/115 kV Ckt 1 Transformer	6/1/2018
200395	SPS	Livingston Ridge 115 kV Substation Conversion	8/31/2017
200411	SPS	Livingston Ridge - Sage Brush 115 kV Ckt 1	6/1/2018
200309	SPS	Sage Brush 115 kV Substation	12/16/2016
200309	SPS	Largarto - Sage Brush 115 kV Ckt 1	12/15/2016
200309	SPS	Lagarto 115 kV Substation	6/1/2018
200309	SPS	Cardinal - Lagarto 115 kV Ckt 1	12/15/2016
200309	SPS	Cardinal 115 kV Substation	12/15/2016
200411	SPS	Ponderosa - Ponderosa Tap 115 kV Ckt 1	6/1/2017
20097	TSMO	Sibley - Mullin Creek 345 kV	Placed in-service in 2016
20097	TSMO	Nebraska City - Mullin Creek 345 kV (GMO)	
20098	OPPD	Nebraska City - Mullin Creek 345 kV (OPPD)	
200395	SPS	Canyon West – Dawn – Panda – Deaf Smith 115kV Ckt 1	12/15/2018
200369	SPS	Canyon East Sub – Randall County Interchange 115kV Ckt 1	12/31/2020
200359	SPS	Carlisle 230/115kV transformer replacement	12/31/2017
200309	SPS	Hobbs – Yoakum – TUCO 345kV project	6/1/2018
200395	SPS	Terry County – Wolfforth 115kV Ckt 1 terminal equipment replacement	6/1/2018
200391	OGE	DeGrasse 345/138kV project	6/1/2017
200396	WFEC	DeGrasse 345/138kV project	6/1/2017
200395	SPS	Harrington East – Potter 230kV Ckt 1 terminal equipment replacement	6/1/2019
200228	WERE	Viola 345/138kV project	6/1/2018
200228	MKEC	Viola 345/138kV project	6/1/2018
200395	SPS	Seminole 230/115kV transformer Ckt 1 & 2 replacement	5/15/2018

SPP Notification to Construct (NTC) ID	Project Owner	Upgrade Name	Estimated Date of Upgrade Completion (EOC)
200262	SPS	Yoakum County Interchange 230/115kV transformer Ckt 1 & 2 replacement	6/1/2019

2.4.5 CONTINGENT UPGRADES

The following facilities do not yet have approval. These facilities have been assigned to higher-queued interconnection customers. These facilities have been included in the models for this study and are assumed to be in service. This list may not be all-inclusive. The DISIS Interconnection Customers, at this time, do not have cost responsibility for these facilities but may later be assigned cost if higher-queued customers terminate their Generation Interconnection Agreement or withdraw from the interconnection queue. The DISIS Interconnection Customer Generation Facilities in-service dates may need to be delayed until the completion of the following upgrades.

Assigned Study	Upgrade Name	Estimated Date of Upgrade Completion (EOC)
DISIS-2010-002	Twin Church - Dixon County 230kV Line Upgrade	11/1/2018
DISIS-2010-002	Buckner - Spearville 345 kV Ckt 1 Terminal Upgrades	12/31/2017
DISIS-2011-001	Hoskins - Dixon County 230kV Line Upgrade	11/1/2018
DISIS-2011-001	Woodward EHV 138kV Phase Shifting Transformer circuit #1	Placed in-service in 2017
DISIS-2013-002	Antelope - County Line - 115kV Rebuild	Placed in-service 2017
DISIS-2013-002	Battle Creek - County Line 115kV Rebuild	
DISIS-2014-002	Plant X - Tolk 230kV rebuild circuit #1	5/31/2018
DISIS-2014-002	Plant X - Tolk 230kV rebuild circuit #2	5/31/2018
DISIS-2014-002	TUCO Interchange 345/230kV CKT 1 Replacement	6/1/2018
DISIS-2015-001	Kress Interchange – Swisher 115kV circuit #1 replace terminal equipment.	TBD
DISIS-2015-001	Oklaunion 345kV Reactive Power Support Install two (2) 50Mvar Capacitor Bank(s)	TBD
DISIS-2015-001	(NRIS Only) Renfrow – Renfrow 138kV circuit #1 rebuild.	TBD
DISIS-2015-002	Potter County Interchange 345/230/13kV Transformer circuit #2, build.	TBD
DISIS-2015-002	Crawfish Draw Substation 345/230kV	TBD
DISIS-2015-002	Border - Chisholm 345kV CKT 1 & 2	TBD
DISIS-2015-002	Chisholm Substation Upgrade 345kV	TBD
DISIS-2015-002	Cleo Corner - Cleo Plant Tap 138kV CKT 1	TBD
DISIS-2015-002	Cleveland - Silver City 138kV CKT 1	TBD
DISIS-2015-002	Cornville Tap - Naples Tap 138kV CKT 1	TBD
DISIS-2015-002	Crawfish Draw - Border 345kV CKT 2	TBD
DISIS-2015-002	Dickinson 230/115/13.8kV CKT 2	TBD
DISIS-2015-002	Gavins Point - Yankton Junction 115kV CKT 1	TBD
DISIS-2015-002	GEN-2015-063 Tap - Mathewson 345kV CKT 1	TBD
DISIS-2015-002	Grapevine - Nichols 230kV CKT 1	TBD
DISIS-2015-002	Grapevine - Wheeler 230kV CKT 1	TBD
DISIS-2015-002	Naples Tap - Payne 138kV CKT 1	TBD
DISIS-2015-002	Norge - Southwest Station 138kV CKT 1	TBD

Assigned Study	Upgrade Name	Estimated Date of Upgrade Completion (EOC)
DISIS-2015-002	Albion - Petersburg - North Petersburg 115kV CKT 1	TBD
DISIS-2015-002	Wheeler - Sweetwater 230kV CKT 1	TBD

2.4.6 POTENTIAL UPGRADES NOT IN THE BASE CASE

Any potential upgrades that do not have a Notification to Construct (NTC) and are not explicitly listed within this report have not been included in the base case. These upgrades include any identified in the SPP Extra-High Voltage (EHV) overlay plan, or any other SPP planning study other than the upgrades listed above in the previous section.

2.4.7 REGIONAL GROUPINGS

The interconnection requests listed in Appendix A are grouped into fifteen (15) active regional groups based on geographical and electrical impacts. These groupings are shown in Appendix C.

To determine interconnection impacts, fifteen (15) different generation dispatch scenarios of the spring, summer, light, and winter base case models are developed to accommodate the regional groupings.

2.5 DEVELOPMENT OF ANALYSIS CASES

2.5.1 POWER FLOW

For Variable Energy Resources (VER) (solar/wind) in each power flow case, Energy Resource Interconnection Service (ERIS), is evaluated for the generating plants within a geographical area of the interconnection request(s) for the VERs dispatched at 100% nameplate of maximum generation. The VERs in the remote areas are dispatched at 20% nameplate of maximum generation. These projects are dispatched across the SPP footprint using load factor ratios.

Peaking units are not dispatched in the spring case, or in the "High VER" summer and winter peak cases. To study peaking units' impacts, the Year 1 winter peak and Year 2 summer peak, Year 5 summer and winter peaks, and Year 10 summer peak models are developed with peaking units dispatched at 100% of the nameplate rating and VERs dispatched at 20% of the nameplate rating. Each interconnection request is also modeled separately at 100% nameplate for certain analyses.

All generators (VER and peaking) that requested Network Resource Interconnection Service (NRIS) are dispatched in an additional analysis into the interconnecting Transmission Owner's (T.O.) area at 100% nameplate with Energy Resource Interconnection Service (ERIS) only requests at 80% nameplate. This method allows for identification of network constraints that are common between regional groupings to have affecting requests share the mitigating upgrade costs throughout the cluster.

The following additional sensitivities were run for situations specific to the local area.

- North Dakota – Canadian border – The phase shifting transformer to Saskatchewan Power (also known as B-10T) and Miles City DC Tie were dispatched at the following levels
    - 2016 Winter Peak –
        - Miles City DC Tie– 200MW East to West transfer
        - B-10T – 65MW South to North transfer
    - 2017 Summer Peak –
        - Miles City DC Tie – 200MW East to West transfer
        - B-10T – 200MW North to South transfer
    - Other Seasons
        - Miles City DC Tie – 140MW East to West transfer (20WP)
        - Miles City DC Ties – 92MW East to West transfer (17G & 20L)
        - B-10T – 0MW

2.5.2 DYNAMIC STABILITY

For each group, all interconnection requests are dispatched at 100% nameplate output while the other groups are dispatched at 20% output for VERs and 100% output for thermal requests.

- North Dakota – Canadian border – The phase shifting transformer to Saskatchewan Power (also known as B-10T) and Miles City DC Tie were dispatched at the following levels
    - 2016 Winter Peak –
        - Miles City DC Tie– 200MW East to West transfer
        - B-10T – 65MW South to North transfer
    - 2017 Summer Peak –
        - Miles City DC Tie – 200MW East to West transfer
        - B-10T – 200MW North to South transfer

2.5.3 SHORT CIRCUIT

The dynamic stability models are used for this analysis.

3 IDENTIFICATION OF NETWORK CONSTRAINTS (SYSTEM PERFORMANCE)

3.1 THERMAL OVERLOADS

Network constraints are found by using PSS/E AC Contingency Calculation (ACCC) analysis with PSS/E MUST First Contingency Incremental Transfer Capability (FCITC) analysis on the entire cluster grouping dispatched at the various levels previously described.

For Energy Resource Interconnection Service (ERIS), thermal overloads are determined for system intact (n-0) greater than 100% of Rate A - normal and for contingency (n-1) greater than 100% of Rate B – emergency conditions.

The overloads are then screened to determine which interconnection requests have at least

- 3% Distribution Factor (DF) for system intact conditions (n-0),
- 20% DF upon outage-based conditions (n-1),
- or 3% DF on contingent elements that resulted in a non-converged solution.

Appropriate transmission reinforcements are identified to mitigate the constraints.

Interconnection Requests that requested Network Resource Interconnection Service (NRIS) are also studied in a separate NRIS analysis to determine if any constraint measured greater than or equal to a 3% DF. If so, these constraints are also assigned transmission reinforcements to mitigate the impacts.

3.2 VOLTAGE

For non-converged power flow solutions that are determined to be caused by lack of voltage support, appropriate transmission support will be identified to mitigate the constraint.

After all thermal overload and voltage support mitigations are determined; a full ACCC analysis is then performed to determine voltage constraints. The following voltage performance guidelines are used in accordance with the Transmission Owner local planning criteria.

SPP voltage criteria are applicable to all SPP facilities 69 kV and greater in the absence of more stringent criteria:

System Intact	Contingency
0.95 – 1.05 per unit	0.90 – 1.05 per unit

Areas and specific buses having more-stringent voltage criteria:

Areas/Facilities	System Intact	Contingency
AEPW – all buses EMDE High Voltage	0.95 – 1.05 per unit	0.92 – 1.05 per unit
WERE Low Voltage	0.95 – 1.05 per unit	0.93 – 1.05 per unit
WERE High Voltage	0.95 – 1.05 per unit	0.95 – 1.05 per unit
TUCO 230 kV Bus #525830	0.925 – 1.05 per unit	0.925 – 1.05 per unit
Wolf Creek 345 kV Bus #532797	0.985 – 1.03 per unit	0.985 – 1.03 per unit
S1251 Bus #646251	1.001 – 1.047 per unit	1.001 – 1.047 per unit

First-Tier External Areas facilities 115 kV and greater.

Area	System Intact	Contingency
AECI EES-EAI LAGN EES AMMO CLEC LAFA LEPA XEL MP SMMPA GRE OTP ALTW MEC MDU DPC ALTE	0.95 – 1.05 per unit	0.90 – 1.05 per unit
OTP-H (115kV+)	0.97 – 1.05 per unit	0.92 – 1.10 per unit
SPC	0.95 – 1.05 per unit	0.95 – 1.05 per unit

The constraints identified through the voltage scan are screened for the following for each interconnection request. 1) 3% DF on the contingent element and 2) 2% change in pu voltage. In certain conditions, engineering judgement was used to determine whether or not a generator had impacts to voltage constraints.

3.3 DYNAMIC STABILITY

Stability issues are considered for transmission reinforcement under ERIS. Generators that fail to meet low voltage ride-through requirements (FERC Order #661-A) or SPP's stability criteria for damping or dynamic voltage recovery are assigned upgrades such that these requirements can be met.

3.4 UPGRADES ASSIGNED

Thermal overloads that require transmission support to mitigate are discussed in Section 8 and listed in Appendix G-T (Cluster & Stand Alone Analysis). Voltage constraints that may require transmission support are discussed in Section 8 and listed in Appendix G-V (Cluster & Stand Alone Analysis). Constraints that are identified solely through the stability analysis are discussed in Section 8 and the appropriate appendix for the detailed stability study of that Interconnection Request. All of these upgrades are cost assigned in Appendix E and Appendix F.

Other network constraints not requiring transmission reinforcements are shown in Appendix H-T (Cluster & Stand Alone Analysis). With a defined source and sink in a Transmission Service Request, this list of network constraints can be refined and expanded to account for all Network Upgrade requirements for firm transmission service. Additional constraints identified by multi-element contingencies are listed in Appendix I.

In no way does the list of constraints in Appendix G-T (Cluster & Stand Alone Analysis) identify all potential constraints that guarantee operation for all periods of time. It should be noted that although this study analyzed many of the most probable contingencies, it is not an all-inclusive list and cannot account for every operational situation. Because of this, it is likely that the Customer(s) may be required to reduce their generation output to 0 MW, also known as curtailment, under certain system conditions to allow system operators to maintain the reliability of the transmission network.

4 DETERMINATION OF COST ALLOCATED NETWORK UPGRADES

Cost Allocated Network Upgrades of Variable Energy Resources (VER) (solar/wind) generation interconnection requests are determined using the Year 2 spring model. Cost Allocated Network Upgrades of peaking units are determined using the Year 5 summer peak model. A PSS/E and MUST sensitivity analysis is performed to determine the Distribution Factors (DF), a distribution factor with no contingency that each generation interconnection request has on each new upgrade. The impact each generation interconnection request has on each upgrade project is weighted by the size of each request. Finally the costs due by each request for a particular project are then determined by allocating the portion of each request's impact over the impact of all affecting requests.

For example, assume that there are three Generation Interconnection requests, X, Y, and Z that are responsible for the costs of Upgrade Project '1'. Given that their respective PTDF for the project have been determined, the cost allocation for Generation Interconnection request 'X' for Upgrade Project 1 is found by the following set of steps and formulas:

Determine an impact factor for a given project for all responsible GI requests:

$$Request\ X\ Impact\ Factor\ on\ Upgrade\ Project\ 1 = PTDF(\%)(X) \times MW(X) = X1$$

$$Request\ Y\ Impact\ Factor\ on\ Upgrade\ Project\ 1 = PTDF(\%)(Y) \times MW(Y) = Y1$$

$$Request\ Z\ Impact\ Factor\ on\ Upgrade\ Project\ 1 = PTDF(\%)(Z) \times MW(Z) = Z1$$

Determine each request's Allocation of Cost for that particular project:

$$Request\ X's\ Project\ 1\ Cost\ Allocation\ (\$) = \frac{Network\ Upgrade\ Project\ 1\ Cost\ (\$) \times X1}{X1 + Y1 + Z1}$$

Repeat previous for each responsible GI request for each Project.

The cost allocation of each needed Network Upgrade is determined by the size of each request and its impact on the given project. This allows for the most efficient and reasonable mechanism for sharing the costs of upgrades.

4.1 CREDITS/COMPENSATION FOR AMOUNTS ADVANCED FOR NETWORK UPGRADES

Interconnection Customer shall be entitled to either credits or potentially incremental Long Term Congestion Rights (iLTCR), otherwise known as compensation, in accordance with Attachment Z2 of the SPP Tariff for any Network Upgrades, including any tax gross-up or any other tax-related payments associated with the Network Upgrades, and not refunded to the Interconnection Customer[2].

5 REQUIRED INTERCONNECTION FACILITIES

The requirement to interconnect the requested generation into the existing and proposed transmission systems in the affected areas of the SPP transmission footprint consist of the necessary cost allocated shared facilities listed in Appendix F by upgrade. The interconnection requirements for the cluster total an estimated $1.4 billion, not including the following costs.

- **Costs Not Included** – Potential additional upgrades required based on review of Laramie Generation Station (LGS) stability limit in southeastern Wyoming. LGS stability limit is to be analyzed by BEPC as part of the Interconnection Facilities Study.
- **Costs Not Included** – Potential additional upgrades required based on review of Gerald Gentleman Station (GGS) stability interface in western Nebraska. GGS stability interface is to be analyzed by NPPD as part of the Interconnection Facilities Study.
- **Costs Not Included** – Costs on Mid-Continent Independent System Operator (MISO).
- **Costs Not Included** –Particular Interconnection Facilities observing instability in the transient stability analysis due to Interconnection Facilities configuration or Interconnection Customer provided dynamic model settings and parameters. Please refer to Appendix E for requests that are identified as requiring further review or costs for Interconnection Facilities.

Interconnection Facilities specific to each interconnection request are listed in Appendix E. A preliminary one-line diagram for each request is listed in Appendix D.

For an explanation of how required Network Upgrades and Interconnection Facilities were determined, refer to the section on "Identification of Network Constraints."

5.1 FACILITIES ANALYSIS

The interconnecting Transmission Owner for each Interconnection Request has provided its preliminary analysis of required Transmission Owner Interconnection Facilities and the associated Network Upgrades, shown in Appendix D. This analysis was limited only to the expected facilities to be constructed by the Transmission Owner at the Point of Interconnection. These costs are included in the one-line diagrams in Appendix D and also listed in Appendix E and F as combined "Interconnection Costs". If the one-lines and costs in Appendix D have been updated by the

[2] A FERC filing is pending in Docket No. ER18-374 to change the provisions of Attachment Z2 which may result in certain upgrades no longer being eligible for revenue credits.

Transmission Owner's Interconnection Facilities Study, those costs will be noted in the appendix. These costs will be further refined by the Transmission Owner as part of the Interconnection Facilities Study. Any additional Network Upgrades identified by this DISIS beyond the Point of Interconnection are defined and estimated by either the Transmission Owner or by SPP. These additional Network Upgrade costs will also be refined further by the Transmission Owner within the Interconnection Facilities Study.

5.2 ENVIRONMENTAL REVIEW

For Interconnection Requests that result in an interconnection to, or modification to, the transmission facilities of the Western-UGP, a National Environmental Policy Act (NEPA) Environmental Review will be required. The Interconnection Customer will be required to execute an Environmental Review Agreement per Section 8.6.1 of the GIP.

6 AFFECTED SYSTEMS COORDINATION

The following procedures are in place to coordinate with Affected Systems.

- Impacts on Associated Electric Cooperative Inc. (AECI) – For any observed violations of thermal overloads on AECI facilities, AECI has been notified by SPP to evaluate the violations for impacts on its transmission system. AECI has instructed SPP to notify the affected Interconnection Customers after posting of this study to contact AECI for an Affected System Study Agreement to further study the impacts on the AECI system.
- Impacts on Mid Continent Independent System Operation (MISO) – Per SPP's agreement with MISO, MISO will be contacted and provided a list of interconnection requests that proceed to move forward into the Interconnection Facilities Study Queue. MISO will then evaluate the Interconnection Requests for impacts and will be in contact with affected Interconnection Customers. For potential impacts see Appendix H-T – Affected System and Appendix H-V – Affected System
- Impacts on Minnkota Power Cooperative, Inc (MPC) – MPC Report is located in Appendix H-AS-T.
- Impacts to other affected systems – For any observed violations of thermal overloads or voltage constraints, SPP will contact the owner of the facility for further information.

7 POWER FLOW ANALYSIS

7.1 POWER FLOW ANALYSIS METHODOLOGY

The ACCC function of PSS/E is used to simulate single element and special (i.e., breaker-to-breaker, multi-element, etc.) contingencies in portions or all of the modeled control areas of SPP, as well as, other control areas external to SPP and the resulting scenarios analyzed. Single element and multi-element contingencies are evaluated.

7.2 POWER FLOW ANALYSIS

A power flow analysis is conducted for each Interconnection Customer's facility using modified versions of the Year 1 winter peak season, the Year 2 spring, Year 2 summer peak season, Year 5 summer and winter peak seasons, and Year 10 summer peak seasonal models. The output of the Interconnection Customer's facility is offset in each model by a reduction in output of existing online SPP generation. This method allows the request to be studied as an Energy Resource Interconnection Service request (ERIS). Certain requests that are also pursuing Network Resource Interconnection Service (NRIS) have an additional analysis conducted for displacing resources in the interconnecting Transmission Owner's balancing area.

8 POWER FLOW RESULTS

8.1 CLUSTER SCENARIO

The Cluster Scenario considers the Base Case as well as all Interconnection Requests in the DISIS Study Queue and all generating facilities (and with respect to (3) below, any identified Network Upgrades associated with such higher-queued interconnection) that, on the date the DISIS is commenced:

1. are directly connected to the Transmission System;
2. are interconnection to Affected Systems and may have an impact on the Interconnection Request;
3. have a pending higher-queued Interconnection Request to interconnect to the Transmission System; and
4. have no Interconnection Queue Position but have executed a GIA or requested that an unexecuted GIA be filed with FERC.

Constraints and associated mitigations for each Interconnection Request are summarized below. Details are contained in Appendix G-T and Appendix G-V. Cost allocation for the Cluster Scenario is found in Appendix E.

8.1.1 CLUSTER GROUP 1 (WOODWARD AREA)

New requests for this study group as well as prior-queued requests are listed in Appendix C.

Several ERIS thermal were observed for system-intact and single-contingency (N-1) conditions. The tables below summarizes constraints and associated mitigations.

Table 8.1 Group 1 Cluster ERIS Thermal Constraints

Monitored Element	Limiting Rate A/B (MVA)	TC %Loading (%MVA)	Contingency	Mitigation
CIMARRON - DRAPER LAKE 345KV CKT 1	717	104.8577	System Intact	Previously Assigned per SPP-NTC-200416
DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	165.2136	System Intact	DeGrasse 345/138kV Project (SPP-NTC-200418 & 200419)
DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	187.0	139.4533	WOODWARD EHV - WWPAR4 138.00 138KV CKT 1	
FPL SWITCH - WOODWARD 138KV CKT 1	153.0	112.0593	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	
NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	111.1773	System Intact	
NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	234.0	105.2112	WOODWARD EHV - WWPAR4 138.00 138KV CKT 1	

The table below summarizes constraints and associated mitigations assignable to incremental ERIS steady state voltage.

GEN-2016-045 and GEN-2016-057 will require the installation of reactors for mitigation of high voltage constraints. Additionally GEN-2016-045 and GEN-2016-057 will be required to complete an Electro-Magnetic Transient Program (EMTP) study.

Table 8.2 Group 1 Cluster ERIS Voltage Constraints

Monitored Element	TC Voltage (PU)	VMIN (PU)	VMAX (PU)	Contingency	Mitigation
GEN-2016-045345.00 345KV	1.322582	0.95	1.05	System Intact	GEN-2016-045 & GEN-2015-057 assigned reactors
GEN-2016-045345.00 345KV	1. 347816	0.95	1.05	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1	
MATHWSN7 345.00 345KV	1.060389	0.90	1.05	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1	

The table below summarizes constraints and associated mitigations assignable to those requests that elect NRIS.

Table 8.3 Group 1 Cluster NRIS Thermal Constraints

Monitored Element	Limiting Rate A/B (MVA)	TC %Loading (%MVA)	Contingency	Mitigation
Currently none				

The table below summarizes constraints and associated mitigations assignable to incremental NRIS steady state voltage.

Table 8.4 Group 1 Cluster NRIS Voltage Constraints

Monitored Element	TC Voltage (PU)	VMIN (PU)	VMAX (PU)	Contingency	Mitigation
Currently none					

8.1.2 CLUSTER GROUP 2 (HITCHLAND AREA)

New requests for this study group as well as prior-queued requests are listed in Appendix C.

Several ERIS thermal constraints were observed for system-intact and single-contingency (N-1) conditions. The table below summarizes constraints and associated mitigations. The table below summarizes constraints and associated mitigations. Potential voltage collapse is inferred from non-convergence.

Table 8.5 Group 2 Cluster ERIS Thermal Constraints

Contingency				Mitigation
ASARCO_TP 3115.00 - HIGHLAND PARK TAP 115KV CKT 1	154.0	101.7136	HUTCHINSON COUNTY INTERCHANGE S. - MARTIN SUB 115KV CKT 1	Updated rating is sufficient for mitigation
BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1	318.7	114.3733	System Intact	Previously assigned in DISIS-2015-002-4 to replace terminal equipment
HIGHLAND PARK TAP - PANTEX SOUTH SUB 115KV CKT 1	154.0	108.7758	HUTCHINSON COUNTY INTERCHANGE S. - MARTIN SUB 115KV CKT 1	Previously assigned per SPP-NTC-200444 to replace terminal equipment
MARTIN SUB - PANTEX NORTH SUB 115KV CKT 1	160.0	104.4728	HUTCHINSON COUNTY INTERCHANGE S. - MARTIN SUB 115KV CKT 1	
SPSNORTH_STX	1160.0	102.5864	System Intact Flowgate	Updated flowgate rating is sufficient for mitigation

The table below summarizes constraints and associated mitigations assignable to incremental ERIS steady state voltage.

Table 8.6 Group 2 Cluster ERIS Voltage Constraints

Monitored Element	TC Voltage (PU)	VMIN (PU)	VMAX (PU)	Contingency	Mitigation
Currently none that are incremental to thermal mitigations					

The table below summarizes constraints and associated mitigations assignable to those requests that elect NRIS.

Table 8.7 Group 2 Cluster NRIS Constraints

Monitored Element	Limiting Rate A/B (MVA)	TC %Loading (%MVA)	Contingency	Mitigation
Currently none				

The table below summarizes constraints and associated mitigations assignable to incremental NRIS steady state voltage.

Table 8.8 Group 2 Cluster NRIS Voltage Constraints

Monitored Element	TC Voltage (PU)	VMIN (PU)	VMAX (PU)	Contingency	Mitigation
Currently none that are incremental to thermal mitigations					

8.1.3 CLUSTER GROUP 3 (SPEARVILLE AREA)

New requests for this study group as well as prior-queued requests are listed in Appendix C.

Several ERIS thermal and voltage constraints were observed for system-intact and single-contingency (N-1) conditions. The table below summarizes constraints and associated mitigations. The table below summarizes constraints and associated mitigations. Potential voltage collapse is inferred from non-convergence.

Table 8.9 Group 3 Cluster ERIS Non-Convergence Constraints

Contingency	Mitigation
BUCKNER7 345.00 - HOLCOMB 345KV CKT 1	Build 125 miles of new 345kV from Beaver County - Clark County
FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1	
FINNEY SWITCHING STATION - WALKTAP7 345.00 345KV CKT 1	
G13-010T 345.00 - G16-049-TAP 345.00 345KV CKT 1	
G13-010T 345.00 - POST ROCK 345KV CKT 1	
Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1	
P12:345:SPS:J07.1.FINN.HITCH	

Table 8.10 Group 3 Cluster ERIS Constraints

Monitored Element	Limiting Rate A/B (MVA)	TC %Loading (%MVA)	Contingency	Mitigation
CLEARWATER - MILAN TAP 138KV CKT 1	110.0	118.2928	System Intact	Viola 345/138 Project and HPILS Project (NTC)
CONWAY 138.00 - MILAN TAP 138KV CKT 1	100.6	129.1001	System Intact	
CONWAY 138.00 - VIOLA 4 138.00 138KV CKT 1	100.6	128.9764	System Intact	
HARPER - MILAN TAP 138KV CKT 1	138.6	101.8611	System Intact	
KINSLEY - PAWNEE-EDWARDS_JCT 115KV CKT 1	76	99.3	System Intact	Conductor clearance increase
KNOLL 230 - POSTROCK6 230.00 230KV CKT 1	328.0	104.3921	System Intact	Previously assigned build second Knoll – Post Rock 230kV per SPP-NTC-200429 and current study assigned build 125 miles of new 345kV from Beaver County - Clark County
POST ROCK (POSTROCK T1) 345/230/13.8KV TRANSFORMER CKT 1	600.0	102.0037	AXTELL - G16-050-TAP 345.00 345KV CKT 1	Build 125 miles of new 345kV from Beaver County - Clark County

The table below summarizes constraints and associated mitigations assignable to incremental ERIS steady state voltage.

Table 8.11 Group 3 Cluster ERIS Voltage Constraints

Monitored Element	TC Voltage (PU)	VMIN (PU)	VMAX (PU)	Contingency	Mitigation
Currently none that are incremental to thermal mitigations					

The table below summarizes constraints and associated mitigations assignable to those requests that elect NRIS.

Table 8.12 Group 3 Cluster NRIS Constraints

Monitored Element	Limiting Rate A/B (MVA)	TC %Loading (%MVA)	Contingency	Mitigation
None in addition to ERIS constraints				

The table below summarizes constraints and associated mitigations assignable to incremental NRIS steady state voltage.

Table 8.13 Group 3 Cluster NRIS Voltage Constraints

Monitored Element	TC Voltage (PU)	VMIN (PU)	VMAX (PU)	Contingency	Mitigation
Currently none that are incremental to ERIS thermal or non-convergence mitigations					

8.1.4 CLUSTER GROUP 4 (NORTHWEST KANSAS AREA)

New requests for this study group as well as prior-queued requests are listed in Appendix C. No new constraints were observed for this group.

Table 8.14 Group 4 Cluster ERIS Constraints

Monitored Element	Limiting Rate A/B (MVA)	TC %Loading (%MVA)	Contingency	Mitigation
Currently none				

The table below summarizes constraints and associated mitigations assignable to incremental ERIS steady state voltage.

Table 8.15 Group 4 Cluster ERIS Voltage Constraints

Monitored Element	TC Voltage (PU)	VMIN (PU)	VMAX (PU)	Contingency	Mitigation
Currently none that are incremental to thermal mitigations					

The table below summarizes constraints and associated mitigations assignable to those requests that elect NRIS.

Table 8.16 Group 4 Cluster NRIS Constraints

Monitored Element	Limiting Rate A/B (MVA)	TC %Loading (%MVA)	Contingency	Mitigation
Currently none				

The table below summarizes constraints and associated mitigations assignable to incremental NRIS steady state voltage.

Table 8.17 Group 4 Cluster NRIS Voltage Constraints

Monitored Element	TC Voltage (PU)	VMIN (PU)	VMAX (PU)	Contingency	Mitigation
Currently none that are incremental to ERIS thermal mitigations					

8.1.5 CLUSTER GROUP 6 (SOUTH TEXAS PANHANDLE/NEW MEXICO AREA)

New requests for this study group as well as prior-queued requests are listed in Appendix C.

Several ERIS thermal and voltage constraints were observed for system-intact and single-contingency (N-1) conditions. The table below summarizes non-convergence and thermal constraints and associated mitigations. The table below summarizes constraints and associated mitigations. Potential voltage collapse is inferred from non-convergence. Reactive power at Border and Oklaunion was required to dispatch the study models. Once models were reviewed after ACCC, the reactive power included in the dispatched cases were reviewed for evaluation of current study upgrade requirements. Crawfish Draw – Tolk – Potter County – Chisholm 345kV and Oklaunion reactive power support was required light load conditions to dispatch the DISIS-2016-001 Group 6 generation.

Table 8.18 Group 6 Cluster ERIS Non-Convergence Constraints

Contingency	Mitigation
917X	In addition to DISIS-2014-002, DISIS-2015-001, and DISIS-2015-002 assigned upgrades, the following new upgrades are required for group 6 potential voltage collapse: 1) Oklaunion +/-100Mvar SVC 2) Border +300Mvar SVC and 300Mvars of capacitor bank(s) 3) Build approximately 64 miles of new 345kV from Crawfish Draw – Tolk 4) Build approximately 115 miles of new 345kV from Tolk – Potter County
AMARILLO SOUTH INTERCHANGE - G15031_T 230.00 230KV CKT 1	
AMARILLO SOUTH INTERCHANGE - NICHOLS STATION 230KV CKT 1	
AXTELL - G16-050-TAP 345.00 345KV CKT 1	
BORDER 7345.00 - CHISHOLM7 345.00 345KV CKT 1	
BORDER 7345.00 - CHISHOLM7 345.00 345KV CKT 2	
BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1	
BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2	
BORDER 7345.00 - WOODWARD DISTRICT EHV 345KV CKT 1	
BUCKNER7 345.00 - HOLCOMB 345KV CKT 1	
BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1	
BUSHLAND INTERCHANGE - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1	
BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1	
BUSHLAND INTERCHANGE 230KV SWITCHED SHUNT	
BVRCNTY7 345.00 - G11-14T 345.00 345KV CKT 1	
BVRCNTY7 345.00 - G11-14T 345.00 345KV CKT 2	
BVRCNTY7 345.00 - OPTIMA 345.00 345KV CKT 1	
BVRCNTY7 345.00 - OPTIMA 345.00 345KV CKT 2	
CANYON E_TP3115.00 - CANYON WEST SUB 115KV CKT 1	
CANYON E_TP3115.00 - RANDALL COUNTY INTERCHANGE 115KV CKT 1	
CANYON WEST SUB - DAWN SUB 115KV CKT 1	
CARGILL SUB - DEAF SMITH REC-#24 115KV CKT 1	
CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1	
CHAVES COUNTY INTERCHANGE - EDDY_NORTH 6230.00 230KV CKT 1	
CHERRY1 - HARRINGTON STATION 230KV CKT 1	
CHERRY1 - POTTER COUNTY INTERCHANGE 230KV CKT 1	
CHISHOLM6 230.00 - ELK CITY 230KV 230KV CKT 1	
CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1	
CHISHOLM7 345.00 - G16-037-TAP 345.00 345KV CKT 1	
CIMARRON - DRAPER LAKE 345KV CKT 1	
CIMARRON - MINCO 345KV CKT 1	
CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1	
CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	
CRAWFISH_DR2230.00 - SWISHER COUNTY INTERCHANGE 230KV CKT 1	
CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	
CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1	
CURRY COUNTY INTERCHANGE - DEAF SMITH REC-#20 115KV CKT 1	

Contingency	Mitigation
DAWN SUB - Panda Energy Substation Hereford 115KV CKT 1	
DEAF SMITH COUNTY INTERCHANGE - Panda Energy Substation Hereford 115KV CKT 1	
DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1	
DEAF SMITH REC-#20 - PARMER COUNTY SUB 115KV CKT 1	
DEAF SMITH REC-#24 - PARMER COUNTY SUB 115KV CKT 1	
EDDY COUNTY INTERCHANGE - EDDY_NORTH 6230.00 230KV CKT @1	
ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1	
FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1	
FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1	
G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 1	
G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 2	
G13-010T 345.00 - POST ROCK 345KV CKT 1	
G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1	
G14-057T 345.00 - SUNNYSIDE 345KV CKT 1	
G15031_T 230.00 - SWISHER COUNTY INTERCHANGE 230KV CKT 1	
G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	
G1524G1525 345.00 - THISTLE7 345.00 345KV CKT 1	
G1524G1525 345.00 - THISTLE7 345.00 345KV CKT 2	
G16-003-TAP 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1	
G16-003-TAP 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2	
G16-037-TAP 345.00 - GRACEMONT 345KV CKT 1	
G16-049-TAP 345.00 - SPEARVILLE 345KV CKT 1	
G16-050-TAP 345.00 - POST ROCK 345KV CKT 1	
GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1	
GRACEMONT - MINCO 345KV CKT 1	
GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1	
GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1	
Hansford County Switch Station - SPEARMAN INTERCHANGE 115KV CKT 1	
Harrington Station East Bus - POTTER COUNTY INTERCHANGE 230KV CKT 1	
HITCHLAND INTERCHANGE - Hansford County Switch Station 115KV CKT 1	
HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1	
Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1	
Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1	
Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1	
Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2	
HOBBS - YOAKUM_345 345.00 345KV CKT 1	
HOBBS (UPDATE DATA) 345/230/13.2KV TRANSFORMER CKT 1	
HOLCOMB - SETAB 345KV CKT 1	
JOHNSON COUNTY - SUNNYSIDE 345KV CKT 1	
JONES STATION - TUCO INTERCHANGE 230KV CKT 1	
LUBBOCK SOUTH INTERCHANGE - WOLFFORTH INTERCHANGE 230KV CKT 1	
MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1	
MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 2	
MINGO - RED WILLOW 345KV CKT 1	
MINGO - SETAB 345KV CKT 1	
MOORE COUNTY INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1	
MOORE COUNTY INTERCHANGE EAST BUS 115KV SWITCHED SHUNT	
NEWHART 230 - PLANT X STATION 230KV CKT 1	
NEWHART 230 - POTTER COUNTY INTERCHANGE 230KV CKT 1	

Contingency	Mitigation
OKLAUNION - TUCO INTERCHANGE 345KV CKT 1	
OKLAUNION 345KV SWITCHED SHUNT	
P12:115:LCEC:W56.1.HOBBG.LE-LVN	
P12:115:SPS:T04.1.DFSMTH.CASTRO	
P12:115:SPS:T13.1.TAYLOR.WHOBBS	
P12:115:SPS:T14.1.MADDOX.WBENDR	
P12:115:SPS:T38.1.POTJCT.WIPP	
P12:115:SPS:T53.1.NICHLS.KIRBY	
P12:115:SPS:T54.1.KIRBY.SHM(520)	
P12:115:SPS:T59.1.CARGIL.CURRY	
P12:115:SPS:T66.1.RNDALL.HAPPY	
P12:115:SPS:T67.1.HAPPY.KRESS	
P12:115:SPS:V29.1.NICHLS.KNGSMLL	
P12:115:SPS:W08.1.HITCH.LASLEY	
P12:138:AEPW:REDROCKRD4:WTH_JCT4	
P12:138:AEPW:S.W.S.-4:L.E.S.-4	
P12:138:AEPW:SHAM4WT:CHILD4WT	
P12:138:WFEC:MSL03	
P12:138:WFEC:MSL14	
P12:230:AEPW:ELKCITY6:SWEETWT6	
P12:230:AEPW-SPS:SWEETWT6:WHEELER 6	
P12:230:SPS:K43.1.PRNGLE.HARR_E	
P12:345:SPS:J07.1.FINN.HITCH	
P12:345:SPS:J14.1.EDDY.XRDS	
P12:345:SPS:J15.1.XRDS.TOLK	
P12:69:AEPW:NWMEMPH2:CHLDR2WT	
PALO DURO SUB - RANDALL COUNTY INTERCHANGE 115KV CKT 1	
PLANT X STATION - TOLK STATION EAST 230KV CKT 2	
PLANT X STATION - TOLK STATION WEST 230KV CKT 1	
POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	
PRINGLE INTERCHANGE - SPEARMAN INTERCHANGE 115KV CKT 1	
STATELINE INTERCHANGE - STLN-DEMARC6 230KV CKT 1	
STLN-DEMARC6 - SWEETWATER 230KV CKT 1	
SWISHER COUNTY INTERCHANGE 230KV SWITCHED SHUNT	
TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1	
TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2	
THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1	
THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2	
TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1	
TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1	
TUCO INTERCHANGE - YOAKUM_345 345.00 345KV CKT 1	
TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	
TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2	
WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1	

Table 8.19 Group 6 Cluster ERIS Thermal Constraints

Monitored Element	Limiting Rate A/B (MVA)	TC %Loading (%MVA)	Contingency	Mitigation
BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1	329.05	101.1848	System Intact	Mitigated by voltage collapse upgrades and higher queued upgrades
COCHRAN INTERCHANGE - G15-014T 115.00 115KV CKT 1	120.9	107.0929	System Intact	
CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	160.0401	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1	
CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	547.0	187.3884	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1	
CURRY COUNTY INTERCHANGE - DEAF SMITH REC-#20 115KV CKT 1	96.0	100.9705	System Intact	
DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1	318.7	114.5202	System Intact	
G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	350.57	134.1501	P12:345:SPS:J15.1.XRDS.TOLK	
GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1	318.7	100.3944	System Intact	
Harrington Station East Bus - POTTER COUNTY INTERCHANGE 230KV CKT 1	350.57	117.9679	CHERRY1 - POTTER COUNTY INTERCHANGE 230KV CKT 1	
JOHNSON DRAW - TAYLOR SWITCHING STATION 115KV CKT 1	160.0	135.4951	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	
TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	644.0	101.527	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2	
ANDREWS 3115.00 - National Enrichment Plant Sub 115KV CKT 1	525.0	103.7801	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	Hobbs – Andrews 230kV (345kV Built) conversion to operate at 345kV, Install two new Andrews 345/115/13kV Transformers
ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	157.1727	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	
ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	156.4035	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	
G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	422.0	123.2858	ANDRWSXFMR12	
LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON	143.4	104.4352	System Intact	

Monitored Element	Limiting Rate A/B (MVA)	TC %Loading (%MVA)	Contingency	Mitigation
INTERCHANGE 115KV CKT 1				
COCHRAN INTERCHANGE - G15-014T 115.00 115KV CKT 1	120.9	107.0929	System Intact	Tolk - Yoakum Tap 230/115 kV Substation and Transformer
CIMARRON - MINCO 345KV CKT 1	956.0	119.3308	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1	Updated rating is sufficient for mitigation
DRINKARD SUB - DRINKARD TAP 115KV CKT 1	103.0	192.3608	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	Re-conductor/Rebuild approximately 2 miles of 115kV
DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	160.0	137.953	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	Re-conductor/Rebuild approximately 7.5 miles of 115kV
DRINKARD TAP - WEST HOBBS SWITCHING STATION 115KV CKT 1	160.0	111.4781	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	Re-conductor/Rebuild approximately 12.5 miles of 115kV
JAL SUB - TEAGUE SUB 115KV CKT 1	120.0	102.5845	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	Re-conductor/Rebuild approximately 10 miles of 115kV (NTC)
National Enrichment Plant Sub - TARGA 3115.00 115KV CKT 1	120.0	112.107	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1	Re-conductor/Rebuild approximately 4 miles of 115kV (NTC)
National Enrichment Plant Tap - TARGA 3115.00 115KV CKT 1	120.0	101.9469	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1	Re-conductor/Rebuild approximately 3 miles of 115kV (NTC)
National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	109.244	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	Re-conductor/Rebuild approximately 7 miles of 115kV (NTC)
TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1	560.0	101.5617	CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1	Install second 345/230/13kV transformer

The table below summarizes constraints and associated mitigations assignable to incremental ERIS steady state voltage.

Table 8.20 Group 6 Cluster ERIS Voltage Constraints

Monitored Element	TC Voltage (PU)	VMIN (PU)	VMAX (PU)	Contingency	Mitigation
MCLEAN RURAL SUB 115KV	0.933339	0.90	1.05	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1	Shamrock Capacitor Bank(s)
SHAMROCK 115KV	0.92956	0.90	1.05	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1	
SHAMROCK 69KV	0.88574	0.90	1.05	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1	

In addition to the ERIS constraint mitigations, several NRIS thermal and voltage constraints were observed for system-intact and single-contingency (N-1) conditions. The table below summarizes constraints and associated mitigations assignable to those requests that elect NRIS.

Table 8.21 Group 6 Cluster NRIS Thermal Constraints

Monitored Element	Limiting Rate A/B (MVA)	TC %Loading (%MVA)	Contingency	Mitigation
CARLISLE INTERCHANGE - LP-DOUD_TP 3115.00 115KV CKT 1	160.0	117.8623	WOLFFORTH INTERCHANGE (WH 7001668) 230/115/13.2KV TRANSFORMER CKT 1	Constraints are mitigated with ERIS upgrades
CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	130.0882	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1	
CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	547.0	131.7626	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1	
LP-DOUD_TP 3115.00 - SP-WOLF_TP 3115.00 115KV CKT 1	180.0	106.5466	LUBBOCK SOUTH INTERCHANGE - WOLFFORTH INTERCHANGE 230KV CKT 1	
SP-WOLF_TP 3115.00 - YUMA INTERCHANGE 115KV CKT 1	180.0	100.2424	LUBBOCK SOUTH INTERCHANGE - WOLFFORTH INTERCHANGE 230KV CKT 1	
TERRY COUNTY INTERCHANGE - WOLFFORTH INTERCHANGE 115KV CKT 1	153.97	104.2732	TUCO INTERCHANGE - YOAKUM_345 345.00 345KV CKT 1	
CIMARRON - MINCO 345KV CKT 1	956.0	100.42	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1	Updated rating is sufficient for mitigation
CARLISLE INTERCHANGE (WH XHS70711) 230/115/13.2KV TRANSFORMER CKT 1	168.0	107.0453	CARLISLE INTERCHANGE - WOLFFORTH INTERCHANGE 230KV CKT 1	Replace transformer
Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1	644.0	100.572	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2	Install third transformer
Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2	644.0	102.9676	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1	
LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	104.4463	LUBBOCK POWER & LIGHT-SOUTHEAST - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1	Install second transformer
TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1	288.0	119.2294	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2	Crawfish 115kV substation expand, install 230/115kV transformer, and loop in TUCO – Hale County 115kV
TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2	288.0	119.2294	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1	

The table below summarizes constraints and associated mitigations assignable to incremental NRIS steady state voltage.

Table 8.22 Group 6 Cluster NRIS Voltage Constraints

Monitored Element	TC Voltage (PU)	VMIN (PU)	VMAX (PU)	Contingency	Mitigation
Currently none that are incremental to ERIS non-convergence, ERIS thermal, and NRIS thermal mitigations					

8.1.6 CLUSTER GROUP 7 (SOUTHWESTERN OKLAHOMA AREA)

New requests for this study group as well as prior-queued requests are listed in Appendix C.

The ERIS thermal constraints were observed for system-intact and single-contingency (N-1) conditions. The table below summarizes constraints and associated mitigations. The table below summarizes constraints and associated mitigations.

Table 8.23 Group 7 Cluster ERIS Thermal Constraints

Monitored Element	Limiting Rate A/B (MVA)	TC %Loading (%MVA)	Contingency	Mitigation
CIMARRON - MINCO 345KV CKT 1	956.0	100.5565	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1	Updated rating are sufficient for mitigation

The table below summarizes constraints and associated mitigations assignable to incremental ERIS steady state voltage.

Table 8.24 Group 7 Cluster ERIS Voltage Constraints

Monitored Element	TC Voltage (PU)	VMIN (PU)	VMAX (PU)	Contingency	Mitigation
Currently none that are incremental to ERIS thermal mitigations					

The table below summarizes constraints and associated mitigations assignable to those requests that elect NRIS.

Table 8.25 Group 7 Cluster NRIS Thermal Constraints

Monitored Element	Limiting Rate A/B (MVA)	TC %Loading (%MVA)	Contingency	Mitigation
Currently none				

The table below summarizes constraints and associated mitigations assignable to incremental NRIS steady state voltage.

Table 8.26 Group 7 Cluster NRIS Voltage Constraints

Monitored Element	TC Voltage (PU)	VMIN (PU)	VMAX (PU)	Contingency	Mitigation
Currently none that are incremental to ERIS thermal mitigations					

8.1.7 CLUSTER GROUP 8 (NORTH OKLAHOMA/SOUTH CENTRAL KANSAS AREA)

New requests for this study group as well as prior-queued requests are listed in Appendix C.

Several ERIS thermal and voltage constraints were observed for system-intact and single-contingency (N-1) conditions. The table below summarizes constraints and associated mitigations. The table below summarizes constraints and associated mitigations. Potential voltage collapse is inferred from non-convergence.

Table 8.27 Group 8 Cluster ERIS Constraints

Monitored Element	Limiting Rate A/B (MVA)	TC %Loading (%MVA)	Contingency	Mitigation
CANEYRV7 345.00 - NEOSHO 345KV CKT 1	766	99	System Intact	Recently replaced terminal equipment will mitigate this constraint. Cost allocation updated to remove current study project cost assignment.
CHILOCCO4 138.00 - MIDLTNT4 138.00 138KV CKT 1	106.0	184.0574	System Intact	Re-conductor/Rebuild 3.45 miles of 138kV
FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	118.7439	System Intact	Re-conductor/Rebuild 10.3 miles of 138kV
FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	167.0358	MIDLTNT4 138.00 - PECKHAM TAP 138KV CKT 1	
G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	118.6256	NORTHWEST - SPRING CREEK 345KV CKT 1	Higher queued upgrade mitigates this constraint
G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	117.2428	NORTHWEST - SPRING CREEK 345KV CKT 1	Replace structures
KILDARE4 - WHITE EAGLE 138KV CKT 1	222.0	107.7514	HUNTERS7 345.00 - WOODRING 345KV CKT 1	Re-conductor/Rebuild 11 miles of 138kV
NORTHWEST - SPRING CREEK 345KV CKT 1	1195.0	100.6786	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	Replace terminal equipment
OSAGE - WEBB CITY TAP 138KV CKT 1	152.0	100.6804	System Intact	Re-conductor/Rebuild 22 miles of 138kV
OSAGE - WHITE EAGLE 138KV CKT 1	191.0	100.4115	CONTINENTAL EMPIRE - WHITE EAGLE 138KV CKT 1	Re-conductor/Rebuild 3 miles of 138kV

The table below summarizes constraints and associated mitigations assignable to incremental ERIS steady state voltage.

Table 8.28 Group 8 Cluster ERIS Voltage Constraints

Monitored Element	TC Voltage (PU)	VMIN (PU)	VMAX (PU)	Contingency	Mitigation
TC-ROCK 138KV	0.887068	0.93	1.05	SUMNER 4 - TIMBJCT4 138KV CKT 1	Sumner – Viola 138kV (NTC)
TIMBJCT4 138KV	0.887576	0.93	1.05	SUMNER 4 - TIMBJCT4 138KV CKT 1	
CANEYRV7 345.00 345KV	0.924033	0.95	1.05	LACYGNE - WAVERLY7 345.00 345KV CKT 1	SPP & SPP TO determined mitigation is achieved by model adjustments to local switchable reactors and local wind farms providing required power factor ranges.
ELKRVR17 345.00 345KV	0.930383	0.95	1.05	LACYGNE - WAVERLY7 345.00 345KV CKT 1	
LATHAMS7 345.00 345KV	0.930345	0.95	1.05	LACYGNE - WAVERLY7 345.00 345KV CKT 1	
NEOSHO 345KV	0.947824	0.95	1.05	LACYGNE - WAVERLY7 345.00 345KV CKT 1	

In addition to the ERIS constraint mitigations, several NRIS thermal constraints were observed for system-intact and single-contingency (N-1) conditions. The table below summarizes constraints and associated mitigations assignable to those requests that elect NRIS.

Table 8.29 Group 8 Cluster NRIS Constraints

Monitored Element	Limiting Rate A/B (MVA)	TC %Loading (%MVA)	Contingency	Mitigation
FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	99.3	G15-015T 138.00 - MDFRDTP4 138.00 138KV CKT 1	Constraints are mitigated with ERIS upgrades
OSAGE - WEBB CITY TAP 138KV CKT 1	152.0	119.8299	CLEVELAND - G15066_T 345.00 345KV CKT 1	
CLEAVELAND - CLEVLND 4 138.00 138KV CKT Z1	371.0	123.6455	CLEVELAND - TULSA NORTH 345KV CKT 1	Replace bus tie breaker with three breaker ring and upgrade associated terminal equipment
CLEAVELAND - SILVER CITY 138KV CKT 1	174.0	107.892	CLEVELAND - TULSA NORTH 345KV CKT 1	Higher queued upgrade mitigates this constraint
CLEVELAND (CLVAUTO1) 345/138/13.8KV TRANSFORMER CKT 1	494.0	99.8	CLEVELAND - TULSA NORTH 345KV CKT 1	Install second 345/138/13kV transformer
FAIRFAX TAP - SHIDLER 138KV CKT 1	211.0	102.1664	CLEVELAND - G15066_T 345.00 345KV CKT 1	Re-conductor/Rebuild 2.5 miles of 138kV
FAIRFAX TAP - WEBB CITY TAP 138KV CKT 1	211.0	102.1702	CLEVELAND - G15066_T 345.00 345KV CKT 1	Re-conductor/Rebuild 0.5 miles of 138kV
KINZE - MCELROY 138KV CKT 1	222.0	102.4282	CLEVELAND - G15066_T 345.00 345KV CKT 1	Re-conductor/Rebuild 2 miles of 138kV

The table below summarizes constraints and associated mitigations assignable to incremental NRIS steady state voltage.

Table 8.30 Group 8 Cluster NRIS Voltage Constraints

Monitored Element	TC Voltage (PU)	VMIN (PU)	VMAX (PU)	Contingency	Mitigation
Currently none that are incremental to ERIS thermal, voltage, and NRIS thermal mitigations					

8.1.8 CLUSTER GROUP 9 (NEBRASKA AREA)

New requests for this study group as well as prior-queued requests are listed in Appendix C.

Several ERIS thermal and voltage constraints were observed for system-intact and single-contingency (N-1) conditions. The table below summarizes constraints and associated mitigations. The table below summarizes constraints and associated mitigations. Potential voltage collapse is inferred from non-convergenced

NPPD and BEPC will need to perform further stability analysis for the Gentleman and Laramie area interconnect requests. This additional analysis could require additional mitigation by means of new transmission.

Table 8.31 Group 9 Cluster ERIS Non-Convergence Constraints

Contingency	Mitigation
BANNER_CO 345.00 - G1623&1629-T345.00 345KV CKT 1	In addition to high queued assigned upgrades the following new upgrades are required for group 9 potential voltage collapse: 1) Advance Gentleman – Thedford – Holt 345kV project 2) Build approximately 140 miles of new 345kV from Banner County – Keystone 3) Build approximately 30 miles of second 345kV circuit from Keystone – Gentleman
FT THOMPSON - FTTHOM2-LNX3345.00 345KV CKT Z	
FTTHOM2-LNX3345.00 - GRPRAR2-LNX3345.00 345KV CKT 1	
FTTHOMPSON-GRANDPRAIRIE-TLINE-REACTOR-CKT1	
G1623&1629-T345.00 - SIDNEY2-LNX3345.00 345KV CKT 1	
GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z	
GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1	
KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1	
LARAMIE RIVER - STEGALL 345KV CKT 1	
SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z	
SIDNEY - SIDNEY2-LNX3345.00 345KV CKT Z	
SIDNEY-KEYSTONE-TLINE-REACTORS-CKT1	

Table 8.32 Cluster ERIS Thermal Constraints

Monitored Element	Limiting Rate A/B (MVA)	TC %Loading (%MVA)	Contingency	Mitigation
GERALD GENTLEMAN STATION - OGALLALA 230KV CKT 1	320.0	110.8242	GERALD GENTLEMAN STATION - KEYSTONE 345KV CKT 1	Build approximately 30 miles of second 345kV circuit from Keystone – Gentleman
KEYSTONE (KEYSTONE T1) 345/115/13.8KV TRANSFORMER CKT 1	336.0	103.7167	GERALD GENTLEMAN STATION - KEYSTONE 345KV CKT 1	
GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z	720.0	119.4505	FT THOMPSON - FTTHOM2-LNX3345.00 345KV CKT Z	Advance Gentleman – Thedford – Holt 345kV project (NTC)
GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1	720.0	118.985	FT THOMPSON - FTTHOM2-LNX3345.00 345KV CKT Z	
OGALLALA - SIDNEY 230KV CKT 1	320.0	127.7388	SIDNEY-KEYSTONE-TLINE-REACTORS-CKT1	Build approximately 140 miles of new 345kV from Banner County – Keystone
SIDNEY - SIDNEY TRANSFORMER 230KV CKT 1	400.0	122.5383	SIDNEY-KEYSTONE-TLINE-REACTORS-CKT1	
SIDNEY (SDQ KV2A) 345/230/13.8KV TRANSFORMER CKT 1	480.0	99.9	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z	

The table below summarizes constraints and associated mitigations assignable to incremental ERIS steady state voltage.

Table 8.33 Group 9 Cluster ERIS Voltage Constraints

Monitored Element	TC Voltage (PU)	VMIN (PU)	VMAX (PU)	Contingency	Mitigation
ATWOOD 115KV	0.89625	0.90	1.05	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1	Install 10 Mvars of Capacitor Bank(s) at Atwood 115kV as current study upgrade
ATWOOD SWITCH 115KV	0.896664	0.90	1.05	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1	
BVERVLLY 115.00 115KV	0.89886	0.90	1.05	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1	
LUDELL 3 115.00 115KV	0.897028	0.90	1.05	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1	
LUDELLT3 115.00 115KV	0.897045	0.90	1.05	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1	
MCDONLD3 115.00 115KV	0.899428	0.90	1.05	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1	
NORTH ATWOOD 115KV	0.896563	0.90	1.05	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1	
ONEOK 3 115.00 115KV	0.898709	0.90	1.05	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1	

The table below summarizes constraints and associated mitigations assignable to those requests that elect NRIS.

Table 8.34 Group 9 Cluster NRIS Thermal Constraints

Monitored Element	Limiting Rate A/B (MVA)	TC %Loading (%MVA)	Contingency	Mitigation
Currently None				

The table below summarizes constraints and associated mitigations assignable to incremental NRIS steady state voltage.

Table 8.35 Group 9 Cluster NRIS Voltage Constraints

Monitored Element	TC Voltage (PU)	VMIN (PU)	VMAX (PU)	Contingency	Mitigation
Currently None					

8.1.9 CLUSTER GROUP 10 (SOUTHEAST OKLAHOMA/NORTHEAST TEXAS AREA)

New requests for this study group as well as prior-queued requests are listed in Appendix C. No new requests in this group.

8.1.10 CLUSTER GROUP 12 (NORTHWEST ARKANSAS AREA)

New requests for this study group as well as prior-queued requests are listed in Appendix C.

The table below summarizes ERIS constraints and associated mitigations. The table below summarizes constraints and associated mitigations.

Table 8.36 Group 12 Cluster ERIS Thermal Constraints

Monitored Element	Limiting Rate A/B (MVA)	TC %Loading (%MVA)	Contingency	Mitigation
Currently none				

The table below summarizes constraints and associated mitigations assignable to incremental ERIS steady state voltage.

Table 8.37 Group 12 Cluster ERIS Voltage Constraints

Monitored Element	TC Voltage (PU)	VMIN (PU)	VMAX (PU)	Contingency	Mitigation
Currently none that are incremental to ERIS thermal mitigations					

The table below summarizes constraints and associated mitigations assignable to those requests that elect NRIS.

Table 8.38 Group 12 Cluster NRIS Constraints

Monitored Element	Limiting Rate A/B (MVA)	TC %Loading (%MVA)	Contingency	Mitigation
NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	102.0388	System Intact	Re-conductor/Rebuild 28 miles of 161kV
NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	223.0	114.4813	LITCHFIELD - SUB 349 - ASBURY 161KV CKT 1	

The table below summarizes constraints and associated mitigations assignable to incremental NRIS steady state voltage.

Table 8.39 Group 12 Cluster NRIS Voltage Constraints

Monitored Element	TC Voltage (PU)	VMIN (PU)	VMAX (PU)	Contingency	Mitigation
Currently none that are incremental to NRIS thermal mitigations					

8.1.11 CLUSTER GROUP 13 (NORTHEAST KANSAS/NORTHWEST MISSOURI AREA)

New requests for this study group as well as prior-queued requests are listed in Appendix C. No new constraints were observed.

Table 8.40 Group 13 Cluster ERIS Thermal Constraints

Monitored Element	Limiting Rate A/B (MVA)	TC %Loading (%MVA)	Contingency	Mitigation
Current none				

The table below summarizes constraints and associated mitigations assignable to incremental ERIS steady state voltage.

Table 8.41 Group 13 Cluster ERIS Voltage Constraints

Monitored Element	TC Voltage (PU)	VMIN (PU)	VMAX (PU)	Contingency	Mitigation
Current none					

The table below summarizes constraints and associated mitigations assignable to NRIS steady state thermal.

Table 8.42 Group 13 Cluster NRIS Thermal Constraints

Monitored Element	Limiting Rate A/B (MVA)	TC %Loading (%MVA)	Contingency	Mitigation
Currently none				

The table below summarizes constraints and associated mitigations assignable to incremental NRIS steady state voltage.

Table 8.43 Group 13 Cluster NRIS Voltage Constraints

Monitored Element	TC Voltage (PU)	VMIN (PU)	VMAX (PU)	Contingency	Mitigation
Current none					

8.1.12 CLUSTER GROUP 14 (SOUTH CENTRAL OKLAHOMA AREA)

New requests for this study group as well as prior-queued requests are listed in Appendix C.

Several ERIS thermal and voltage constraints were observed for system-intact and single-contingency (N-1) conditions. The table below summarizes constraints and associated mitigations. The table below summarizes constraints and associated mitigations.

Table 8.44 Group 14 Cluster ERIS Constraints

Monitored Element	Limiting Rate A/B (MVA)	TC %Loading (%MVA)	Contingency	Mitigation
CLAYTON - SARDIS 138KV CKT 1	98.0	108.1484	CANADIAN RIVER () 345/138/13.8KV TRANSFORMER CKT 1	Recently completed Re-conductor/rebuild approximately 3.8 miles of 138kV.
ENOWILT - LONE OAK 138KV CKT 1	98.0	103.3477	CANADIAN RIVER () 345/138/13.8KV TRANSFORMER CKT 1	Recently completed re-conductor/rebuild approximately 0.3 miles of 138kV.
ENOWILT - SARDIS 138KV CKT 1	98.0	104.9117	CANADIAN RIVER () 345/138/13.8KV TRANSFORMER CKT 1	Recently completed re-conductor/rebuild approximately 22.4 miles of 138kV.

The table below summarizes constraints and associated mitigations assignable to incremental ERIS steady state voltage.

Table 8.45 Group 14 Cluster ERIS Voltage Constraints

Monitored Element	TC Voltage (PU)	VMIN (PU)	VMAX (PU)	Contingency	Mitigation
Current none					

The table below summarizes constraints and associated mitigations assignable to those requests that elect NRIS.

Table 8.46 Group 14 Cluster NRIS Thermal Constraints

Monitored Element	Limiting Rate A/B (MVA)	TC %Loading (%MVA)	Contingency	Mitigation
Currently None				

The table below summarizes constraints and associated mitigations assignable to incremental NRIS steady state voltage.

Table 8.47 Group 14 Cluster NRIS Voltage Constraints

Monitored Element	TC Voltage (PU)	VMIN (PU)	VMAX (PU)	Contingency	Mitigation
Current none					

8.1.13 CLUSTER GROUP 15 (EASTERN SOUTH DAKOTA)

New requests for this study group as well as prior-queued requests are listed in Appendix C.

The table below summarizes constraints and associated mitigations. The table below summarizes constraints and associated mitigations.

GEN-2016-017 was also analyzed in Group 16 due to its close electrical location to other current study group 16 requests.

Table 8.48 Group 15 Cluster ERIS Constraints

Monitored Element	Limiting Rate A/B (MVA)	TC %Loading (%MVA)	Contingency	Mitigation
SPLIT ROCK - WHITE 345KV CKT 1	720.0	121.1556	System Intact	Updated rating is sufficient for constraint mitigation

The table below summarizes constraints and associated mitigations assignable to incremental ERIS steady state voltage.

Table 8.49 Group 15 Cluster ERIS Voltage Constraints

Monitored Element	TC Voltage (PU)	VMIN (PU)	VMAX (PU)	Contingency	Mitigation
Current none					

The table below summarizes constraints and associated mitigations assignable to NRIS steady state thermal.

Table 8.50 Group 15 Cluster NRIS Thermal Constraints

Monitored Element	Limiting Rate A/B (MVA)	TC %Loading (%MVA)	Contingency	Mitigation
Current none				

The table below summarizes constraints and associated mitigations assignable to incremental NRIS steady state voltage.

Table 8.51 Group 15 Cluster NRIS Voltage Constraints

Monitored Element	TC Voltage (PU)	VMIN (PU)	VMAX (PU)	Contingency	Mitigation
Current none					

8.1.14 CLUSTER GROUP 16 (WESTERN NORTH DAKOTA)

New requests for this study group as well as prior-queued requests are listed in Appendix C.

Several ERIS thermal and voltage constraints were observed for system-intact and single-contingency (N-1) conditions. The table below summarizes constraints and associated mitigations. The table below summarizes constraints and associated mitigations.

Table 8.52 Group 16 Cluster ERIS Non-Convergence Constraints

Contingency	Mitigation
FORBES - ROSEAU 500KV CKT 1	Mitigation subject to Affected System Review and analysis.
RIEL - ROSEAU 500KV CKT 1	
ROSEAU - ROSEAUM 2 500.00 500KV CKT 1	

Table 8.53 Group 16 Cluster ERIS Thermal Constraints

Monitored Element	Limiting Rate A/B (MVA)	TC %Loading (%MVA)	Contingency	Mitigation
BUFFALO - JAMESTOWN 345KV CKT 1	705.0	104.97	System Intact	Mitigation subject to Affected System Review and analysis.
ELLENDALE - OAKES 230KV CKT 1	319.0	100.3304	System Intact	

The table below summarizes constraints and associated mitigations assignable to incremental ERIS steady state voltage.

Table 8.54 Group 16 Cluster ERIS Voltage Constraints

Monitored Element	TC Voltage (PU)	VMIN (PU)	VMAX (PU)	Contingency	Mitigation
G16-017-TAP 345.00 345KV	1.105048	0.90	1.05	FTTHOM1-LNX3345.00 - G16-017-TAP 345.00 345KV CKT 1	GEN-2016-017 POI Substation reactor required

The table below summarizes constraints and associated mitigations assignable to those requests that elect NRIS.

Table 8.55 Group 16 Cluster NRIS Constraints

Monitored Element	Limiting Rate A/B (MVA)	TC %Loading (%MVA)	Contingency	Mitigation
BUFFALO - JAMESTOWN 345KV CKT 1	705	101.2066	System Intact	Mitigation subject to Affected System Review and analysis
BUFFALO - JAMESTOWN 345KV CKT 1	705	116.6	CNTSHNT3 345.00 - PRAIRIE3 345.00 345KV CKT 1	
FARGO - SHEYNNE 230KV CKT 1	342.0	139.1369	BUFFALO - JAMESTOWN 345KV CKT 1	Higher queued, DPP-2016-FEB-West Phase 1 mitigation
GLENHAM - L3 HAWDON 230KV CKT 1	210.0	106.141	FT THOMPSON - FTTHOM1-LNX3345.00 345KV CKT Z	Replace terminal equipment
GLENHAM - WHITLOK 230KV CKT 1	260.0	102.4597	GEN-2016-017TAP-FTTHOMPSONREACTOR-FTTHOMPSON-CKT1	Updated rating is sufficient for constraint mitigations
HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	114.5418	FT THOMPSON - FTTHOM1-LNX3345.00 345KV CKT Z	Updated rating sufficient for mitigation

The table below summarizes constraints and associated mitigations assignable to incremental NRIS steady state voltage.

Table 8.56 Group 16 Cluster NRIS Voltage Constraints

Monitored Element	TC Voltage (PU)	VMIN (PU)	VMAX (PU)	Contingency	Mitigation
GRPRAR 345KV	0.809257	0.90	1.05	WATERTN-LNX3345.00 - WATERTOWN 345KV CKT Z	Advance R-Plan
GRAND ISLAND 345KV	0.891388	0.90	1.05	WATERTOWN-WHITE-TLINE-REACTOR-CKT1	

8.1.15 CLUSTER GROUP 17 (WESTERN SOUTH DAKOTA)

New requests for this study group as well as prior-queued requests are listed in Appendix C. No new constraints were observed.

Table 8.57 Group 17 Cluster ERIS Constraints

Monitored Element	Limiting Rate A/B (MVA)	TC %Loading (%MVA)	Contingency	Mitigation
Currently none				

The table below summarizes constraints and associated mitigations assignable to incremental ERIS steady state voltage.

Table 8.58 Group 17 Cluster ERIS Voltage Constraints

Monitored Element	TC Voltage (PU)	VMIN (PU)	VMAX (PU)	Contingency	Mitigation
Currently none					

The table below summarizes constraints and associated mitigations assignable to those requests that elect NRIS.

Table 8.59 Group 17 Cluster NRIS Thermal Constraints

Monitored Element	Limiting Rate A/B (MVA)	TC %Loading (%MVA)	Contingency	Mitigation
Currently none				

The table below summarizes constraints and associated mitigations assignable to incremental NRIS steady state voltage.

Table 8.60 Group 17 Cluster NRIS Voltage Constraints

Monitored Element	TC Voltage (PU)	VMIN (PU)	VMAX (PU)	Contingency	Mitigation
Currently none					

8.1.16 CLUSTER GROUP 18 (EASTERN NORTH DAKOTA)

New requests for this study group as well as prior-queued requests are listed in Appendix C. No new constraints were observed.

Table 8.61 Group 18 Cluster ERIS Constraints

Monitored Element	Limiting Rate A/B (MVA)	TC %Loading (%MVA)	Contingency	Mitigation
Currently none				

The table below summarizes constraints and associated mitigations assignable to incremental ERIS steady state voltage.

Table 8.62 Group 18 Cluster ERIS Voltage Constraints

Monitored Element	TC Voltage (PU)	VMIN (PU)	VMAX (PU)	Contingency	Mitigation
Currently none					

The table below summarizes constraints and associated mitigations. The table below summarizes constraints and associated mitigations.

Table 8.63 Group 18 Cluster NRIS Constraints

Monitored Element	Limiting Rate A/B (MVA)	TC %Loading (%MVA)	Contingency	Mitigation
Currently none				

The table below summarizes constraints and associated mitigations assignable to incremental NRIS steady state voltage.

Table 8.64 Group 18 Cluster NRIS Voltage Constraints

Monitored Element	TC Voltage (PU)	VMIN (PU)	VMAX (PU)	Contingency	Mitigation
Currently none					

8.2 STAND-ALONE SCENARIO

The Stand-Alone Scenario considers the Base Case as well as all generating facilities (and with respect to (3) below, any identified Network Upgrades associated with such higher-queued interconnection) that, on the date the DISIS is commenced:

1. are directly connected to the Transmission System;
2. are interconnection to Affected Systems and may have an impact on the Interconnection Request;
3. have a pending higher-queued Interconnection Request to interconnect to the Transmission System or have executed an Interconnection Facilities Study Agreement; and
4. have no Interconnection Queue Position but have executed a GIA or requested that an unexecuted GIA be filed with FERC.

Constraints and associated mitigations for each Interconnection Request are summarized in the table below. Details are contained in Appendix G1-T and Appendix G1-V. Cost allocation for the Stand-Alone Scenario is found in Appendix E1.

Limited Operation results are listed below. While these results are based on the criteria listed in GIP 8.4.3, the Interconnection Customer may request additional scenarios for Limited Operation based on higher-queued Interconnection Requests not being placed in service. All of these amounts listed are based on SPP limitations and do not account for limitations on Affected Systems.

Table 8.65 Limited Operation Results

Group Number	Request	Available MW Before Mitigation	Most-Limiting Constraint	Mitigation
	GEN-2015-095	0	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	DeGrasse 345/138kV Project
	GEN-2016-003	248.4	None	
	GEN-2016-020	0	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	DeGrasse 345/138kV Project
	GEN-2016-045	501.4	None	
	GEN-2016-047	469	None	
	GEN-2016-057	501.4	None	
Group 2	GEN-2015-082	200	None	
	GEN-2016-070	0	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1	Replace line traps at both terminal (higher queued upgrades)
Group 3	GEN-2016-005	ERIS – 0	Non-convergence constraints listed in Section 8 Group 3 tables	Build Beaver Co – Clark Co 345kV
		NRIS – 0		
	GEN-2016-016	0		
		0		
	GEN-2016-046	0		
	GEN-2016-049	0		
Group 4	GEN-2016-067	73.6	None	
Group 6	GEN-2015-041	ERIS – 5	None	
		NRIS – 0	CARLISLE INTERCHANGE - LP-DOUD_TP 3115.00 115KV CKT 1	Rebuild Carlisle – LP-Doud 115kV CKT 1.
	GEN-2016-015	0	Non-convergence constraints listed in Section 8 Group 6 tables	1) Oklaunion 150Mvar Capacitor Bank(s) and +/-100Mvar SVC 2) Border +300Mvar SVC and 300Mvars of capacitor bank(s) 3) Build approximately 64 miles of new 345kV from Crawfish Draw – Tolk 4) Build approximately 115 miles of new 345kV from Tolk – Potter County
	GEN-2016-056	0		
	GEN-2016-062	0		
	GEN-2016-069	0		
Group 7	GEN-2016-037	300	None	
	GEN-2016-051	9.8	None	
Group 8	GEN-2016-009	29	None	
	GEN-2016-022	151.8	None	
	GEN-2016-031	1.5	None	
	GEN-2016-032	ERIS – 200	None	
		NRIS – 200	None	
	GEN-2016-048	ERIS – 0	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	Rebuild Farber – Belle Plains 138kV CKT 1
		NRIS – 0	Limited by ERIS	
	GEN-2016-060	0	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	Rebuild Farber – Belle Plains 138kV CKT 1
	GEN-2016-061	0	G15063_T 345.00 - WOODRING 345KV CKT 1	Replace structures
	GEN-2016-068	0	G15063_T 345.00 - WOODRING 345KV CKT 1	Replace structures

Group Number	Request	Available MW Before Mitigation	Most-Limiting Constraint	Mitigation
	GEN-2016-071	0	CHILOCCO4 138.00 - MIDLTNT4 138.00 138KV CKT 1	Rebuild Chilocco – Middleton 138kV
	GEN-2016-073	220	None	
Group 9	GEN-2015-089	0	Non-convergence constraints listed in Section 8 Group 9 tables	R- Plan (Gentleman – Thedford – Holt 345kV).
	GEN-2016-021	300	None	
	GEN-2016-023	0	Non-convergence constraints listed in Section 8 Group 9 tables	Build Banner Co – Keystone 345kV CKT 1, Keystone – GGS 345kV CKT 2, and R-Plan
	GEN-2016-029	0		
	GEN-2016-043	230	None	
	GEN-2016-050	250.7	None	
	GEN-2016-075	0	Non-convergence constraints listed in Section 8 Group 9 tables	R- Plan (Gentleman – Thedford – Holt 345kV).
Group 12	GEN-2016-013	ERIS – 10	None	
		NRIS – 0	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	Rebuild Neosho – Riverton 161kV CKT 1
	GEN-2016-014	ERIS – 10	None	
		NRIS – 0	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	Rebuild Neosho – Riverton 161kV CKT 1
Group 14	GEN-2015-036	303.6	None	
	GEN-2016-028	100	None	
	GEN-2016-030	100	None	
	GEN-2016-063	200	None	
Group 15	GEN-2016-017	250.7	None	
Group 16	GEN-2016-004	ERIS – 201.6		
		NRIS – 0	GLENHAM - L3 HAWDON 230KV CKT 1 and Low voltage at GRPRAR 345KV GRAND ISLAND 345KV	Rplan and Replace terminal equipment
	GEN-2016-052	3.3	None	
	GEN-2016-053	3.3	None	
Group 17	GEN-2016-054	3.4	None	
Group 18	GEN-2016-007	100.05	None	

8.3 CURTAILMENT AND SYSTEM RELIABILITY

In no way does this study guarantee operation for all periods of time. It should be noted that although this study analyzed many of the most probable contingencies, it is not an all-inclusive list and cannot account for every operational situation. Because of this, it is likely that the Customer(s) may be required to reduce their generation output to 0 MW, also known as curtailment, under certain system conditions to allow system operators to maintain the reliability of the transmission network.

9 STABILITY & SHORT CIRCUIT ANALYSIS

A stability and short-circuit analysis was conducted for each Interconnection Request using modified versions of the 2015 MDWG Models 2016 winter, 2017 summer, and 2025 summer peak dynamic cases[3]. The stability analysis assumes that all upgrades identified in the power flow analysis are in-service unless otherwise noted in the individual group stability study.

For each group, the interconnection requests are studied at 100% nameplate output while the other groups are dispatched at 20% output for Variable Energy Resource (VER) requests and 100% output for other requests. The output of the Interconnection Customer's facility is offset in each model by a reduction in output of existing online SPP generation. Each Interconnection Request is studied in a Stand Alone scenario in addition to the cluster scenario.

A synopsis is included for each group. The detailed stability study for each group can be found in the Appendices.

A preliminary short-circuit analysis was performed for this study and mitigations were identified below. The short-circuit analysis will be refined in the Interconnection Facilities Study and any additional required upgrades and cost assignment will be identified at that time.

9.1 POWER FACTOR REQUIREMENTS SUMMARY

Power factor requirements are listed in the table below by cluster group. In addition, some Interconnection Requests may have requirements for reactors under low-wind conditions as identified in the detailed reports found in the Appendices.

Group	Request	Size (MW)	Generator Model	Point of Interconnection	Minimum Lagging Power Factor	Minimum Leading Power Factor
1	GEN-2015-095	176	Vestas V110	Tap on Mooreland to Noel Switch 138kV (G15-095T)	0.95	0.95
1	GEN-2016-003	248.4	Vestas GS V126 3.45MW	Tap on Hitchland to Woodward 345kV (G16-003-TAP)	0.95	0.95
1	GEN-2016-020	150	Vestas V110 VCSS 2.0MW	Mooreland 138 kV (520999)	0.95	0.95
1	GEN-2016-045	500	GE 2.3MW	Mathewson 345 kV (515497)	0.95	0.95
1	GEN-2016-057	500	GE 2.3MW	Mathewson 345 kV (515497)	0.95	0.95
2	GEN-2015-082	200.0	GE 2.0MW	Tap on Woodward (515375) to Beaver (515554) 345kV (G11-14-TAP, 560000)	0.95	0.95
2	GEN-2016-070	5.3MW Uprate (Total 84.8MW)	GE 1.6MW	Martin Switching Station 115kV (523928)	0.95	0.95

[3]Short Circuit analysis performed only on the 2017 and 2025 Summer Peak seasonal model. Group 6 and Group 15 Stability Analyses also include 2020 Summer and Winter Peak seasons.

Group	Request	Size (MW)	Generator Model	Point of Interconnection	Minimum Lagging Power Factor	Minimum Leading Power Factor
3	GEN-2016-005	150	Vestas V110 2.0MW wind	GEN-2016-005-TAP 345 kV (Tap on Clark County – Thistle 345 kV line)	0.95	0.95
3	GEN-2016-016	78.2	GE 2.3MW wind	North Kinsley 115 kV	0.95	0.95
3	GEN-2016-046	299	GE 2.3MW wind	GEN-2016-046-TAP 345 kV (Tap on Clark County – Ironwood 345 kV line)	0.95	0.95
3	GEN-2016-049	310.2	Vestas V117 GS 3.3MW wind	GEN-2016-049-TAP 345 kV (Tap on GEN-2013-010 Tap/Post Rock – Spearville 345 kV line)	0.95	0.95
6	ASGI-2016-001	2.5	Envision E110 2.5MW (wind)	Wolfforth 115kV (526524)	0.95	0.95
6	ASGI-2016-002	0.35 uprate to ASGI-2015-002; total power = 2.53MW)	GE 2.53MW (584723)(wind)	Hurlwood Substation 69/12/74lV) [Yuma Interchange 115/69kV (526469)]	0.95	0.95
6	ASGI-2016-004	10	3 x Alstom 3.2MW/4 x Renewtech 100kW	Palo Duro 115kV (524530)	0.95	0.95
6	GEN-2016-015	100	TMEIC 1.667NW PV inverters (solar)	Andrews 230kV (528604)	0.95	0.95
6	GEN-2016-056	200	GE 2.0MW (wind)	Carlisle 230 kV (526161)	0.95	0.95
6	GEN-2016-062	250.7	GE 2.3MW (wind)	Andrews 230kV (528604)	0.95	0.95
6	GEN-2016-069	31.35	Hanwha 3.8MW & Hanwha 0.95MW	Chaves County 115kV (527482)	0.95	0.95
7	GEN-2016-037	300	Vestas V110 2.0MW (587233)	Tap Chisholm (511553) – Gracemont (515800) 345kV, (G16-037-TAP, 560078)	0.95	0.95
7	GEN-2016-051	9.8MW uprate to GEN-2003-022/GEN-2004-020 (total = 156.8MW)	G.E. 1.6MW (579363)	Tap Clinton Junction (511534) – Weatherford Southeast (511536) 138kV, (WTH WF 138kV, 511506)	0.95	0.95
8	GEN-2016-022	151.8	Vestas V126 3.45MW (wind; 587163)	Ranch Road 345kV (515576)	0.95	0.95
8	GEN-2016-031	1.5MW uprate of GEN-2015-001(total = 201.3MW)	Vestas V126 3.3MW (wind; 584453)	Ranch Road 345kV (515576)	0.95	0.95
8	GEN-2016-032	200	Vestas V110 2MW (wind; 587213)	Tap Marshall (514733)-Cottonwood Creek (514827) 138kV, (G16-032-TAP, 560077)	0.95	0.95

Group	Request	Size (MW)	Generator Model	Point of Interconnection	Minimum Lagging Power Factor	Minimum Leading Power Factor
8	GEN -2016-048	74	Sunny Central 2940 2.94MW (solar; 587333)	Sooner 138kV (514802)	0.95	0.95
8	GEN-2016-060	25.3	G.E. 2.3MW (wind)	Belle Plain 138kV (533063)	0.95	0.95
8	GEN-2016-061	250.7	GE 2.3 MW (wind; 587413)	Tap Woodring (514715) – Sooner (514803) 345kV (G16-061-TAP, 560084)	0.95	0.95
8	GEN-2016-068	250	GE 2.0MW (wind; 587463)	Woodring 345kV (514715)	0.95	0.95
8	GEN-2016-071	200.1	GE 2.3MW (wind; 587483)	Chilocco 138kV (521198)	0.95	0.95
8	GEN-2016-073	220	GE 2.0MW (wind; 587503)	Tap on Thistle (539801) to Wichita (532796) 345kV, ckt1&2 (Buffalo Flats 345kV; 560033)	0.95	0.95
9	GEN-2015-089	200	GE 2.0MW	Utica 230kV (652526)	0.95	0.95
9	GEN-2016-021	300	Vestas V110 VCSS 2.0MW (wind)	Hoskins 345kV (640266)	0.95	0.95
9	GEN-2016-023	150.5	GE 2.0MW and 1.79MW wind (587093, 587095)	Tap Sidney (659426) - Laramie River (659131) 345kV (587090)	0.95	0.95
9	GEN-2016-029	150.5	GE 2.3MW and 1.79MW wind	Tap Sidney (659426) - Laramie River (659131) 345kV (587090)	0.95	0.95
9	GEN-2016-043	230	GE 2.3MW wind (587283)	Hoskins 345kV (640226)	0.95	0.95
9	GEN-2016-050	250.7	GE 2.3MW wind (587353)	Axtell (640065)-Post Rock (530583) 345 kV (560082)	0.95	0.95
9	GEN-2016-075	50	Vestas V110 VCSS 2.0MW wind	Tap Ft. Thompson-Hope County 345 kV (Grand Prarie, 652532)	0.95	0.95
14	GEN-2015-036	303.6	Siemens 2.3 MW (wind)	PSO Johnston County 345 kV	0.95	0.95
14	GEN-2016-028	100	Vestas V110 VCSS 2.0 MW (wind)	Clayton 138 kV	0.95	0.95
14	GEN-2016-030	100	AE 500NX 0.5MW (solar)	Brown 138 kV	0.95	0.95
14	GEN-2016-063	200	Vestas V110 VCSS 2.0MW	Tap on Hugo to Sunnyside 345kV	0.95	0.95
15	GEN-2016-017	250.7	109 x G.E. 2.3 MW wind	Tap Fort Thompson (652806) – Leland Olds (659105) 345 kV, (G16-017-TAP, 560074)	0.95	0.95
16	GEN-2016-004	202	Vestas V136 3.6MW /Vestas V110 2.0MW	BEPC Leland Olds 230kV (659106)	0.95	0.95
16	GEN-2016-052	3.3 uprate to GI-0508 (total = 52.8MW)	GE 1.6MW wind	Hilken 230kV (652466)	0.95	0.95

Group	Request	Size (MW)	Generator Model	Point of Interconnection	Minimum Lagging Power Factor	Minimum Leading Power Factor
16	GEN-2016-053	3.3 uprate to GI-0615 (total = 52.8MW)	GE 1.6MW wind	Hilken 230kV (652466)	0.95	0.95
17	GEN-2015-089	200	GE 2.0MW wind	WAPA Utica Junction 230kV (652526)	0.95	0.95
17	GEN-2016-054	3.4 uprate (total = 54.4MW)	GE 1.6MW wind	Wessington Springs 230kV (652607)	0.95	0.95
18	GEN-2016-007	100.0	VESTAS V126 GS 3.45MW WIND	WAPA Valley City 115 kV (652454)	0.95	0.95

9.2 CLUSTER STABILITY AND SHORT-CIRCUIT SUMMARY

9.2.1 CLUSTER GROUP 1 (WOODWARD AREA)

New requests for this study group as well as prior-queued requests are listed in Appendix C.

The Group 1 stability analysis for this area was performed by S&C Electric (S&C). With the new requests modeled, violations of voltage recovery criteria were observed. However, these violations were due to some modelling issues. Once the modelling issues were corrected, the voltage violations no longer existed.

Upgrades identified in the power flow analysis were also tested in the stability analysis. This was done to make sure that the power flow upgrades do not affect the stability of the system.

The consultant observed that GEN-2016-045 and GEN-2016-057 would require large reactors, 294-330 MVAR, to compensate for the line charging current from each approximate 300 miles long transmission lead to the POI. It is essential for the facility study of these requests to incorporate an electromagnetic transients (EMT) study to identifying an appropriate design of the reactive compensation.

With all previously-assigned and currently-assigned Network Upgrades placed in service, no violations were observed, including violations of low-voltage ride-through requirements, for the probable contingencies studied.

9.2.2 CLUSTER GROUP 2 (HITCHLAND AREA)

New requests for this study group as well as prior-queued requests are listed in Appendix C.

The Group 2 stability analysis for this area was performed by SPP Staff (SPP). With the new requests modeled, violations of stability damping criteria and voltage recovery criteria were not observed. Upgrades identified in the power flow analysis were also tested in the stability analysis.

With all previously-assigned and currently-assigned Network Upgrades placed in service, no violations were observed, including violations of low-voltage ride-through requirements, for the probable contingencies studied.

9.2.3 CLUSTER GROUP 3 (SPEARVILLE AREA)

The Group 3 stability analysis was not performed again for this restudy. This group was not analyzed for this restudy and previously identified restudy results remain valid.

9.2.4 CLUSTER GROUP 4 (NORTHWEST KANSAS AREA)

The Group 4 stability analysis was not performed again for this restudy. This group was not analyzed for this restudy and previously identified restudy results remain valid.

9.2.5 CLUSTER GROUP 6 (SOUTH TEXAS PANHANDLE/NEW MEXICO AREA)

New requests for this study group as well as prior-queued requests are listed in Appendix C.

The Group 6 stability analysis for this area was performed by MEPPI. With the new requests modeled, violations of stability damping criteria and voltage recovery criteria were observed. Upgrades identified in the power flow analysis were also tested in the stability analysis.

The consultant has determined the following needed upgrades:

- Build Crawfish Draw to Tolk 345 kV Circuit #1
- Build Tolk to Potter County 345 kV Circuit #1
- Build Potter County 345/230 kV Transformer #2
- Build Potter County to Grapevine to Chisholm 345 kV Circuit #1
- Add +300 Mvar SVC at Border 345 kV
    - 600 total capacitive Mvars at Border 345 kV (300 Mvar switchable capacitor banks modeled as 6 blocks of 50 Mvar
- Add +/- 100 Mvar SVC at Oklaunion 345 kV
- Add 250 Mvar to existing switchable capacitor bank at Oklaunion 345kV (this brings total to 440 Mvar)
- Build Woodward to Tatonga to Mathewson 345 kV Circuit #2
    - Required to be implemented in 16WP and 17SP
    - Line exists in 20WP, 20SP, and 25SP
- Build Chaves County to Price to CV Pine to Capitan 115 kV Circuit #1
    - Required to be implemented in 16WP and 17SP
    - Line exists in 20WP, 20SP, and 25SP
- Convert existing Andrews 230 kV substation and Hobbs to Andrews 230 kV circuit to 345 kV

In the 20WP season, under normal system dispatch, system instability exists for a fault that results in the loss of the Tuco to Oklaunion 345 kV line. For this reason, it is necessary to limit the total interconnection service in this area until all area generation scheduled for retirement has been realized.

With all previously-assigned and currently-assigned Network Upgrades placed in service, no violations were observed, including violations of low-voltage ride-through requirements, for the probable contingencies studied.

9.2.6 CLUSTER GROUP 7 (SOUTHWESTERN OKLAHOMA AREA)

The Group 7 stability analysis was not performed again for this restudy. This group was not analyzed for this restudy and previously identified restudy results remain valid.

9.2.7 CLUSTER GROUP 8 (NORTH OKLAHOMA/SOUTH CENTRAL KANSAS AREA)

New requests for this study group as well as prior-queued requests are listed in Appendix C.

The Group 8 stability analysis for this area was performed by MEPPI. With the new requests modeled, violations of stability damping criteria and voltage recovery criteria were observed. Upgrades identified in the power flow analysis were also tested in the stability analysis.

The consultant has determined the following:

- Dispatch of shunt capacitors at TIMBJCT2 and UDALL_2 following the outage of the Belle Plaine (533063) – Farber (533042) 138kV line to mitigate steady-state voltage violations.
- Reduction of generation at GEN-2016-071 following prior outage of Middleton Tap to Peckham Tap 138 kV line to mitigate instability and generator tripping.

With all previously-assigned and currently-assigned Network Upgrades placed in service, no violations were observed, including violations of low-voltage ride-through requirements, for the probable contingencies studied.

9.2.8 CLUSTER GROUP 9 (NEBRASKA AREA)

New requests for this study group as well as prior-queued requests are listed in Appendix C.

The Group 9 stability analysis for this area was performed by MEPPI. With the new requests modeled, violations of stability damping criteria and voltage recovery criteria were observed. Upgrades identified in the power flow analysis were also tested in the stability analysis.

The consultant has determined the following needed upgrades:

- Keystone to Banner County (G16-034 Tap) 345 kV circuit #1
- SPP R Plan (16WP and 17SP advancement)
    - Cherry County/Thedford 345/115/13.8 kV transformer
    - Gentleman to Cherry County 345 kV circuit #1
    - Holt County to Cherry County 345 kV circuit #1
- Gentleman to Keystone 345 kV circuit #2
- 10 Mvar capacitor bank at Atwood 115 kV (25SP only)

With all previously-assigned and currently-assigned Network Upgrades placed in service, no violations were observed, including violations of low-voltage ride-through requirements, for the probable contingencies studied.

9.2.9 CLUSTER GROUP 12 (NORTHWEST ARKANSAS AREA)

The Group 12 stability analysis was not performed again for this restudy. This group was not analyzed for this restudy and previously identified restudy results remain valid.

9.2.10 CLUSTER GROUP 13 (NORTHEAST KANSAS/NORTHWEST MISSOURI AREA)

The Group 13 stability analysis was not performed again for this restudy. This group was not analyzed for this restudy and previously identified restudy results remain valid.

9.2.11 CLUSTER GROUP 14 (SOUTH CENTRAL OKLAHOMA AREA)

New requests for this study group as well as prior-queued requests are listed in Appendix C.

The Group 14 stability analysis for this area was performed by S&C. New requests for this study group as well as prior-queued requests are listed in Appendix C.

With the new requests modeled, violations of stability damping criteria and voltage recovery criteria were observed. Upgrades identified in the power flow analysis were also tested in the stability analysis.

The consultant's report noted issues that warrant further investigation in the Facilities Study:

- Generation Interconnection Request GEN-2016-030 (involving Power Electronics HEC-USsolar inverters) was tripping offline due to underfrequency during faults at and near the POI. Further investigations and discussions with SPP concluded that this was potentially a simulation numerical issue and thus the frequency relay at interconnection request GEN-2016-030 was deactivated. The manufacturer will need to verify this study finding prior to interconnection service being provided.

The consultant has determined the following:

- Reduction of generation at GEN-2015-036 following prior outage of JOHNCO 7 (514809) to PITTSB-7 (510907) line to mitigate instability and generator tripping.

With all previously-assigned and currently-assigned Network Upgrades placed in service, no violations were observed, including violations of low-voltage ride-through requirements, for the probable contingencies studied.

9.2.12 CLUSTER GROUP 15 (EASTERN SOUTH DAKOTA)

The Group 15 stability analysis was not performed again for this restudy. This group was not analyzed for this restudy and previously identified restudy results remain valid.

9.2.13 CLUSTER GROUP 16 (WESTERN NORTH DAKOTA)

New requests for this study group as well as prior-queued requests are listed in Appendix C.

The Group 16 stability analysis for this area was performed by MEPPI. With the new requests modeled, violations of stability damping criteria and voltage recovery criteria were observed. Upgrades identified in the power flow analysis were also tested in the stability analysis.

The consultant has identified the following:

- Reduction of generation at GI1414GEN W0.6900 Unit 1 located at bus 659453 from 137 MW to 50 MW (16WP, 17SP, and 25SP) and switch off 109.6 Mvar line reactor at bus 659421 (17SP) following prior outage of Heart River 230 kV (659448) to Belfield 230 kV (652425) CKT 1 to mitigate instability and generator tripping

With all previously-assigned and currently-assigned Network Upgrades placed in service, no violations were observed, including violations of low-voltage ride-through requirements, for the probable contingencies studied.

9.2.14 CLUSTER GROUP 17 (WESTERN SOUTH DAKOTA)

The Group 17 stability analysis was not performed again for this restudy. This group was not analyzed for this restudy and previously identified restudy results remain valid.

9.2.15 CLUSTER GROUP 18 (EASTERN NORTH DAKOTA)

The Group 18 stability analysis was not performed again for this restudy. This group was not analyzed for this restudy and previously identified restudy results remain valid.

9.3 STAND-ALONE SCENARIO STABILITY SUMMARY

The Stand-Alone Scenario considers the Base Case as well as all generating facilities (and with respect to (3) below, any identified Network Upgrades associated with such higher-queued interconnection) that, on the date the DISIS is commenced:

1. are directly connected to the Transmission System;
2. are interconnection to Affected Systems and may have an impact on the Interconnection Request;
3. have a pending higher-queued Interconnection Request to interconnect to the Transmission System or have executed an Interconnection Facilities Study Agreement; and
4. have no Interconnection Queue Position but have executed a GIA or requested that an unexecuted GIA be filed with FERC.

Constraints and associated mitigations for each Interconnection Request are summarized in the Section 8.2. Details are contained in Appendix J. Cost allocation for the Stand-Alone Scenario is found in Appendix E1.

9.4 CURTAILMENT AND SYSTEM RELIABILITY

In no way does this study guarantee operation for all periods of time. It should be noted that although this study analyzed many of the most probable contingencies, it is not an all-inclusive list and cannot account for every operational situation. Because of this, it is likely that the Customer(s) may be required to reduce their generation output to 0 MW, also known as curtailment, under certain system conditions to allow system operators to maintain the reliability of the transmission network.

10 CONCLUSION

The minimum cost of interconnecting all new generation interconnection requests included in this Definitive Interconnection System Impact Study is estimated at $1.4 Billion, not including the exceptions noted in Section 5.

Allocated costs for Network Upgrades and Transmission Owner Interconnection Facilities are listed in Appendix E and F. For Interconnection Requests that result in an interconnection to, or modification of, the transmission facilities of the Western-UGP (WAPA), a National Environmental Policy Act (NEPA) Environmental Review will be required. The Interconnection Customer will be required to execute an Environmental Review Agreement per Section 8.6.1 of the GIP.

These costs do not include the cost of upgrades of other transmission facilities listed in Appendix H which are Network Constraints. These interconnection costs do not include any cost of any Network Upgrades that are identified as required through the short circuit analysis. Potential over-duty circuit breakers capability will be identified by the Transmission Owner in the Interconnection Facilities Study.

Please note higher queued, MISO 2016-FEB-West Phase 2 analysis is not complete at this time. Depending on the results and mitigations assigned in MISO-2016-FEB-West Phase 2, SPP could require a restudy for Group 9, 15, 16, 17, and 18 due to higher queue study assumption changes.

Further refinement of total estimated interconnection costs will be provided, should the Interconnection Customer meet the requirements for acceptance and choose to move into the Interconnection Facilities Study following the posting of this DISIS. The Interconnection Facilities Study may include additional study analysis, additional facility upgrades not yet identified by this DISIS, such as circuit breaker replacements and affected system facilities, and further refinement of existing cost estimates.

The required interconnection costs listed in Appendices E, and F, and other upgrades associated with Network Constraints do not include all costs associated with the deliverability of the energy to final customers. These costs are determined by separate studies if the Customer submits a Transmission Service Request (TSR) through SPP's Open Access Same Time Information System (OASIS) as required by Attachment Z1 of the SPP Open Access Transmission Tariff (OATT).

11 APPENDICES

11.1 A: GENERATION INTERCONNECTION REQUESTS CONSIDERED FOR IMPACT STUDY

A: Generation Interconnection Requests Considered for Study

Request	Amount	Service	Area	Requested Point of Interconnection	Proposed Point of Interconnection	Requested In-Service Date	In Service Date Delayed Until no earlier than*
ASGI-2016-001	2.50	ER	SPS	Wolfforth 115kV	Wolfforth 115kV		TBD
ASGI-2016-002	0.35	ER	SPS	Hurlwood 115kV	SP-Yuma 115kV		TBD
ASGI-2016-003	6.00	ER	KCPL		Paola 161kV		TBD
ASGI-2016-004	9.60	ER	SPS		Palo Duro 115kV		TBD
GEN-2015-036	303.60	ER	OKGE	Johnston County 345kV	Johnston County 345kV	12/31/2017	TBD
GEN-2015-041	5.00	ER/NR	SPS	TUCO Interchange 345kV	TUCO Interchange 345kV	7/1/2015	TBD
GEN-2015-082	200.00	ER	OKGE	Tap Hitchland - Woodward Dbl Ckt (GEN-2011-014 Tap) 345kV	Tap Hitchland - Woodward Dbl Ckt (GEN-2011-014 Tap) 345kV	12/1/2017	TBD
GEN-2015-089	200.00	ER	WAPA	Utica 230kV	Utica 230kV	6/30/2017	TBD
GEN-2015-095	176.00	ER	OKGE	Tap Rose Valley - Mooreland 138kV	DeGrasse 138kV	12/1/2017	TBD
GEN-2016-003	248.40	ER	OKGE	Tap Badger - Woodward 345kV	Tap Badger - Woodward 345kV	12/31/2017	TBD
GEN-2016-004	202.00	ER/NR	WAPA	Leland Olds 230kV	Leland Olds 230kV	12/1/2018	TBD
GEN-2016-005	150.00	ER/NR	SUNCMKEC	Tap Clark County - Thistle 345kV	Tap Clark County - Thistle 345kV	12/31/2018	TBD
GEN-2016-007	100.00	ER	WAPA	Valley City 115kV	Valley City 115kV	12/31/2018	TBD
GEN-2016-009	29.00	ER	OKGE	Osage 69kV	Osage 69kV	9/30/2018	TBD
GEN-2016-013	10.00	ER/NR	EMDE	La Russell 161kV	La Russell 161kV	4/25/2003	TBD
GEN-2016-014	10.00	ER/NR	EMDE	La Russell 161kV	La Russell 161kV	4/25/2003	TBD
GEN-2016-015	100.00	ER	SPS	Andrews 230kV	Andrews 230kV	10/1/2018	TBD
GEN-2016-016	78.20	ER	MIDW	North Kinsley 115kV	North Kinsley 115kV	12/1/2017	TBD
GEN-2016-017	250.70	ER	WAPA	Tap Fort Thompson - Leland Olds 345kV	Tap Fort Thompson - Leland Olds 345kV	12/1/2017	TBD
GEN-2016-020	150.00	ER	WFEC	Mooreland 138kV	Mooreland 138kV	12/31/2018	TBD
GEN-2016-021	300.00	ER	NPPD	Hoskins 345kV	Hoskins 345kV	12/1/2018	TBD
GEN-2016-022	151.80	ER	OKGE	Ranch Road 345kV	Ranch Road 345kV	12/31/2017	TBD
GEN-2016-023	150.50	ER	WAPA	Tap Laramie River – Sidney 345kV	Tap Laramie River – Sidney 345kV	12/31/2017	TBD
GEN-2016-028	100.00	ER	AEPW	Clayton 138kV	Clayton 138kV	12/31/2018	TBD
GEN-2016-029	150.00	ER	WAPA	Tap Laramie River – Sidney 345kV	Tap Laramie River – Sidney 345kV	12/31/2017	TBD
GEN-2016-030	100.00	ER/NR	OKGE	Brown 138kV	Brown 138kV	1/1/2019	TBD
GEN-2016-031	1.50	ER	OKGE	Ranch Road 345kV	Ranch Road 345kV	11/30/2016	TBD
GEN-2016-032	200.00	ER/NR	OKGE	Tap Marshall - Cottonwood Creek 138kV	Tap Marshall - Cottonwood Creek 138kV	10/1/2018	TBD
GEN-2016-037	300.00	ER	AEPW	Tap Chisholm - Gracemont 345kV	Tap Chisholm - Gracemont 345kV	12/1/2018	TBD
GEN-2016-043	230.00	ER	NPPD	Hoskins 345kV	Hoskins 345kV	9/1/2018	TBD
GEN-2016-045	499.10	ER	OKGE	Mathewson 345kV	Mathewson 345kV	8/31/2018	TBD
GEN-2016-046	299.00	ER	SUNCMKEC	Tap Clark County - Ironwood 345kV	Tap Clark County - Ironwood 345kV	12/1/2018	TBD
GEN-2016-047	24.00	ER	OKGE	Mustang 69kV	Mustang 69kV	12/31/2017	TBD
GEN-2016-048	82.30	ER/NR	OKGE	Sooner 138kV	Sooner 138kV	6/30/2019	TBD
GEN-2016-049	310.20	ER	SUNCMKEC	Tap Spearville - Post Rock 345kV	Tap Spearville - Post Rock 345kV	7/31/2018	TBD
GEN-2016-050	250.70	ER	NPPD	Tap Axtell - Post Rock 345kV	Tap Axtell - Post Rock 345kV	12/1/2018	TBD
GEN-2016-051	9.80	ER	AEPW	Tap Clinton Junction - Weatherford Southeast 138kV	Tap Clinton Junction - Weatherford Southeast 138kV		TBD
GEN-2016-052	3.30	ER	WAPA	Hilken 230kV	Hilken 230kV	12/31/2016	TBD
GEN-2016-053	3.30	ER	WAPA	Hilken 230kV	Hilken 230kV	12/31/2016	TBD
GEN-2016-054	3.40	ER	WAPA	Wessington Springs 230kV	Wessington Springs 230kV		TBD
GEN-2016-056	200.00	ER	SPS	Carlisle 230kV	Carlisle 230kV	12/15/2018	TBD

Request	Amount	Service	Area	Requested Point of Interconnection	Proposed Point of Interconnection	Requested In-Service Date	In Service Date Delayed Until no earlier than*
GEN-2016-057	499.10	ER	OKGE	Mathewson 345kV	Mathewson 345kV	8/31/2018	TBD
GEN-2016-060	25.30	ER	WERE	Belle Plain 138kV	Belle Plain 138kV	12/31/2017	TBD
GEN-2016-061	250.70	ER	OKGE	Tap Woodring - Sooner 345kV	Tap Woodring - Sooner 345kV	12/1/2017	TBD
GEN-2016-062	250.70	ER	SPS	Andrews 230kV	Andrews 230kV	12/1/2018	TBD
GEN-2016-063	200.00	ER/NR	OKGE	Tap Sunnyside – Hugo 345kV	Tap Sunnyside – Hugo 345kV	12/31/2018	TBD
GEN-2016-067	73.60	ER	SUNCMKEC	Mingo 345kV	Mingo 345kV	11/1/2017	TBD
GEN-2016-068	250.00	ER	OKGE	Woodring 345kV	Woodring 345kV	12/1/2017	TBD
GEN-2016-069	31.40	ER	SPS	Chaves County 115kV	Chaves County 115kV	6/1/2018	TBD
GEN-2016-070	5.30	ER	SPS	Martin 115kV	Martin 115kV	11/1/2016	TBD
GEN-2016-071	200.10	ER	WFEC	Chilocco 138kV	Chilocco 138kV	9/30/2018	TBD
GEN-2016-073	220.00	ER	WERE	Tap Thistle – Wichita 345kV Dbl CKT	Tap Thistle – Wichita 345kV Dbl CKT	12/31/2017	TBD
GEN-2016-075	50.00	ER	WAPA	Tap Fort Thompson - Grand Island 345kV	Grand Prairie 345kV	12/31/2017	TBD
Total:	**7,656.45**						

*In-Service Date for each request is to be determined after the Interconnection Facility Study is completed.

11.2 B: PRIOR-QUEUED INTERCONNECTION REQUESTS

B: Prior Queued Interconnection Requests

Request	Amount	Area	Requested/Proposed Point of Interconnection	Status or In-Service Date
ASGI-2010-006	150.00	AECI	Remington 138kV	AECI queue Affected Study
ASGI-2010-010	42.20	SPS	Lovington 115kV	Lea County Affected Study
ASGI-2010-020	30.00	SPS	Tap LE-Tatum - LE-Crossroads 69kV	Lea County Affected Study
ASGI-2010-021	15.00	SPS	Tap LE-Saunders Tap - LE-Anderson 69kV	Lea County Affected Study
ASGI-2011-001	27.30	SPS	Lovington 115kV	On-Line
ASGI-2011-002	20.00	SPS	Herring 115kV	On-Line
ASGI-2011-003	10.00	SPS	Hendricks 69kV	On-Line
ASGI-2011-004	20.00	SPS	Pleasant Hill 69kV	Under Study (DISIS-2011-002)
ASGI-2012-002	18.15	SPS	FE-Clovis Interchange 115kV	Under Study (DISIS-2012-002)
ASGI-2012-006	22.50	SUNCMKEC	Tap Hugoton - Rolla 69kV	Under Study (DISIS-2012-001)
ASGI-2013-001	11.50	SPS	PanTex South 115kV	Under Study (DISIS-2013-001)
ASGI-2013-002	18.40	SPS	FE Tucumcari 115kV	Under Study (DISIS-2013-001)
ASGI-2013-003	18.40	SPS	FE Clovis 115kV	Under Study (DISIS-2013-001)
ASGI-2013-004	36.60	SUNCMKEC	Morris 115kV	Under Study (DISIS-2013-002)
ASGI-2013-005	1.65	SPS	FE Clovis 115kV	Under Study (DISIS-2013-002)
ASGI-2013-006	2.00	SPS	SP-Erskine 115kV	
ASGI-2014-001	2.50	SPS	SP-Erskine 115kV	Under Study (DISIS-2014-001)
ASGI-2014-014	56.40	GRDA	Ferguson 69kV	Under Study (DISIS-2014-002)
ASGI-2015-001	6.13	SUNCMKEC	Ninnescah 115kV	Under Study (DISIS-2015-001)
ASGI-2015-002	2.00	SPS	SP-Yuma 69kV	Under Study (DISIS-2015-001)
ASGI-2015-004	56.36	GRDA	Coffeyville City 69kV	Under Study (DISIS-2015-001)
ASGI-2015-006	9.00	SWPA	Tupelo 138kV	Under Study (DISIS-2015-002)
ASGI-2016-005	20.00	WAPA	Tap White Lake - Stickeny 69kV	Northwester Queued Request
ASGI-2016-006	20.00	WAPA	Mitchall	Northwester Queued Request
ASGI-2016-007	20.00	WAPA	Kimball 69kV	Northwester Queued Request
G176	100.00	XEL	Yankee 115kV	
G255	100.00	XEL	Yankee 115kV	MISO Queued Request
G380	150.00	OTP	Rugby 115kV	MISO Queued Request
G408	12.00	XEL	Tap McHenry - Souris 115kV	MISO Queued Request
G502	50.60	MP	Milton Young 230kV	MISO Queued Request
G586	30.00	XEL	Yankee 115kV	
G645	50.00	GRE	Ladish 115kV	MISO Queued Request
G723	10.00	MDU	Haskett 115kV	MISO Queued Request
G736	200.00	OTP	Big Stone South 230kV	
G752	150.00	MDU	Tap Bison - Hettinger 230kV	MISO Queued Request
G788	49.00	GRE	Ladish 115kV	MISO Queued Request
G830	99.00	GRE	GRE McHenry 115kV	MISO Queued Request
GEN-2001-014	96.00	WFEC	Ft Supply 138kV	On-Line
GEN-2001-026	74.30	WFEC	Washita 138kV	On-Line
GEN-2001-033	180.00	SPS	San Juan Tap 230kV	On-Line at 120MW
GEN-2001-036	80.00	SPS	Norton 115kV	On-Line
GEN-2001-037	100.00	OKGE	FPL Moreland Tap 138kV	On-Line
GEN-2001-039A	105.00	SUNCMKEC	Shooting Star Tap 115kV	On-Line
GEN-2001-039M	100.00	SUNCMKEC	Central Plains Tap 115kV	On-Line
GEN-2002-004	200.00	WERE	Latham 345kV	On-Line at 150MW
GEN-2002-005	120.00	WFEC	Red Hills Tap 138kV	On-Line

Request	Amount	Area	Requested/Proposed Point of Interconnection	Status or In-Service Date
GEN-2002-008	240.00	SPS	Hitchland 345kV	On-Line at 120MW
GEN-2002-008IS	40.50	WAPA	Edgeley 115kV [Pomona 115kV]	Commercial Operation
GEN-2002-009	80.00	SPS	Hansford 115kV	On-Line
GEN-2002-009IS	40.00	WAPA	Ft Thompson 69kV [Hyde 69kV]	Commercial Operation
GEN-2002-022	240.00	SPS	Bushland 230kV	On-Line
GEN-2002-023N	0.80	NPPD	Harmony 115kV	On-Line
GEN-2002-025A	150.00	SUNCMKEC	Spearville 230kV	On-Line
GEN-2003-004	100.00	WFEC	Washita 138kV	On-Line
GEN-2003-005	100.00	WFEC	Anadarko - Paradise (Blue Canyon) 138kV	On-Line
GEN-2003-006A	200.00	SUNCMKEC	Elm Creek 230kV	On-Line
GEN-2003-019	250.00	MIDW	Smoky Hills Tap 230kV	On-Line
GEN-2003-020	160.00	SPS	Martin 115kV	On-Line
GEN-2003-021N	75.00	NPPD	Ainsworth Wind Tap 115kV	On-Line
GEN-2003-022	120.00	AEPW	Weatherford 138kV	On-Line
GEN-2004-014	154.50	SUNCMKEC	Spearville 230kV	On-Line at 100MW
GEN-2004-020	27.00	AEPW	Weatherford 138kV	On-Line
GEN-2004-023	20.60	WFEC	Washita 138kV	On-Line
GEN-2004-023N	75.00	NPPD	Columbus Co 115kV	On-Line
GEN-2005-003	30.60	WFEC	Washita 138kV	On-Line
GEN-2005-003IS	100.00	WAPA	Nelson 115kV	Commercial Operation
GEN-2005-008	120.00	OKGE	Woodward 138kV	On-Line
GEN-2005-008IS	50.00	WAPA	Hilken 230kV [Ecklund 230kV]	Commercial Operation
GEN-2005-012	250.00	SUNCMKEC	Ironwood 345kV	On-Line at 160MW
GEN-2005-013	201.00	WERE	Caney River 345kV	On-Line
GEN-2006-001IS	10.00	XEL	Marshall 115kV	Commercial Operation
GEN-2006-002	101.00	AEPW	Sweetwater 230kV	On-Line
GEN-2006-002IS	51.00	WAPA	Wessington Springs 230kV	Commercial Operation
GEN-2006-006IS	10.00	XEL	Marshall 115kV	Commercial Operation
GEN-2006-015IS	50.00	WAPA	Hilken 230kV [Ecklund 230kV]	Commercial Operation
GEN-2006-018	170.00	SPS	TUCO Interchange 230kV	On-Line
GEN-2006-020N	42.00	NPPD	Bloomfield 115kV	On-Line
GEN-2006-020S	18.90	SPS	DWS Frisco 115kV	On-Line
GEN-2006-021	101.00	SUNCMKEC	Flat Ridge Tap 138kV	On-Line
GEN-2006-024S	19.80	WFEC	Buffalo Bear Tap 69kV	On-Line
GEN-2006-026	502.00	SPS	Hobbs 230kV & Hobbs 115kV	On-Line
GEN-2006-031	75.00	MIDW	Knoll 115kV	On-Line
GEN-2006-035	225.00	AEPW	Sweetwater 230kV	On-Line at 132MW
GEN-2006-037N1	75.00	NPPD	Broken Bow 115kV	On-Line
GEN-2006-038N005	80.00	NPPD	Broken Bow 115kV	On-Line
GEN-2006-038N019	80.00	NPPD	Petersburg North 115kV	On-Line
GEN-2006-043	99.00	AEPW	Sweetwater 230kV	On-Line
GEN-2006-044	370.00	SPS	Hitchland 345kV	On-Line at 120MW
GEN-2006-044N	40.50	NPPD	North Petersburg 115kV	On-Line
GEN-2006-046	131.00	OKGE	Dewey 138kV	On-Line
GEN-2007-011N08	81.00	NPPD	Bloomfield 115kV	On-Line
GEN-2007-013IS	50.00	WAPA	Wessington Springs 230kV	Commercial Operation
GEN-2007-014IS	100.00	WAPA	Wessington Springs 230kV	Commercial Operation
GEN-2007-015IS	100.00	WAPA	Hilken 230kV [Ecklund 230kV]	Commercial Operation
GEN-2007-017IS	166.00	WAPA	Ft Thompson-Grand Island 345kV	On Schedule
GEN-2007-018IS	234.00	WAPA	Ft Thompson-Grand Island 345kV	On Schedule

Request	Amount	Area	Requested/Proposed Point of Interconnection	Status or In-Service Date
GEN-2007-020IS	16.00	WAPA	Nelson 115kV	Commercial Operation
GEN-2007-021	201.00	OKGE	Tatonga 345kV	On-Line
GEN-2007-023IS	50.00	WAPA	Formit-Summit 115kV	On Suspension
GEN-2007-025	300.00	WERE	Viola 345kV	On-Line
GEN-2007-040	200.00	SUNCMKEC	Buckner 345kV	On-Line at 132MW
GEN-2007-043	200.00	OKGE	Minco 345kV	On-Line
GEN-2007-044	300.00	OKGE	Tatonga 345kV	On-Line at 199MW
GEN-2007-046	200.00	SPS	Hitchland 115kV	On-Line
GEN-2007-050	170.00	OKGE	Woodward EHV 138kV	On-Line at 150MW
GEN-2007-052	150.00	WFEC	Anadarko 138kV	On-Line
GEN-2007-062	425.00	OKGE	Woodward EHV 345kV	On-Line for 225MW, On Schedule and 2017
GEN-2008-003	101.00	OKGE	Woodward EHV 138kV	On-Line
GEN-2008-008IS	5.00	WAPA	Nelson 115kV	Commercial Operation
GEN-2008-013	300.00	OKGE	Hunter 345kV	On-Line at 235MW
GEN-2008-018	250.00	SPS	Finney 345kV	On-Line
GEN-2008-021	42.00	WERE	Wolf Creek 345kV	On-Line
GEN-2008-022	300.00	SPS	Crossroads 345kV	On-Line
GEN-2008-023	150.00	AEPW	Hobart Junction 138kV	On-Line
GEN-2008-037	101.00	WFEC	Slick Hills 138kV	On-Line
GEN-2008-044	197.80	OKGE	Tatonga 345kV	On-Line
GEN-2008-047	300.00	OKGE	Beaver County 345kV	On-Line
GEN-2008-051	322.00	SPS	Potter County 345kV	On-Line at 161MW
GEN-2008-079	99.20	SUNCMKEC	Crooked Creek 115kV	On-Line
GEN-2008-086N02	201.00	NPPD	Meadow Grove 230kV	On-Line
GEN-2008-092	200.60	MIDW	Post Rock 230kV	On-Line
GEN-2008-098	100.80	WERE	Waverly 345kV	On-Line
GEN-2008-119O	60.00	OPPD	S1399 161kV	On-Line
GEN-2008-123N	89.70	NPPD	Tap Pauline - Guide Rock (Rosemont) 115kV	On Schedule for 2016
GEN-2008-124	200.10	SUNCMKEC	Ironwood 345kV	On Schedule for 2016
GEN-2008-129	80.00	KCPL	Pleasant Hill 161kV	On-Line
GEN-2009-001IS	200.00	WAPA	Groton-Watertown 345kV	On Schedule
GEN-2009-006IS	90.00	WAPA	Mission 115kV	On Suspension
GEN-2009-007IS	100.00	WAPA	Mission 115kV	On Suspension
GEN-2009-008	199.50	MIDW	South Hays 230kV	On-Line
GEN-2009-018IS	100.00	WAPA	Groton 115kV	Commercial Operation
GEN-2009-020	48.30	MIDW	Walnut Creek 69kV	On-Line
GEN-2009-020AIS	130.50	WAPA	Tripp Junction 115kV	Commercial Operation
GEN-2009-025	59.80	OKGE	Nardins 69kV	On-Line
GEN-2009-026IS	110.00	WAPA	Dickenson-Heskett 230kV	On Schedule
GEN-2009-040	73.80	WERE	Marshall 115kV	On-Line
GEN-2010-001	300.00	OKGE	Beaver County 345kV	On-Line
GEN-2010-001IS	99.00	WAPA	Bismarck-Glenham 230kV	On Schedule
GEN-2010-003	100.80	WERE	Waverly 345kV	On-Line
GEN-2010-003IS	34.00	WAPA	Wessington Springs 230kV	Commercial Operation
GEN-2010-005	299.20	WERE	Viola 345kV	On-Line at 170MW
GEN-2010-006	205.00	SPS	Jones 230kV	On-Line
GEN-2010-007IS	172.50	WAPA	Antelope Valley 345kV	On Suspension
GEN-2010-009	165.60	SUNCMKEC	Buckner 345kV	On-Line
GEN-2010-011	29.70	OKGE	Tatonga 345kV	On-Line

Request	Amount	Area	Requested/Proposed Point of Interconnection	Status or In-Service Date
GEN-2010-014	358.80	SPS	Hitchland 345kV	On Schedule for 2018
GEN-2010-036	4.60	WERE	6th Street 115kV	On-Line
GEN-2010-040	300.00	OKGE	Cimarron 345kV	On-Line
GEN-2010-041	10.50	OPPD	S1399 161kV	On Schedule for 2015
GEN-2010-045	197.80	SUNCMKEC	Buckner 345kV	On Suspension
GEN-2010-046	56.00	SPS	TUCO Interchange 230kV	On Schedule for 2016
GEN-2010-051	200.00	NPPD	Tap Hoskins - Twin Church (Dixon County) 230kV	On Suspension
GEN-2010-055	4.50	AEPW	Wekiwa 138kV	On-Line
GEN-2010-057	201.00	MIDW	Rice County 230kV	On-Line
GEN-2011-008	600.00	SUNCMKEC	Clark County 345kV	On-Line
GEN-2011-010	100.80	OKGE	Minco 345kV	On-Line
GEN-2011-011	50.00	KCPL	Iatan 345kV	On-Line
GEN-2011-014	201.00	OKGE	Tap Hitchland - Woodward Dbl Ckt (GEN-2011-014 Tap) 345kV	On-Line
GEN-2011-016	200.10	SUNCMKEC	Ironwood 345kV	On Suspension
GEN-2011-018	73.60	NPPD	Steele City 115kV	On-Line
GEN-2011-019	175.00	OKGE	Woodward 345kV	On Schedule for 2017
GEN-2011-020	165.60	OKGE	Woodward 345kV	On Schedule for 2017
GEN-2011-022	299.00	SPS	Hitchland 345kV	On Schedule for 2016 (150MW) and 2017 (149MW)
GEN-2011-025	80.00	SPS	Tap Floyd County - Crosby County 115kV	On Schedule for 2016
GEN-2011-027	120.00	NPPD	Tap Hoskins - Twin Church (Dixon County) 230kV	On Schedule for 2018
GEN-2011-037	7.00	WFEC	Blue Canyon 5 138kV	On-Line
GEN-2011-040	111.00	OKGE	Carter County 138kV	On-Line
GEN-2011-045	205.00	SPS	Jones 230kV	On-Line
GEN-2011-046	27.00	SPS	Lopez 115kV	On-Line
GEN-2011-048	175.00	SPS	Mustang 230kV	On-Line
GEN-2011-049	250.70	OKGE	Border 345kV	On Schedule for 2016
GEN-2011-050	109.80	AEPW	Santa Fe Tap 138kV	On-Line
GEN-2011-054	300.00	OKGE	Cimarron 345kV	On-Line
GEN-2011-056	3.60	NPPD	Jeffrey 115kV	On-Line
GEN-2011-056A	3.60	NPPD	John 1 115kV	On-Line
GEN-2011-056B	4.50	NPPD	John 2 115kV	On-Line
GEN-2011-057	150.40	WERE	Creswell 138kV	On-Line
GEN-2012-001	61.20	SPS	Cirrus Tap 230kV	On-Line
GEN-2012-004	41.40	OKGE	Carter County 138kV	On-Line
GEN-2012-006IS	125.01	WAPA	Williston-Ch. Creek 230kV	On Schedule
GEN-2012-007	120.00	SUNCMKEC	Rubart 115kV	On-Line
GEN-2012-009IS	99.00	WAPA	Fort Randall 115kV	On Suspension
GEN-2012-012IS	75.00	WAPA	Wolf Point-Circle 115kV	On Suspension
GEN-2012-014IS	99.50	WAPA	Groton 115kV	On Schedule
GEN-2012-020	478.00	SPS	TUCO 230kV	On Schedule for 2016
GEN-2012-021	4.80	LES	Terry Bundy Generating Station 115kV	On-Line
GEN-2012-024	180.00	SUNCMKEC	Clark County 345kV	On Schedule for 2016
GEN-2012-028	74.80	WFEC	Gotebo 69kV	On-Line
GEN-2012-032	300.00	OKGE	Open Sky 345kV	On-Line
GEN-2012-033	98.10	OKGE	Tap and Tie South 4th - Bunch Creek & Enid Tap - Fairmont (GEN-2012-033T) 138kV	On-Line
GEN-2012-034	7.00	SPS	Mustang 230kV	On-Line
GEN-2012-035	7.00	SPS	Mustang 230kV	On-Line
GEN-2012-036	7.00	SPS	Mustang 230kV	On-Line

Request	Amount	Area	Requested/Proposed Point of Interconnection	Status or In-Service Date
GEN-2012-037	203.00	SPS	TUCO 345kV	On-Line
GEN-2012-041	121.50	OKGE	Ranch Road 345kV	On-Line
GEN-2013-001IS	90.00	WAPA	Summit-Watertown 115kV	On Suspension
GEN-2013-002	50.60	LES	Tap Sheldon - Folsom & Pleasant Hill (GEN-2013-002 Tap) 115kV CKT 2	On Suspension
GEN-2013-007	100.30	OKGE	Tap Prices Falls - Carter 138kV	On-Line
GEN-2013-008	1.20	NPPD	Steele City 115kV	On-Line
GEN-2013-009IS	19.50	WAPA	Redfield NW 115kV	Commercial Operation
GEN-2013-010	99.00	SUNCMKEC	Tap Spearville - Post Rock (North of GEN-2011-017 Tap) 345kV	On Suspension
GEN-2013-011	30.00	AEPW	Turk 138kV	On-Line
GEN-2013-012	147.00	OKGE	Redbud 345kV	On-Line
GEN-2013-016	203.00	SPS	TUCO 345kV	On Schedule for 2017
GEN-2013-019	73.60	LES	Tap Sheldon - Folsom & Pleasant Hill (GEN-2013-002 Tap) 115kV CKT 2	On Suspension
GEN-2013-022	25.00	SPS	Norton 115kV	On-Line
GEN-2013-027	150.00	SPS	Tap Tolk - Yoakum 230kV	On Schedule for 2018
GEN-2013-028	559.50	GRDA	Tap N Tulsa - GRDA 1 345kV	On Schedule for 2017
GEN-2013-029	300.00	OKGE	Renfrow 345kV	On-Line for 151.6MW
GEN-2013-030	300.00	OKGE	Beaver County 345kV	On Schedule for 2016 (200MW) and 2017 (100MW)
GEN-2013-032	204.00	NPPD	Antelope 115kV	On Schedule for 2017
GEN-2013-033	28.00	MIDW	Knoll 115kV	On-Line
GEN-2014-001	200.60	WERE	Tap Wichita - Emporia Energy Center (GEN-2014-001 Tap) 345kV	On Suspension
GEN-2014-001IS	103.70	WAPA	Newell-Maurine 115kV	On Suspension
GEN-2014-002	10.50	OKGE	Tatonga 345kV (GEN-2007-021 POI)	On Schedule for 2015
GEN-2014-003	15.80	OKGE	Tatonga 345kV (GEN-2007-044 POI)	On Schedule for 2015
GEN-2014-003IS	91.00	WAPA	Culbertson 115kV	On Schedule
GEN-2014-004	4.00	NPPD	Steele City 115kV (GEN-2011-018 POI)	On-Line
GEN-2014-004IS	384.20	WAPA	Charlie Creek 345kV	IA Pending
GEN-2014-005	5.70	OKGE	Minco 345kV (GEN-2011-010 POI)	On-Line
GEN-2014-006IS	125.00	WAPA	Williston 115kV	On Schedule
GEN-2014-010IS	150.00	WAPA	Neset 115kV	On Schedule
GEN-2014-012	225.00	SPS	Tap Hobbs Interchange - Andrews 230kV	On Suspension
GEN-2014-013	73.50	NPPD	Meadow Grove (GEN-2008-086N2 Sub) 230kV	On-Line
GEN-2014-014IS	151.50	WAPA	Belfield-Rhame 230kV	On Schedule
GEN-2014-020	100.00	AEPW	Tuttle 138kV	On Schedule for 2017
GEN-2014-021	300.00	KCPL	Tap Nebraska City - Mullin Creek 345kV	On Schedule for 2016
GEN-2014-025	2.40	MIDW	Walnut Creek 69kV	On-Line
GEN-2014-028	35.00	EMDE	Riverton 161kV	On-Line
GEN-2014-031	35.80	NPPD	Meadow Grove 230kV	On-Line
GEN-2014-032	10.20	NPPD	Meadow Grove 230kV	On Schedule for 2016
GEN-2014-033	70.00	SPS	Chaves County 115kV	On-Line
GEN-2014-034	70.00	SPS	Chaves County 115kV	On-Line
GEN-2014-035	30.00	SPS	Chaves County 115kV	On Schedule for 2018
GEN-2014-037	200.00	SPS	Tap Hitchland - Beaver County Dbl Ckt (Optima) 345kV	FACILITY STUDY STAGE
GEN-2014-039	73.40	NPPD	Friend 115kV	On Schedule for 2017
GEN-2014-040	320.40	SPS	Castro 115kV	On-Line
GEN-2014-047	40.00	SPS	Crossroads 345kV	On Schedule for 2017
GEN-2014-056	250.00	OKGE	Minco 345kV	On Schedule for 2016

Request	Amount	Area	Requested/Proposed Point of Interconnection	Status or In-Service Date
GEN-2014-057	250.00	AEPW	Tap Lawton - Sunnyside (Terry Road) 345kV	On-Line
GEN-2014-064	248.40	OKGE	Otter 138kV	On Suspension
GEN-2015-001	200.00	OKGE	Ranch Road 345kV	On-Line
GEN-2015-004	52.90	OKGE	Border 345kV	On Schedule for 2017
GEN-2015-005	200.10	KCPL	Tap Nebraska City - Sibley 345kV	On-Line
GEN-2015-007	160.00	NPPD	Hoskins 345kV	FACILITY STUDY STAGE
GEN-2015-013	120.00	WFEC	Synder 138kV	FACILITY STUDY STAGE
GEN-2015-014	150.00	SPS	Tap Cochran - Lehman 115kV	FACILITY STUDY STAGE
GEN-2015-015	154.60	OKGE	Tap Medford Tap - Coyote 138kV	FACILITY STUDY STAGE
GEN-2015-016	200.00	KCPL	Tap Marmaton - Centerville 161kV	FACILITY STUDY STAGE
GEN-2015-020	100.00	SPS	Oasis 115kV	FACILITY STUDY STAGE
GEN-2015-021	20.00	SUNCMKEC	Johnson Corner 115kV	FACILITY STUDY STAGE
GEN-2015-022	112.00	SPS	Swisher 115kV	FACILITY STUDY STAGE
GEN-2015-023	300.70	NPPD	Holt County 345kV	FACILITY STUDY STAGE
GEN-2015-024	220.00	WERE	Tap Thistle - Wichita 345kV Dbl CKT	On-Line
GEN-2015-025	220.00	WERE	Tap Thistle - Wichita 345kV Dbl CKT	On-Line
GEN-2015-029	161.00	OKGE	Tatonga 345kV	On Suspension
GEN-2015-030	200.10	OKGE	Sooner 345kV	On Suspension
GEN-2015-031	150.53	SPS	Tap Amarillo South - Swisher 230kV	FACILITY STUDY STAGE
GEN-2015-034	200.00	OKGE	Ranch Road 345kV	FACILITY STUDY STAGE
GEN-2015-045	20.00	AEPW	Tap Lawton - Sunnyside (Terry Road) 345kV	FACILITY STUDY STAGE
GEN-2015-046	300.00	WAPA	Tande 345kV	FACILITY STUDY STAGE
GEN-2015-047	300.00	OKGE	Sooner 345kV	FACILITY STUDY STAGE
GEN-2015-048	200.00	OKGE	Cleo Corner 138kV	FACILITY STUDY STAGE
GEN-2015-052	300.00	WERE	Tap Open Sky - Rose Hill 345kV	FACILITY STUDY STAGE
GEN-2015-053	50.00	NPPD	Antelope 115kV	FACILITY STUDY STAGE
GEN-2015-055	40.00	WFEC	Erick 138kV	FACILITY STUDY STAGE
GEN-2015-056	101.20	SPS	Crossroads 345kV	FACILITY STUDY STAGE
GEN-2015-057	100.00	OKGE	Minco 345kV	FACILITY STUDY STAGE
GEN-2015-058	50.00	SPS	Atoka 115kV	FACILITY STUDY STAGE
GEN-2015-062	4.50	OKGE	Tap and Tie South 4th - Bunch Creek & Enid Tap - Fairmont (GEN-2012-033T) 138kV	FACILITY STUDY STAGE
GEN-2015-063	300.00	OKGE	Tap Woodring - Mathewson 345kV	FACILITY STUDY STAGE
GEN-2015-064	197.80	SUNCMKEC	Mingo 115kV	FACILITY STUDY STAGE
GEN-2015-065	202.40	SUNCMKEC	Mingo 345kV	FACILITY STUDY STAGE
GEN-2015-066	248.40	OKGE	Tap Cleveland - Sooner 345kV	FACILITY STUDY STAGE
GEN-2015-068	300.00	SPS	TUCO Interchange 345kV	FACILITY STUDY STAGE
GEN-2015-069	300.00	WERE	Union Ridge 230kV	FACILITY STUDY STAGE
GEN-2015-071	200.00	AEPW	Chisholm 345kV	FACILITY STUDY STAGE
GEN-2015-073	200.10	WERE	Emporia Energy Center 345kV	FACILITY STUDY STAGE
GEN-2015-075	51.50	SPS	Carlisle 69kV	FACILITY STUDY STAGE
GEN-2015-076	158.40	NPPD	Belden 115kV	FACILITY STUDY STAGE
GEN-2015-079	129.20	SPS	Tap Yoakum - Hobbs Interchange 230kV	FACILITY STUDY STAGE
GEN-2015-080	129.20	SPS	Tap Yoakum - Hobbs Interchange 230kV	FACILITY STUDY STAGE
GEN-2015-083	125.00	WERE	Belle Plain 138kV	FACILITY STUDY STAGE
GEN-2015-084	51.30	AEPW	Hollis 138kV	FACILITY STUDY STAGE
GEN-2015-085	122.40	AEPW	Altus Junction 138kV	FACILITY STUDY STAGE
GEN-2015-087	66.00	NPPD	Tap Fairbury - Hebron 115kV	FACILITY STUDY STAGE
GEN-2015-088	300.00	NPPD	Tap Moore - Pauline 345kV	FACILITY STUDY STAGE
GEN-2015-090	220.00	WERE	Tap Thistle - Wichita 345kV Dbl CKT	FACILITY STUDY STAGE

Request	Amount	Area	Requested/Proposed Point of Interconnection	Status or In-Service Date
GEN-2015-092	250.00	AEPW	Tap Lawton - Sunnyside (Terry Road) 345kV	FACILITY STUDY STAGE
GEN-2015-093	250.00	OKGE	Gracemont 345kV	FACILITY STUDY STAGE
GEN-2015-096	150.00	WAPA	Tap Belfied - Rhame 230kV	On-Line
GEN-2015-098	100.00	WAPA	Mingusville 230kV	FACILITY STUDY STAGE
Gray County Wind (Montezuma)	110.00	SUNCMKEC	Gray County Tap 115kV	On-Line
H081	200.00	XEL	Tap Brookings - Lyons County 345kV	Under Study DPP-2016-FEB-West
J003	20.00	MDU	Baker 115kV	MISO Queued Request
J249	180.00	MDU	MDU Tatanka 230kV	MISO Queued Request
J262	100.00	OTP	Jamestown 345	MISO Queued Request
J263	100.00	OTP	Jamestown 345	MISO Queued Request
J290	150.00	XEL	Tap Glenboro South - Rugby 230kV	MISO Queued Request
J316	150.00	MDU	MDU 230 kV Tatanka-Ellendale line	MISO Queued Request
J432	98.00	XEL	Brookings 345kV	Under Study DPP-2016-FEB-West
J436	150.00	OTP	Big Stone South 345kV	MISO Queued Request
J437	150.00	OTP	Big Stone South 345kV	MISO Queued Request
J442	200.00	OTP	Big Stone 230 kV	MISO Queued Request
J460	200.00	XEL	Tap Brookings - Lyons County 345kV	Under Study DPP-2016-FEB-West
J488	151.80	OTP	Tap Big Stone - Ellendale 345kV	Under Study DPP-2016-FEB-West
J489	151.80	OTP	Tap Big Stone - Ellendale 345kV	Under Study DPP-2016-FEB-West
J490	60.00	MDU	McIntosh 115kV	Under Study DPP-2016-FEB-West
J493	150.00	OTP	Burr 115kV	Under Study DPP-2016-FEB-West
J510	326.90	OTP	Tap Brookings - Big Stone 345kV	Under Study DPP-2016-FEB-West
J525	50.00	XEL	Lake Wilson 69kV	Under Study DPP-2016-FEB-West
J526	300.00	OTP	Tap Brookings - Big Stone 345kV	Under Study DPP-2016-FEB-West
Llano Estacado (White Deer)	80.00	SPS	Llano Wind 115kV	On-Line
MPC01200	44.00	OTP	Sidney 230kV	IA Pending
MPC02100	100.00	OTP	Sidney 230kV	On-Line
NPPD Distributed (Broken Bow)	8.30	NPPD	Broken Bow 115kV	On-Line
NPPD Distributed (Buffalo County Solar)	10.00	NPPD	Kearney Northeast	On-Line
NPPD Distributed (Burt County Wind)	12.00	NPPD	Tekamah & Oakland 115kV	On-Line
NPPD Distributed (Burwell)	3.00	NPPD	Ord 115kV	On-Line
NPPD Distributed (Columbus Hydro)	45.00	NPPD	Columbus 115kV	On-Line
NPPD Distributed (North Platte - Lexington)	54.00	NPPD	Multiple: Jeffrey 115kV, John_1 115kV, John_2 115kV	On-Line
NPPD Distributed (Ord)	11.90	NPPD	Ord 115kV	On-Line
NPPD Distributed (Stuart)	2.10	NPPD	Ainsworth 115kV	On-Line
SPS Distributed (Carson)	10.00	SPS	Martin 115kV	On-Line
SPS Distributed (Dumas 19th St)	20.00	SPS	Dumas 19th Street 115kV	On-Line
SPS Distributed (Etter)	20.00	SPS	Etter 115kV	On-Line
SPS Distributed (Hopi)	10.00	SPS	Hopi 115kV	On-Line
SPS Distributed (Jal)	10.00	SPS	S Jal 115kV	On-Line
SPS Distributed (Lea Road)	10.00	SPS	Lea Road 115kV	On-Line

Request	Amount	Area	Requested/Proposed Point of Interconnection	Status or In-Service Date
SPS Distributed (Monument)	10.00	SPS	Monument 115kV	On-Line
SPS Distributed (Moore E)	25.00	SPS	Moore East 115kV	On-Line
SPS Distributed (Ocotillo)	10.00	SPS	S_Jal 115kV	On-Line
SPS Distributed (Sherman)	20.00	SPS	Sherman 115kV	On-Line
SPS Distributed (Spearman)	10.00	SPS	Spearman 69kV	On-Line
SPS Distributed (TC-Texas County)	20.00	SPS	Texas County 115kV	On-Line
SPS Distributed (Yuma)	2.57	SPS	SP-Yuma 69kV	On-Line
Total:	**41,119.8**			

11.3 C: STUDY GROUPINGS

C. Study Groups

GROUP 1: WOODWARD AREA			
Request	**Capacity**	**Area**	**Proposed Point of Interconnection**
GEN-2001-014	96.00	WFEC	Ft Supply 138kV
GEN-2001-037	100.00	OKGE	FPL Moreland Tap 138kV
GEN-2005-008	120.00	OKGE	Woodward 138kV
GEN-2006-024S	19.80	WFEC	Buffalo Bear Tap 69kV
GEN-2006-046	131.00	OKGE	Dewey 138kV
GEN-2007-021	201.00	OKGE	Tatonga 345kV
GEN-2007-043	200.00	OKGE	Minco 345kV
GEN-2007-044	300.00	OKGE	Tatonga 345kV
GEN-2007-050	170.00	OKGE	Woodward EHV 138kV
GEN-2007-062	425.00	OKGE	Woodward EHV 345kV
GEN-2008-003	101.00	OKGE	Woodward EHV 138kV
GEN-2008-044	197.80	OKGE	Tatonga 345kV
GEN-2010-011	29.70	OKGE	Tatonga 345kV
GEN-2010-040	300.00	OKGE	Cimarron 345kV
GEN-2011-010	100.80	OKGE	Minco 345kV
GEN-2011-019	175.00	OKGE	Woodward 345kV
GEN-2011-020	165.60	OKGE	Woodward 345kV
GEN-2011-054	300.00	OKGE	Cimarron 345kV
GEN-2014-002	10.50	OKGE	Tatonga 345kV (GEN-2007-021 POI)
GEN-2014-003	15.80	OKGE	Tatonga 345kV (GEN-2007-044 POI)
GEN-2014-005	5.70	OKGE	Minco 345kV (GEN-2011-010 POI)
GEN-2014-020	100.00	AEPW	Tuttle 138kV
GEN-2014-056	250.00	OKGE	Minco 345kV
GEN-2015-029	161.00	OKGE	Tatonga 345kV
GEN-2015-048	200.00	OKGE	Cleo Corner 138kV
GEN-2015-057	100.00	OKGE	Minco 345kV
GEN-2015-093	250.00	OKGE	Gracemont 345kV
PRIOR QUEUED SUBTOTAL	**4,225.70**		
GEN-2015-095	176.00	OKGE	DeGrasse 138kV
GEN-2016-003	248.40	OKGE	Tap Badger - Woodward 345kV
GEN-2016-020	150.00	WFEC	Mooreland 138kV
GEN-2016-045	499.10	OKGE	Mathewson 345kV
GEN-2016-047	24.00	OKGE	Mustang 69kV
GEN-2016-057	499.10	OKGE	Mathewson 345kV
CURRENT CLUSTER SUBTOTAL	**1,596.60**		
AREA TOTAL	**5,822.30**		

GROUP 2: HITCHLAND AREA			
Request	**Capacity**	**Area**	**Proposed Point of Interconnection**
ASGI-2011-002	20.00	SPS	Herring 115kV
ASGI-2013-001	11.50	SPS	PanTex South 115kV
GEN-2002-008	240.00	SPS	Hitchland 345kV
GEN-2002-009	80.00	SPS	Hansford 115kV
GEN-2002-022	240.00	SPS	Bushland 230kV
GEN-2003-020	160.00	SPS	Martin 115kV
GEN-2006-020S	18.90	SPS	DWS Frisco 115kV
GEN-2006-044	370.00	SPS	Hitchland 345kV
GEN-2007-046	200.00	SPS	Hitchland 115kV
GEN-2008-047	300.00	OKGE	Beaver County 345kV
GEN-2008-051	322.00	SPS	Potter County 345kV
GEN-2010-001	300.00	OKGE	Beaver County 345kV
GEN-2010-014	358.80	SPS	Hitchland 345kV
GEN-2011-014	201.00	OKGE	Tap Hitchland - Woodward Dbl Ckt (GEN-2011-014 Tap) 345kV
GEN-2011-022	299.00	SPS	Hitchland 345kV
GEN-2013-030	300.00	OKGE	Beaver County 345kV
GEN-2014-037	200.00	SPS	Tap Hitchland - Beaver County Dbl Ckt (Optima) 345kV
Llano Estacado (White Deer)	80.00	SPS	Llano Wind 115kV
SPS Distributed (Carson)	10.00	SPS	Martin 115kV
SPS Distributed (Dumas 19th St)	20.00	SPS	Dumas 19th Street 115kV
SPS Distributed (Etter)	20.00	SPS	Etter 115kV
SPS Distributed (Moore E)	25.00	SPS	Moore East 115kV
SPS Distributed (Sherman)	20.00	SPS	Sherman 115kV
SPS Distributed (Spearman)	10.00	SPS	Spearman 69kV
SPS Distributed (TC-Texas County)	20.00	SPS	Texas County 115kV
PRIOR QUEUED SUBTOTAL	**3,826.20**		
GEN-2015-082	200.00	OKGE	Tap Hitchland - Woodward Dbl Ckt (GEN-2011-014 Tap) 345kV
GEN-2016-070	5.30	SPS	Martin 115kV
CURRENT CLUSTER SUBTOTAL	**205.30**		
AREA TOTAL	**4,031.50**		

GROUP 3: SPEARVILLE AREA

Request	Capacity	Area	Proposed Point of Interconnection
ASGI-2012-006	22.50	SUNCMKEC	Tap Hugoton - Rolla 69kV
ASGI-2015-001	6.13	SUNCMKEC	Ninnescah 115kV
GEN-2001-039A	105.00	SUNCMKEC	Shooting Star Tap 115kV
GEN-2002-025A	150.00	SUNCMKEC	Spearville 230kV
GEN-2004-014	154.50	SUNCMKEC	Spearville 230kV
GEN-2005-012	250.00	SUNCMKEC	Ironwood 345kV
GEN-2006-021	101.00	SUNCMKEC	Flat Ridge Tap 138kV
GEN-2007-040	200.00	SUNCMKEC	Buckner 345kV
GEN-2008-018	250.00	SPS	Finney 345kV
GEN-2008-079	99.20	SUNCMKEC	Crooked Creek 115kV
GEN-2008-124	200.10	SUNCMKEC	Ironwood 345kV
GEN-2010-009	165.60	SUNCMKEC	Buckner 345kV
GEN-2010-045	197.80	SUNCMKEC	Buckner 345kV
GEN-2011-008	600.00	SUNCMKEC	Clark County 345kV
GEN-2011-016	200.10	SUNCMKEC	Ironwood 345kV
GEN-2012-007	120.00	SUNCMKEC	Rubart 115kV
GEN-2012-024	180.00	SUNCMKEC	Clark County 345kV
GEN-2013-010	99.00	SUNCMKEC	Tap Spearville - Post Rock (North of GEN-2011-017 Tap) 345kV
GEN-2015-021	20.00	SUNCMKEC	Johnson Corner 115kV
Gray County Wind (Montezuma)	110.00	SUNCMKEC	Gray County Tap 115kV
PRIOR QUEUED SUBTOTAL	**3,230.93**		
GEN-2016-005	150.00	SUNCMKEC	Tap Clark County - Thistle 345kV
GEN-2016-016	78.20	MIDW	North Kinsley 115kV
GEN-2016-046	299.00	SUNCMKEC	Tap Clark County - Ironwood 345kV
GEN-2016-049	310.20	SUNCMKEC	Tap Spearville - Post Rock 345kV
CURRENT CLUSTER SUBTOTAL	**837.40**		
AREA TOTAL	**4,068.33**		

GROUP 4: NORTHWEST KANSAS AREA

Request	Capacity	Area	Proposed Point of Interconnection
ASGI-2013-004	36.60	SUNCMKEC	Morris 115kV
GEN-2001-039M	100.00	SUNCMKEC	Central Plains Tap 115kV
GEN-2003-006A	200.00	SUNCMKEC	Elm Creek 230kV
GEN-2003-019	250.00	MIDW	Smoky Hills Tap 230kV
GEN-2006-031	75.00	MIDW	Knoll 115kV
GEN-2008-092	200.60	MIDW	Post Rock 230kV
GEN-2009-008	199.50	MIDW	South Hays 230kV
GEN-2009-020	48.30	MIDW	Walnut Creek 69kV
GEN-2010-057	201.00	MIDW	Rice County 230kV
GEN-2013-033	28.00	MIDW	Knoll 115kV
GEN-2014-025	2.40	MIDW	Walnut Creek 69kV
GEN-2015-064	197.80	SUNCMKEC	Mingo 115kV
GEN-2015-065	202.40	SUNCMKEC	Mingo 345kV
PRIOR QUEUED SUBTOTAL	**1,741.60**		
GEN-2016-067	73.60	SUNCMKEC	Mingo 345kV
CURRENT CLUSTER SUBTOTAL	**73.60**		
AREA TOTAL	**1,815.20**		

GROUP 6: SOUTH TEXAS PANHANDLE/NEW MEXICO AREA			
Request	Capacity	Area	Proposed Point of Interconnection
ASGI-2010-010	42.20	SPS	Lovington 115kV
ASGI-2010-020	30.00	SPS	Tap LE-Tatum - LE-Crossroads 69kV
ASGI-2010-021	15.00	SPS	Tap LE-Saunders Tap - LE-Anderson 69kV
ASGI-2011-001	27.30	SPS	Lovington 115kV
ASGI-2011-003	10.00	SPS	Hendricks 69kV
ASGI-2011-004	20.00	SPS	Pleasant Hill 69kV
ASGI-2012-002	18.15	SPS	FE-Clovis Interchange 115kV
ASGI-2013-002	18.40	SPS	FE Tucumcari 115kV
ASGI-2013-003	18.40	SPS	FE Clovis 115kV
ASGI-2013-005	1.65	SPS	FE Clovis 115kV
ASGI-2013-006	2.00	SPS	SP-Erskine 115kV
ASGI-2014-001	2.50	SPS	SP-Erskine 115kV
ASGI-2015-002	2.00	SPS	SP-Yuma 69kV
GEN-2001-033	180.00	SPS	San Juan Tap 230kV
GEN-2001-036	80.00	SPS	Norton 115kV
GEN-2006-018	170.00	SPS	TUCO Interchange 230kV
GEN-2006-026	502.00	SPS	Hobbs 230kV & Hobbs 115kV
GEN-2008-022	300.00	SPS	Crossroads 345kV
GEN-2010-006	205.00	SPS	Jones 230kV
GEN-2010-046	56.00	SPS	TUCO Interchange 230kV
GEN-2011-025	80.00	SPS	Tap Floyd County - Crosby County 115kV
GEN-2011-045	205.00	SPS	Jones 230kV
GEN-2011-046	27.00	SPS	Lopez 115kV
GEN-2011-048	175.00	SPS	Mustang 230kV
GEN-2012-001	61.20	SPS	Cirrus Tap 230kV
GEN-2012-020	478.00	SPS	TUCO 230kV
GEN-2012-034	7.00	SPS	Mustang 230kV
GEN-2012-035	7.00	SPS	Mustang 230kV
GEN-2012-036	7.00	SPS	Mustang 230kV
GEN-2012-037	203.00	SPS	TUCO 345kV
GEN-2013-016	203.00	SPS	TUCO 345kV
GEN-2013-022	25.00	SPS	Norton 115kV
GEN-2013-027	150.00	SPS	Tap Tolk - Yoakum 230kV
GEN-2014-012	225.00	SPS	Tap Hobbs Interchange - Andrews 230kV
GEN-2014-033	70.00	SPS	Chaves County 115kV
GEN-2014-034	70.00	SPS	Chaves County 115kV
GEN-2014-035	30.00	SPS	Chaves County 115kV
GEN-2014-040	320.40	SPS	Castro 115kV
GEN-2014-047	40.00	SPS	Crossroads 345kV
GEN-2015-014	150.00	SPS	Tap Cochran - Lehman 115kV
GEN-2015-020	100.00	SPS	Oasis 115kV
GEN-2015-022	112.00	SPS	Swisher 115kV
GEN-2015-031	150.53	SPS	Tap Amarillo South - Swisher 230kV
GEN-2015-056	101.20	SPS	Crossroads 345kV
GEN-2015-058	50.00	SPS	Atoka 115kV
GEN-2015-068	300.00	SPS	TUCO Interchange 345kV
GEN-2015-075	51.50	SPS	Carlisle 69kV
GEN-2015-079	129.20	SPS	Tap Yoakum - Hobbs Interchange 230kV
GEN-2015-080	129.20	SPS	Tap Yoakum - Hobbs Interchange 230kV

SPS Distributed (Hopi)	10.00	SPS	Hopi 115kV
SPS Distributed (Jal)	10.00	SPS	S Jal 115kV
SPS Distributed (Lea Road)	10.00	SPS	Lea Road 115kV
SPS Distributed (Monument)	10.00	SPS	Monument 115kV
SPS Distributed (Ocotillo)	10.00	SPS	S_Jal 115kV
SPS Distributed (Yuma)	2.57	SPS	SP-Yuma 69kV
PRIOR QUEUED SUBTOTAL	**5,410.40**		
ASGI-2016-001	2.50	SPS	Wolfforth 115kV
ASGI-2016-002	0.35	SPS	SP-Yuma 115kV
ASGI-2016-004	9.60	SPS	Palo Duro 115kV
GEN-2015-041	5.00	SPS	TUCO Interchange 345kV
GEN-2016-015	100.00	SPS	Andrews 230kV
GEN-2016-056	200.00	SPS	Carlisle 230kV
GEN-2016-062	250.70	SPS	Andrews 230kV
GEN-2016-069	31.40	SPS	Chaves County 115kV
CURRENT CLUSTER SUBTOTAL	**599.55**		
AREA TOTAL	**6,009.95**		

GROUP 7: SOUTHWEST OKLAHOMA AREA

Request	Capacity	Area	Proposed Point of Interconnection
GEN-2001-026	74.30	WFEC	Washita 138kV
GEN-2002-005	120.00	WFEC	Red Hills Tap 138kV
GEN-2003-004	100.00	WFEC	Washita 138kV
GEN-2003-005	100.00	WFEC	Anadarko - Paradise (Blue Canyon) 138kV
GEN-2003-022	120.00	AEPW	Weatherford 138kV
GEN-2004-020	27.00	AEPW	Weatherford 138kV
GEN-2004-023	20.60	WFEC	Washita 138kV
GEN-2005-003	30.60	WFEC	Washita 138kV
GEN-2006-002	101.00	AEPW	Sweetwater 230kV
GEN-2006-035	225.00	AEPW	Sweetwater 230kV
GEN-2006-043	99.00	AEPW	Sweetwater 230kV
GEN-2007-052	150.00	WFEC	Anadarko 138kV
GEN-2008-023	150.00	AEPW	Hobart Junction 138kV
GEN-2008-037	101.00	WFEC	Slick Hills 138kV
GEN-2011-037	7.00	WFEC	Blue Canyon 5 138kV
GEN-2011-049	250.70	OKGE	Border 345kV
GEN-2012-028	74.80	WFEC	Gotebo 69kV
GEN-2015-004	52.90	OKGE	Border 345kV
GEN-2015-013	120.00	WFEC	Synder 138kV
GEN-2015-055	40.00	WFEC	Erick 138kV
GEN-2015-071	200.00	AEPW	Chisholm 345kV
GEN-2015-084	51.30	AEPW	Hollis 138kV
GEN-2015-085	122.40	AEPW	Altus Junction 138kV
PRIOR QUEUED SUBTOTAL	**2,337.60**		
GEN-2016-037	300.00	AEPW	Tap Chisholm - Gracemont 345kV
GEN-2016-051	9.80	AEPW	Tap Clinton Junction - Weatherford Southeast 138kV
CURRENT CLUSTER SUBTOTAL	**309.80**		
AREA TOTAL	**2,647.40**		

GROUP 8: NORTH OKLAHOMA/SOUTH CENTRAL KANSAS AREA

Request	Capacity	Area	Proposed Point of Interconnection
ASGI-2010-006	150.00	AECI	Remington 138kV
ASGI-2014-014	56.40	GRDA	Ferguson 69kV
ASGI-2015-004	56.36	GRDA	Coffeyville City 69kV
GEN-2002-004	200.00	WERE	Latham 345kV
GEN-2005-013	201.00	WERE	Caney River 345kV
GEN-2007-025	300.00	WERE	Viola 345kV
GEN-2008-013	300.00	OKGE	Hunter 345kV
GEN-2008-021	42.00	WERE	Wolf Creek 345kV
GEN-2008-098	100.80	WERE	Waverly 345kV
GEN-2009-025	59.80	OKGE	Nardins 69kV
GEN-2010-003	100.80	WERE	Waverly 345kV
GEN-2010-005	299.20	WERE	Viola 345kV
GEN-2010-055	4.50	AEPW	Wekiwa 138kV
GEN-2011-057	150.40	WERE	Creswell 138kV
GEN-2012-032	300.00	OKGE	Open Sky 345kV
GEN-2012-033	98.10	OKGE	Tap and Tie South 4th - Bunch Creek & Enid Tap - Fairmont (GEN-2012-033T) 138kV
GEN-2012-041	121.50	OKGE	Ranch Road 345kV
GEN-2013-012	147.00	OKGE	Redbud 345kV
GEN-2013-028	559.50	GRDA	Tap N Tulsa - GRDA 1 345kV

GEN-2013-029	300.00	OKGE	Renfrow 345kV
GEN-2014-001	200.60	WERE	Tap Wichita - Emporia Energy Center (GEN-2014-001 Tap) 345kV
GEN-2014-028	35.00	EMDE	Riverton 161kV
GEN-2014-064	248.40	OKGE	Otter 138kV
GEN-2015-001	200.00	OKGE	Ranch Road 345kV
GEN-2015-015	154.60	OKGE	Tap Medford Tap - Coyote 138kV
GEN-2015-016	200.00	KCPL	Tap Marmaton - Centerville 161kV
GEN-2015-024	220.00	WERE	Tap Thistle - Wichita 345kV Dbl CKT
GEN-2015-025	220.00	WERE	Tap Thistle - Wichita 345kV Dbl CKT
GEN-2015-030	200.10	OKGE	Sooner 345kV
GEN-2015-034	200.00	OKGE	Ranch Road 345kV
GEN-2015-047	300.00	OKGE	Sooner 345kV
GEN-2015-052	300.00	WERE	Tap Open Sky - Rose Hill 345kV
GEN-2015-062	4.50	OKGE	Tap and Tie South 4th - Bunch Creek & Enid Tap - Fairmont (GEN-2012-033T) 138kV
GEN-2015-063	300.00	OKGE	Tap Woodring - Mathewson 345kV
GEN-2015-066	248.40	OKGE	Tap Cleveland - Sooner 345kV
GEN-2015-069	300.00	WERE	Union Ridge 230kV
GEN-2015-073	200.10	WERE	Emporia Energy Center 345kV
GEN-2015-083	125.00	WERE	Belle Plain 138kV
GEN-2015-090	220.00	WERE	Tap Thistle - Wichita 345kV Dbl CKT
PRIOR QUEUED SUBTOTAL	**7,424.06**		
GEN-2016-009	29.00	OKGE	Osage 69kV
GEN-2016-022	151.80	OKGE	Ranch Road 345kV
GEN-2016-031	1.50	OKGE	Ranch Road 345kV
GEN-2016-032	200.00	OKGE	Tap Marshall - Cottonwood Creek 138kV
GEN-2016-048	82.30	OKGE	Sooner 138kV
GEN-2016-060	25.30	WERE	Belle Plain 138kV
GEN-2016-061	250.70	OKGE	Tap Woodring - Sooner 345kV
GEN-2016-068	250.00	OKGE	Woodring 345kV
GEN-2016-071	200.10	WFEC	Chilocco 138kV
GEN-2016-073	220.00	WERE	Tap Thistle – Wichita 345kV Dbl CKT
CURRENT CLUSTER SUBTOTAL	**1,410.70**		
AREA TOTAL	**8,834.76**		

GROUP 9: NEBRASKA AREA

Request	Capacity	Area	Proposed Point of Interconnection
GEN-2002-023N	0.80	NPPD	Harmony 115kV
GEN-2003-021N	75.00	NPPD	Ainsworth Wind Tap 115kV
GEN-2004-023N	75.00	NPPD	Columbus Co 115kV
GEN-2006-020N	42.00	NPPD	Bloomfield 115kV
GEN-2006-037N1	75.00	NPPD	Broken Bow 115kV
GEN-2006-038N005	80.00	NPPD	Broken Bow 115kV
GEN-2006-038N019	80.00	NPPD	Petersburg North 115kV
GEN-2006-044N	40.50	NPPD	North Petersburg 115kV
GEN-2007-011N08	81.00	NPPD	Bloomfield 115kV
GEN-2007-017IS	166.00	WAPA	Ft Thompson-Grand Island 345kV
GEN-2007-018IS	234.00	WAPA	Ft Thompson-Grand Island 345kV
GEN-2008-086N02	201.00	NPPD	Meadow Grove 230kV
GEN-2008-119O	60.00	OPPD	S1399 161kV
GEN-2008-123N	89.70	NPPD	Tap Pauline - Guide Rock (Rosemont) 115kV
GEN-2009-040	73.80	WERE	Marshall 115kV
GEN-2010-041	10.50	OPPD	S1399 161kV
GEN-2010-051	200.00	NPPD	Tap Hoskins - Twin Church (Dixon County) 230kV

GEN-2011-018	73.60	NPPD	Steele City 115kV
GEN-2011-027	120.00	NPPD	Tap Hoskins - Twin Church (Dixon County) 230kV
GEN-2011-056	3.60	NPPD	Jeffrey 115kV
GEN-2011-056A	3.60	NPPD	John 1 115kV
GEN-2011-056B	4.50	NPPD	John 2 115kV
GEN-2012-021	4.80	LES	Terry Bundy Generating Station 115kV
GEN-2013-002	50.60	LES	Tap Sheldon - Folsom & Pleasant Hill (GEN-2013-002 Tap) 115kV CKT 2
GEN-2013-008	1.20	NPPD	Steele City 115kV
GEN-2013-019	73.60	LES	Tap Sheldon - Folsom & Pleasant Hill (GEN-2013-002 Tap) 115kV CKT 2
GEN-2013-032	204.00	NPPD	Antelope 115kV
GEN-2014-004	4.00	NPPD	Steele City 115kV (GEN-2011-018 POI)
GEN-2014-013	73.50	NPPD	Meadow Grove (GEN-2008-086N2 Sub) 230kV
GEN-2014-031	35.80	NPPD	Meadow Grove 230kV
GEN-2014-032	10.20	NPPD	Meadow Grove 230kV
GEN-2014-039	73.40	NPPD	Friend 115kV
GEN-2015-007	160.00	NPPD	Hoskins 345kV
GEN-2015-023	300.70	NPPD	Holt County 345kV
GEN-2015-053	50.00	NPPD	Antelope 115kV
GEN-2015-076	158.40	NPPD	Belden 115kV
GEN-2015-087	66.00	NPPD	Tap Fairbury - Hebron 115kV
GEN-2015-088	300.00	NPPD	Tap Moore - Pauline 345kV
NPPD Distributed (Broken Bow)	8.30	NPPD	Broken Bow 115kV
NPPD Distributed (Buffalo County Solar)	10.00	NPPD	Kearney Northeast
NPPD Distributed (Burt County Wind)	12.00	NPPD	Tekamah & Oakland 115kV
NPPD Distributed (Burwell)	3.00	NPPD	Ord 115kV
NPPD Distributed (Columbus Hydro)	45.00	NPPD	Columbus 115kV
NPPD Distributed (North Platte - Lexington)	54.00	NPPD	Multiple: Jeffrey 115kV, John_1 115kV, John_2 115kV
NPPD Distributed (Ord)	11.90	NPPD	Ord 115kV
NPPD Distributed (Stuart)	2.10	NPPD	Ainsworth 115kV
PRIOR QUEUED SUBTOTAL	**3,502.10**		
GEN-2015-089	200.00	WAPA	Utica 230kV
GEN-2016-021	300.00	NPPD	Hoskins 345kV
GEN-2016-023	150.50	WAPA	Tap Laramie River – Sidney 345kV
GEN-2016-029	150.00	WAPA	Tap Laramie River – Sidney 345kV
GEN-2016-043	230.00	NPPD	Hoskins 345kV
GEN-2016-050	250.70	NPPD	Tap Axtell - Post Rock 345kV
GEN-2016-075	50.00	WAPA	Grand Prairie 345kV
CURRENT CLUSTER SUBTOTAL	**1,331.20**		
AREA TOTAL	**4,833.30**		

GROUP 10: SOUTHEAST OKLAHOMA/NORTHEAST TEXAS AREA

Request	Capacity	Area	Proposed Point of Interconnection
AREA TOTAL	**0.00**		

GROUP 12: NORTHWEST ARKANSAS AREA

Request	Capacity	Area	Proposed Point of Interconnection
GEN-2013-011	30.00	AEPW	Turk 138kV
PRIOR QUEUED SUBTOTAL	**30.00**		
GEN-2016-013	10.00	EMDE	La Russell 161kV
GEN-2016-014	10.00	EMDE	La Russell 161kV
CURRENT CLUSTER SUBTOTAL	**20.00**		
AREA TOTAL	**50.00**		

GROUP 13: NORTHWEST MISSOURI AREA

Request	Capacity	Area	Proposed Point of Interconnection
GEN-2008-129	80.00	KCPL	Pleasant Hill 161kV
GEN-2010-036	4.60	WERE	6th Street 115kV
GEN-2011-011	50.00	KCPL	Iatan 345kV
GEN-2014-021	300.00	KCPL	Tap Nebraska City - Mullin Creek 345kV
GEN-2015-005	200.10	KCPL	Tap Nebraska City - Sibley 345kV
PRIOR QUEUED SUBTOTAL	**634.70**		
ASGI-2016-003	6.00	KCPL	Paola 161kV
CURRENT CLUSTER SUBTOTAL	**6.00**		
AREA TOTAL	**640.70**		

GROUP 14: SOUTH CENTRAL OKLAHOMA AREA

Request	Capacity	Area	Proposed Point of Interconnection
ASGI-2015-006	9.00	SWPA	Tupelo 138kV
GEN-2011-040	111.00	OKGE	Carter County 138kV
GEN-2011-050	109.80	AEPW	Santa Fe Tap 138kV
GEN-2012-004	41.40	OKGE	Carter County 138kV
GEN-2013-007	100.30	OKGE	Tap Prices Falls - Carter 138kV
GEN-2014-057	250.00	AEPW	Tap Lawton - Sunnyside (Terry Road) 345kV
GEN-2015-045	20.00	AEPW	Tap Lawton - Sunnyside (Terry Road) 345kV
GEN-2015-092	250.00	AEPW	Tap Lawton - Sunnyside (Terry Road) 345kV
PRIOR QUEUED SUBTOTAL	**891.50**		
GEN-2015-036	303.60	OKGE	Johnston County 345kV
GEN-2016-028	100.00	AEPW	Clayton 138kV
GEN-2016-030	100.00	OKGE	Brown 138kV
GEN-2016-063	200.00	OKGE	Tap Sunnyside – Hugo 345kV
CURRENT CLUSTER SUBTOTAL	**703.60**		
AREA TOTAL	**1,595.10**		

GROUP 15: E-SOUTH DAKOTA AREA			
Request	**Capacity**	**Area**	**Proposed Point of Interconnection**
ASGI-2016-005	20.00	WAPA	Tap White Lake - Stickeny 69kV
ASGI-2016-006	20.00	WAPA	Mitchall
ASGI-2016-007	20.00	WAPA	Kimball 69kV
G176	100.00	XEL	Yankee 115kV
G255	100.00	XEL	Yankee 115kV
G586	30.00	XEL	Yankee 115kV
G736	200.00	OTP	Big Stone South 230kV
GEN-2002-009IS	40.00	WAPA	Ft Thompson 69kV [Hyde 69kV]
GEN-2007-013IS	50.00	WAPA	Wessington Springs 230kV
GEN-2007-014IS	100.00	WAPA	Wessington Springs 230kV
GEN-2007-023IS	50.00	WAPA	Formit-Summit 115kV
GEN-2009-001IS	200.00	WAPA	Groton-Watertown 345kV
GEN-2009-018IS	100.00	WAPA	Groton 115kV
GEN-2010-001IS	99.00	WAPA	Bismarck-Glenham 230kV
GEN-2010-003IS	34.00	WAPA	Wessington Springs 230kV
GEN-2012-014IS	99.50	WAPA	Groton 115kV
GEN-2013-001IS	90.00	WAPA	Summit-Watertown 115kV
GEN-2013-009IS	19.50	WAPA	Redfield NW 115kV
GEN-2014-001IS	103.70	WAPA	Newell-Maurine 115kV
H081	200.00	XEL	Tap Brookings - Lyons County 345kV
J432	98.00	XEL	Brookings 345kV
J436	150.00	OTP	Big Stone South 345kV
J437	150.00	OTP	Big Stone South 345kV
J442	200.00	OTP	Big Stone 230 kV
J460	200.00	XEL	Tap Brookings - Lyons County 345kV
J488	151.80	OTP	Tap Big Stone - Ellendale 345kV
J489	151.80	OTP	Tap Big Stone - Ellendale 345kV
J493	150.00	OTP	Burr 115kV
J510	326.90	OTP	Tap Brookings - Big Stone 345kV
J525	50.00	XEL	Lake Wilson 69kV
J526	300.00	OTP	Tap Brookings - Big Stone 345kV
PRIOR QUEUED SUBTOTAL	**3,604.20**		
GEN-2016-017	250.70	WAPA	Tap Fort Thompson - Leland Olds 345kV
CURRENT CLUSTER SUBTOTAL	**250.70**		
AREA TOTAL	**3,854.90**		

GROUP 16: W-NORTH DAKOTA AREA			
Request	**Capacity**	**Area**	**Proposed Point of Interconnection**
G380	150.00	OTP	Rugby 115kV
G408	12.00	XEL	Tap McHenry - Souris 115kV
G502	50.60	MP	Milton Young 230kV
G645	50.00	GRE	Ladish 115kV
G723	10.00	MDU	Haskett 115kV
G752	150.00	MDU	Tap Bison - Hettinger 230kV
G788	49.00	GRE	Ladish 115kV
G830	99.00	GRE	GRE McHenry 115kV
GEN-2005-008IS	50.00	WAPA	Hilken 230kV [Ecklund 230kV]
GEN-2006-015IS	50.00	WAPA	Hilken 230kV [Ecklund 230kV]
GEN-2007-015IS	100.00	WAPA	Hilken 230kV [Ecklund 230kV]
GEN-2009-026IS	110.00	WAPA	Dickenson-Heskett 230kV
GEN-2010-007IS	172.50	WAPA	Antelope Valley 345kV
GEN-2012-006IS	125.01	WAPA	Williston-Ch. Creek 230kV
GEN-2012-012IS	75.00	WAPA	Wolf Point-Circle 115kV
GEN-2014-003IS	91.00	WAPA	Culbertson 115kV
GEN-2014-004IS	384.20	WAPA	Charlie Creek 345kV
GEN-2014-006IS	125.00	WAPA	Williston 115kV
GEN-2014-010IS	150.00	WAPA	Neset 115kV
GEN-2014-014IS	151.50	WAPA	Belfield-Rhame 230kV
GEN-2015-046	300.00	WAPA	Tande 345kV
GEN-2015-096	150.00	WAPA	Tap Belfied - Rhame 230kV
GEN-2015-098	100.00	WAPA	Mingusville 230kV
J003	20.00	MDU	Baker 115kV
J249	180.00	MDU	MDU Tatanka 230kV
J262	100.00	OTP	Jamestown 345
J263	100.00	OTP	Jamestown 345
J290	150.00	XEL	Tap Glenboro South - Rugby 230kV
J316	150.00	MDU	MDU 230 kV Tatanka-Ellendale line
MPC01200	44.00	OTP	Sidney 230kV
MPC02100	100.00	OTP	Sidney 230kV
PRIOR QUEUED SUBTOTAL	**3,548.81**		
GEN-2016-004	202.00	WAPA	Leland Olds 230kV
GEN-2016-052	3.30	WAPA	Hilken 230kV
GEN-2016-053	3.30	WAPA	Hilken 230kV
CURRENT CLUSTER SUBTOTAL	**208.60**		
AREA TOTAL	**0.00**		

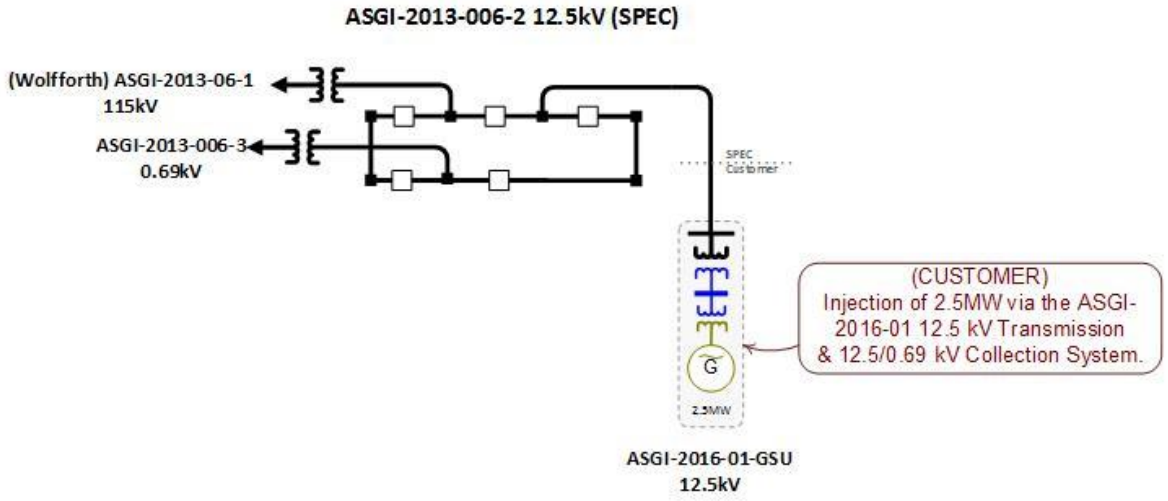
GROUP 17: W-SOUTH DAKOTA AREA			
Request	**Capacity**	**Area**	**Proposed Point of Interconnection**
GEN-2006-002IS	51.00	WAPA	Wessington Springs 230kV
GEN-2009-006IS	90.00	WAPA	Mission 115kV
GEN-2009-007IS	100.00	WAPA	Mission 115kV
GEN-2009-020AIS	130.50	WAPA	Tripp Junction 115kV
GEN-2012-009IS	99.00	WAPA	Fort Randall 115kV
J490	60.00	MDU	McIntosh 115kV
PRIOR QUEUED SUBTOTAL	**530.50**		
GEN-2016-054	3.40	WAPA	Wessington Springs 230kV
CURRENT CLUSTER SUBTOTAL	**3.40**		
AREA TOTAL	**0.00**		

GROUP 18: E-NORTH DAKOTA AREA			
Request	**Capacity**	**Area**	**Proposed Point of Interconnection**
GEN-2002-008IS	40.50	WAPA	Edgeley 115kV [Pomona 115kV]
GEN-2005-003IS	100.00	WAPA	Nelson 115kV
GEN-2006-001IS	10.00	XEL	Marshall 115kV
GEN-2006-006IS	10.00	XEL	Marshall 115kV
GEN-2007-020IS	16.00	WAPA	Nelson 115kV
GEN-2008-008IS	5.00	WAPA	Nelson 115kV
PRIOR QUEUED SUBTOTAL	**181.50**		
GEN-2016-007	100.00	WAPA	Valley City 115kV
CURRENT CLUSTER SUBTOTAL	**100.00**		
AREA TOTAL	**0.00**		

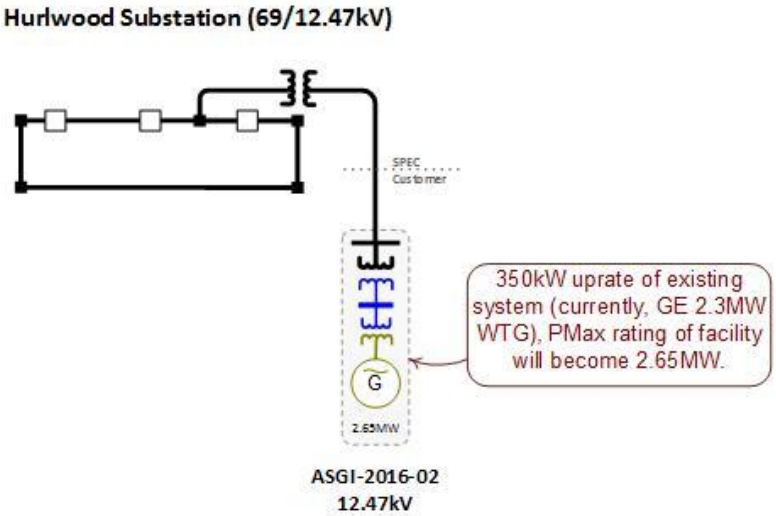
CLUSTER TOTAL (CURRENT STUDY)	**7,656.5**	**MW**
PQ TOTAL (PRIOR QUEUED)	**41,119.8**	**MW**
CLUSTER TOTAL (INCLUDING PRIOR QUEUED)	**48,776.3**	**MW**

11.4 D: PROPOSED POINT OF INTERCONNECTION ONE-LINE DIAGRAMS

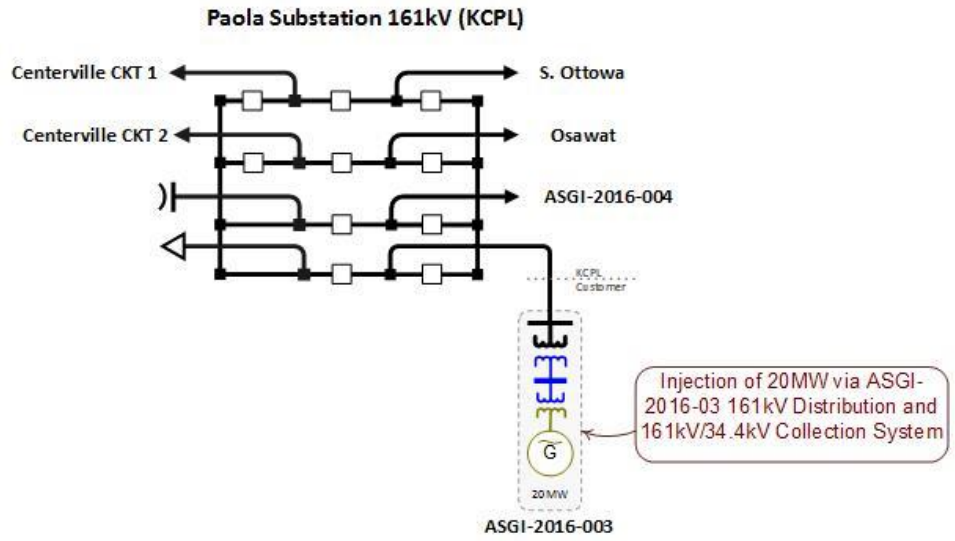
Interconnection Request: ASGI-2016-001
Cluster Interconnection Costs: $21,750



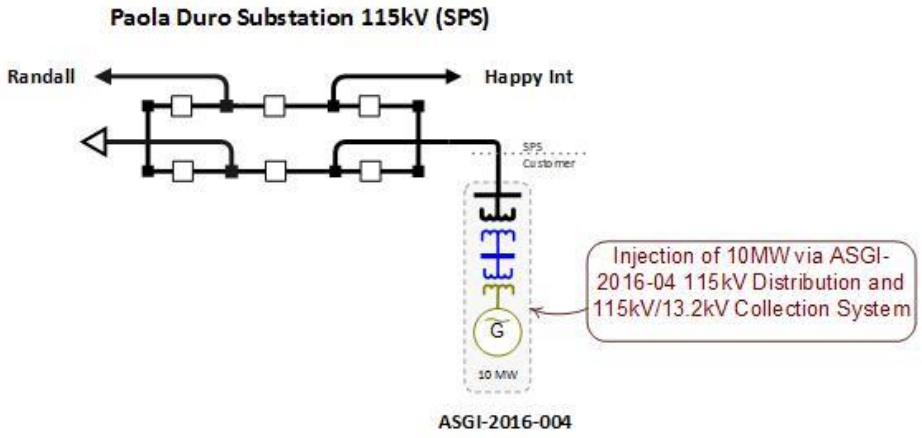
Interconnection Request: ASGI-2016-002
Cluster Interconnection Costs: $21,750



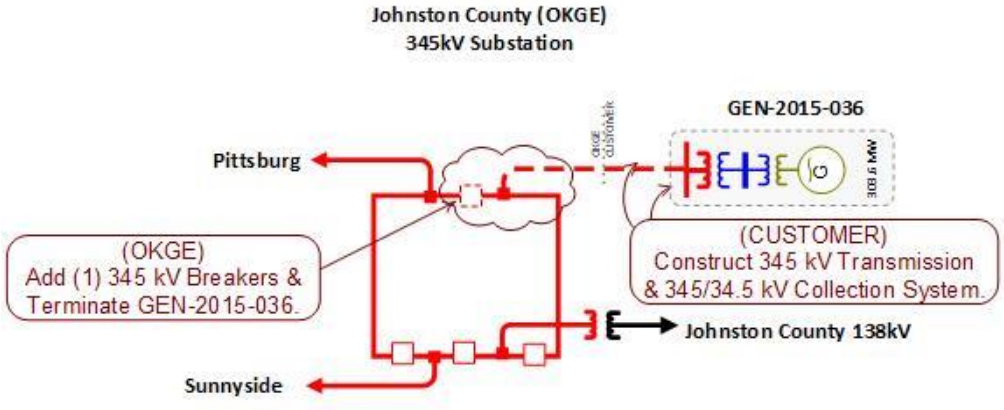
Interconnection Request: ASGI-2016-003
Cluster Interconnection Costs: $10,000



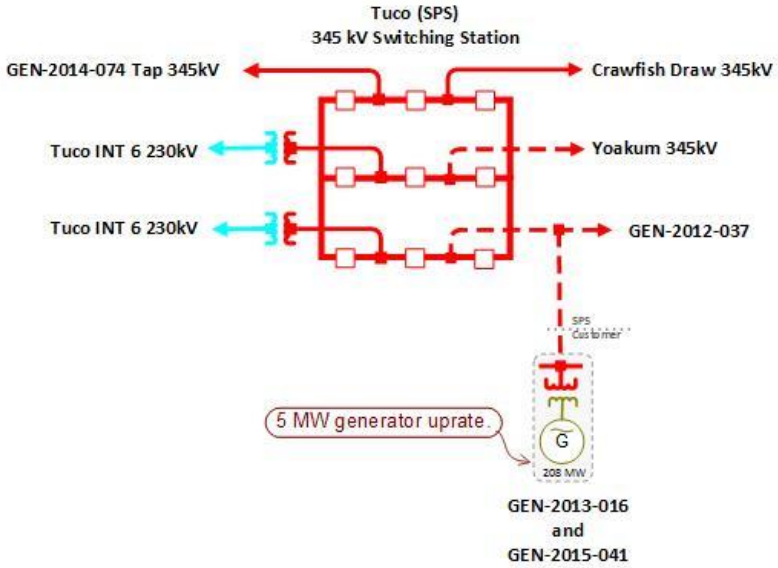
Interconnection Request: ASGI-2016-004
Cluster Interconnection Costs: $15,000



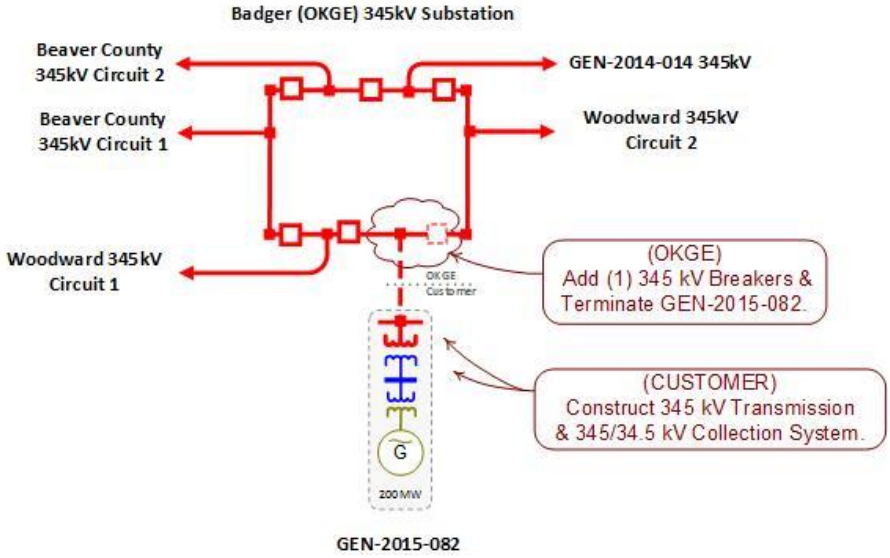
Interconnection Request: GEN-2015-036
Cluster Interconnection Costs: $2,025,000



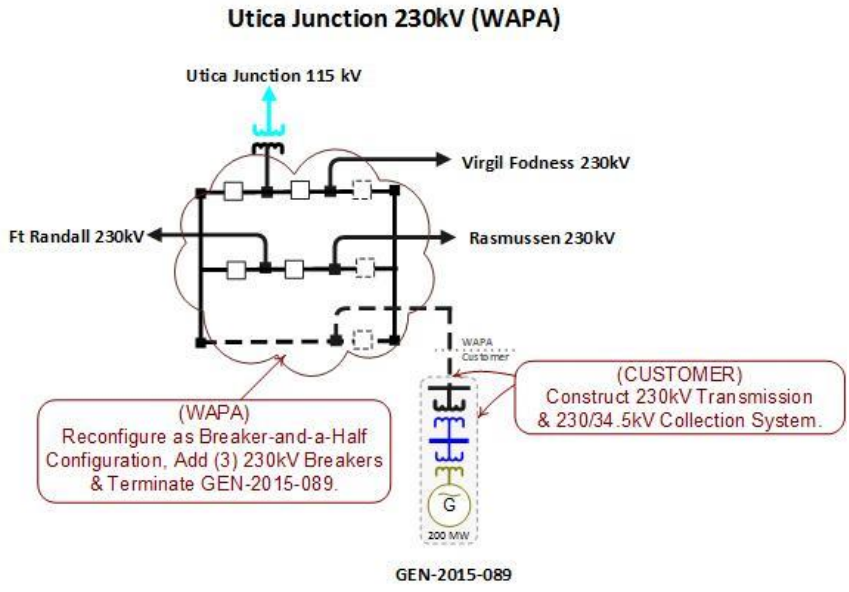
Interconnection Request: GEN-2015-041
Cluster Interconnection Costs: $0



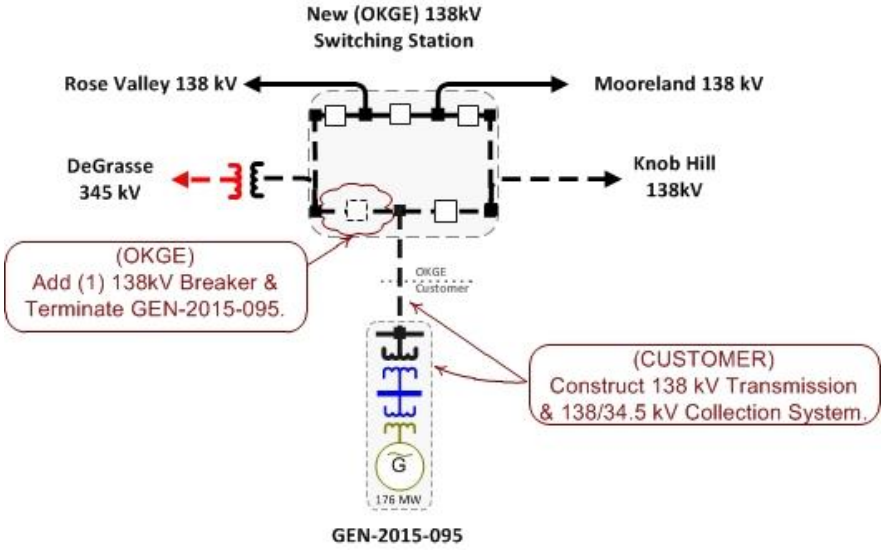
Interconnection Request: GEN-2015-082
Cluster Interconnection Costs: $1,930,000



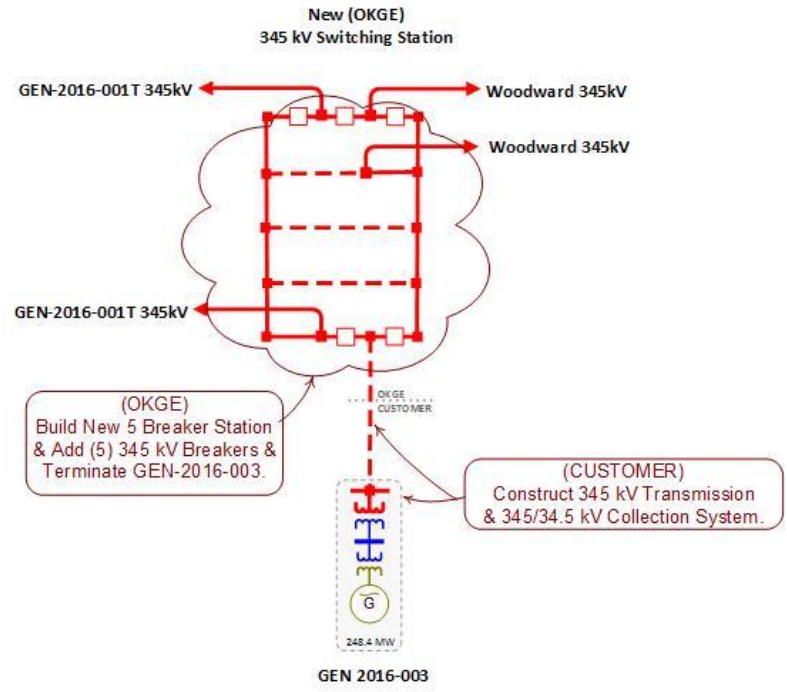
Interconnection Request: GEN-2015-089
Cluster Interconnection Costs: $2,000,000



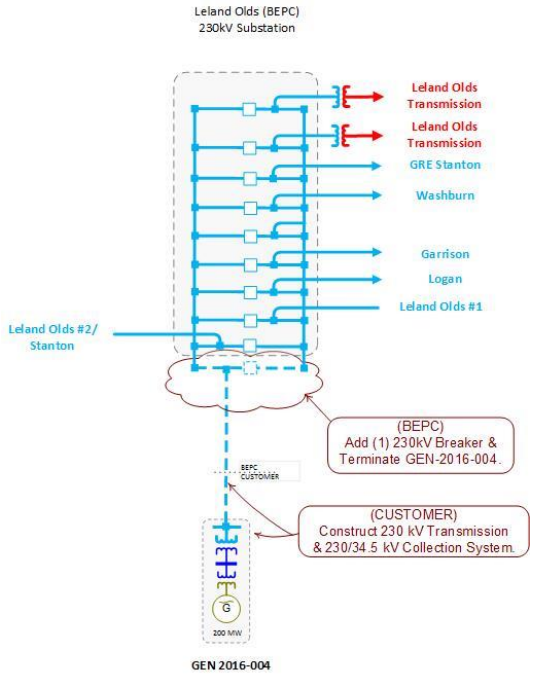
Interconnection Request: GEN-2015-095
Cluster Interconnection Costs: $942,900



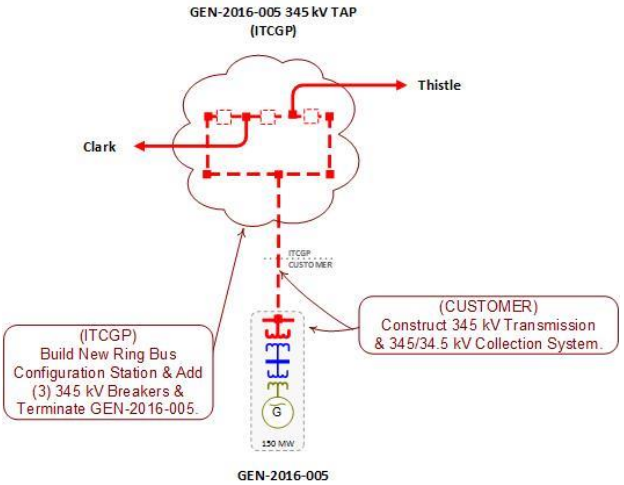
Interconnection Request: GEN-2016-003
Cluster Interconnection Costs: $15,000,000



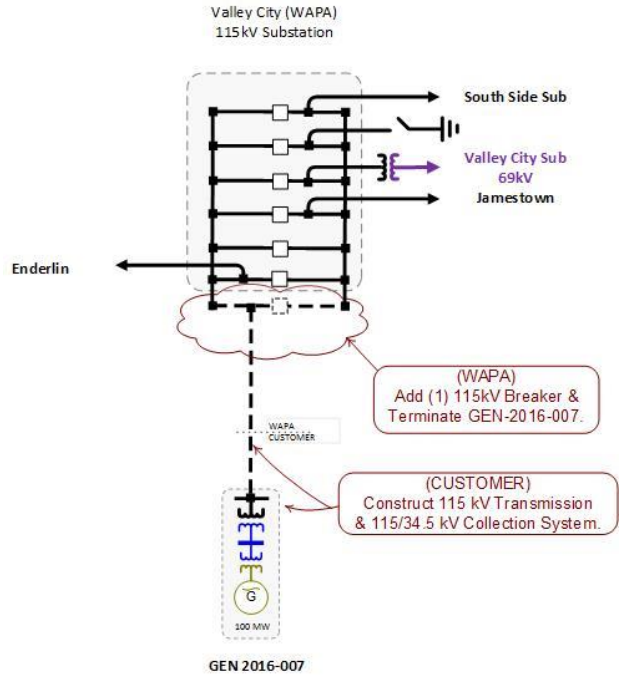
Interconnection Request: GEN-2016-004
Cluster Interconnection Costs: $2,871,212



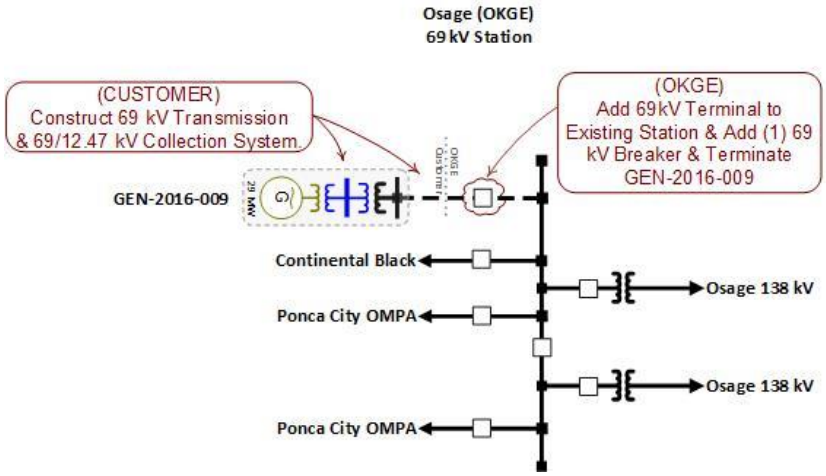
Interconnection Request: GEN-2016-005
Cluster Interconnection Costs: $8,614,897



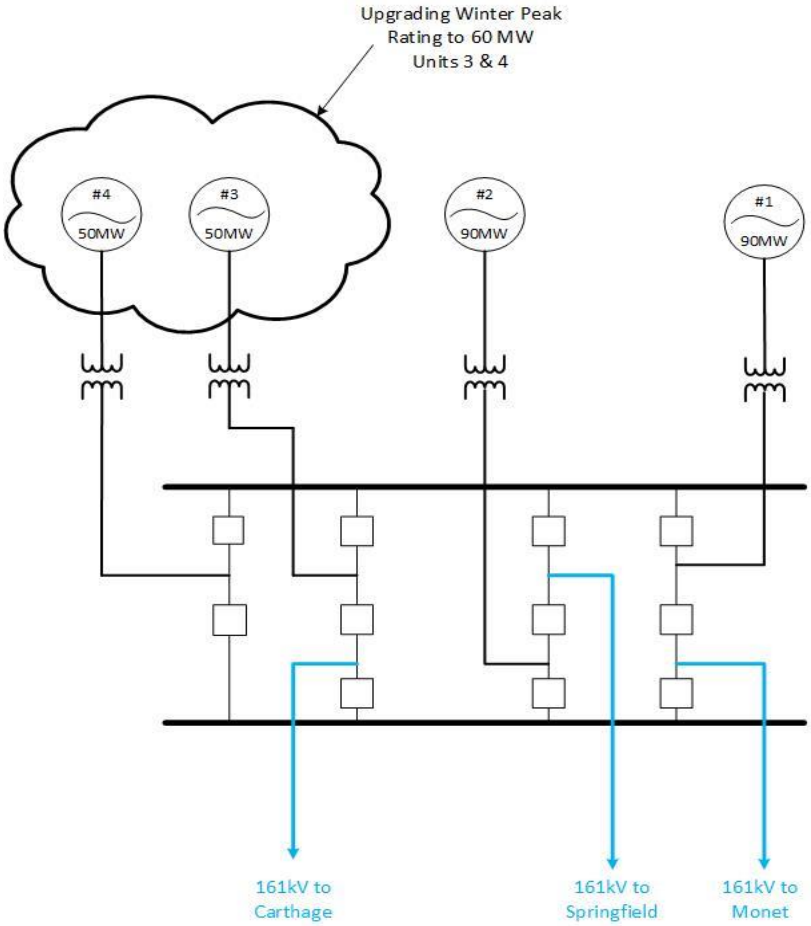
Interconnection Request: GEN-2016-007
Cluster Interconnection Costs: $1,100,000



Interconnection Request: GEN-2016-009
Cluster Interconnection Costs: $956,218

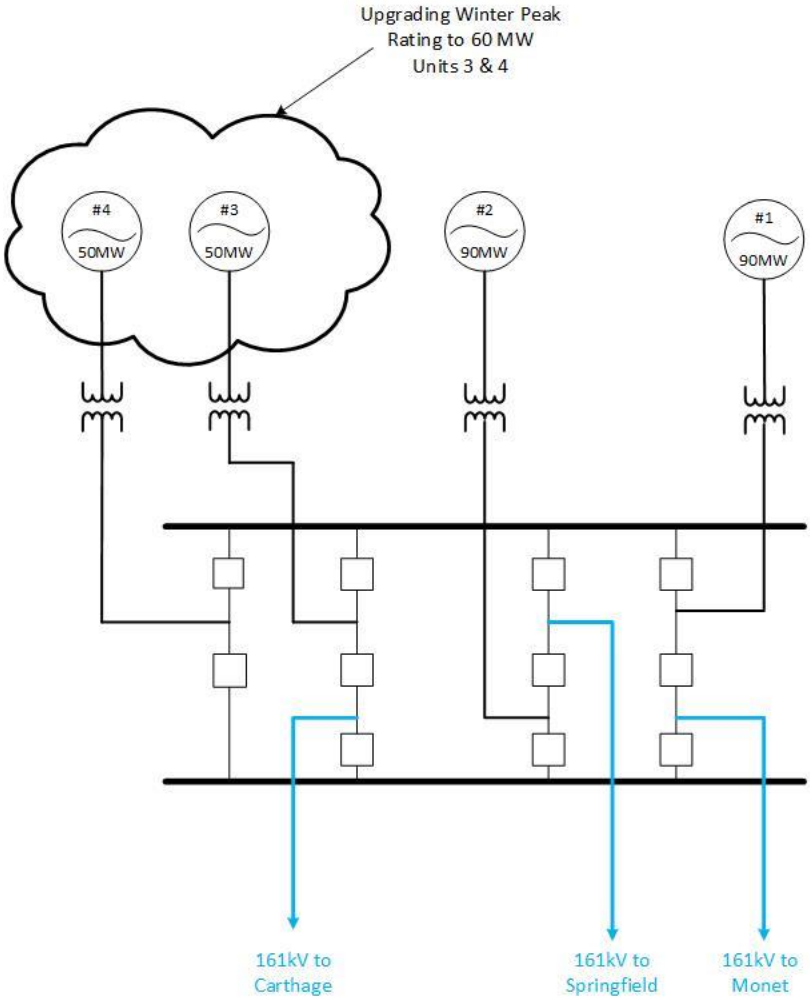


Interconnection Request: GEN-2016-013
Cluster Interconnection Costs: $0



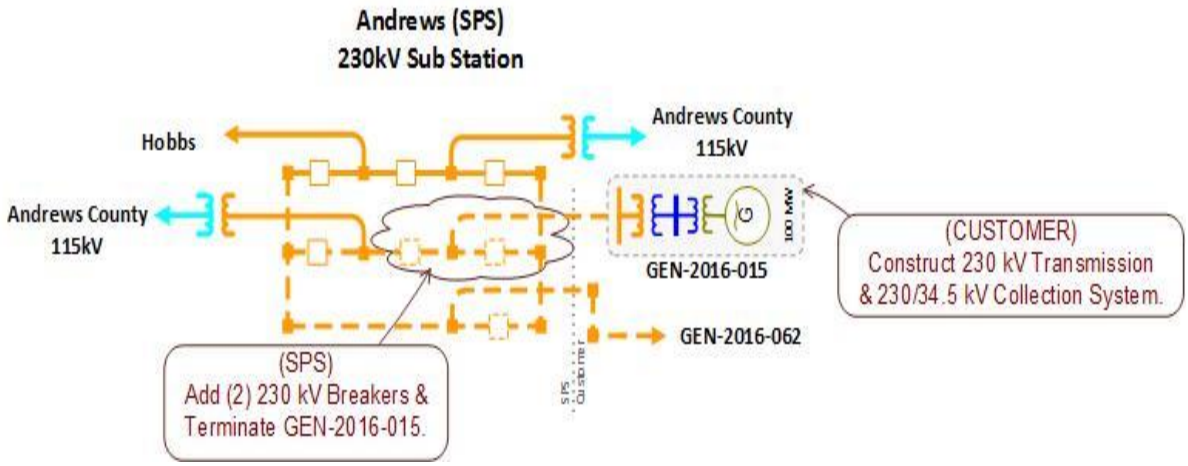
GEN_2016-013
LaRussel Energy Center

Interconnection Request: GEN-2016-014
Cluster Interconnection Costs: $0

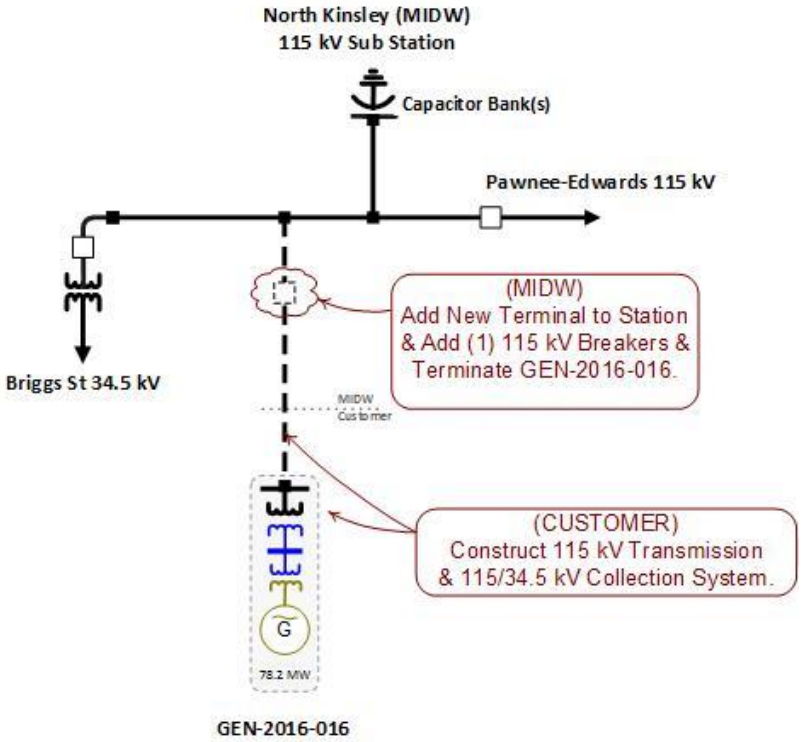


GEN_2016-013
LaRussel Energy Center

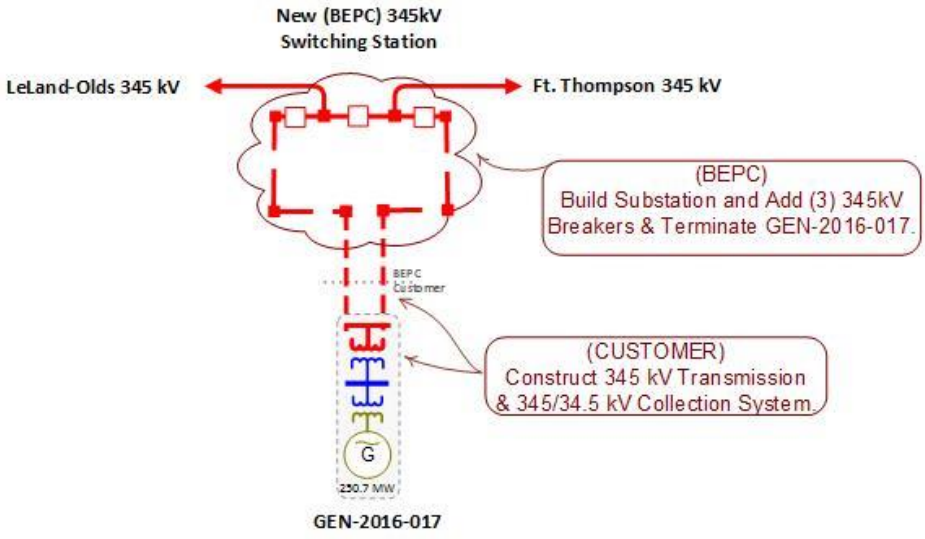
Interconnection Request: GEN-2016-015
Cluster Interconnection Costs: $6,625,863



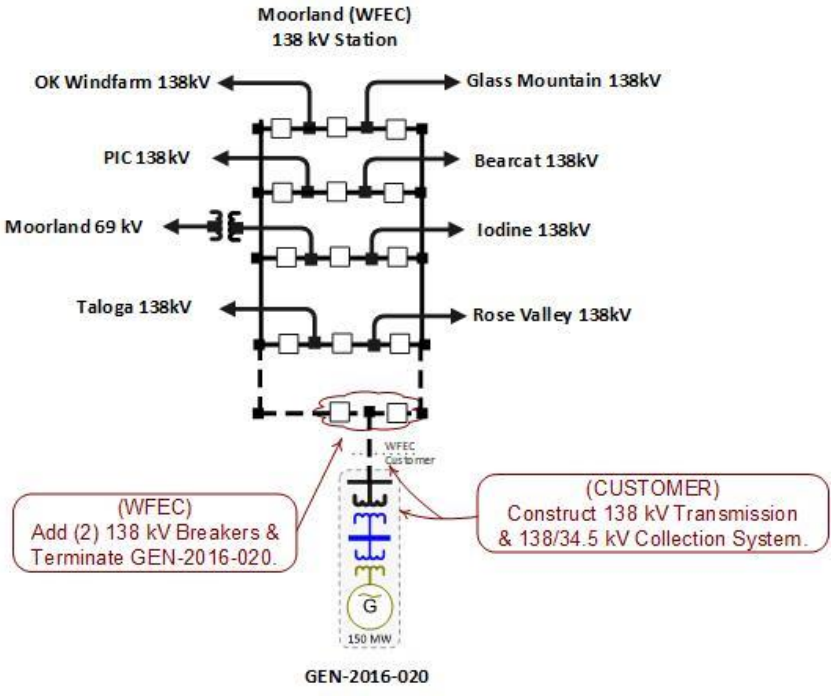
Interconnection Request: GEN-2016-016
Cluster Interconnection Costs: $4,761,014



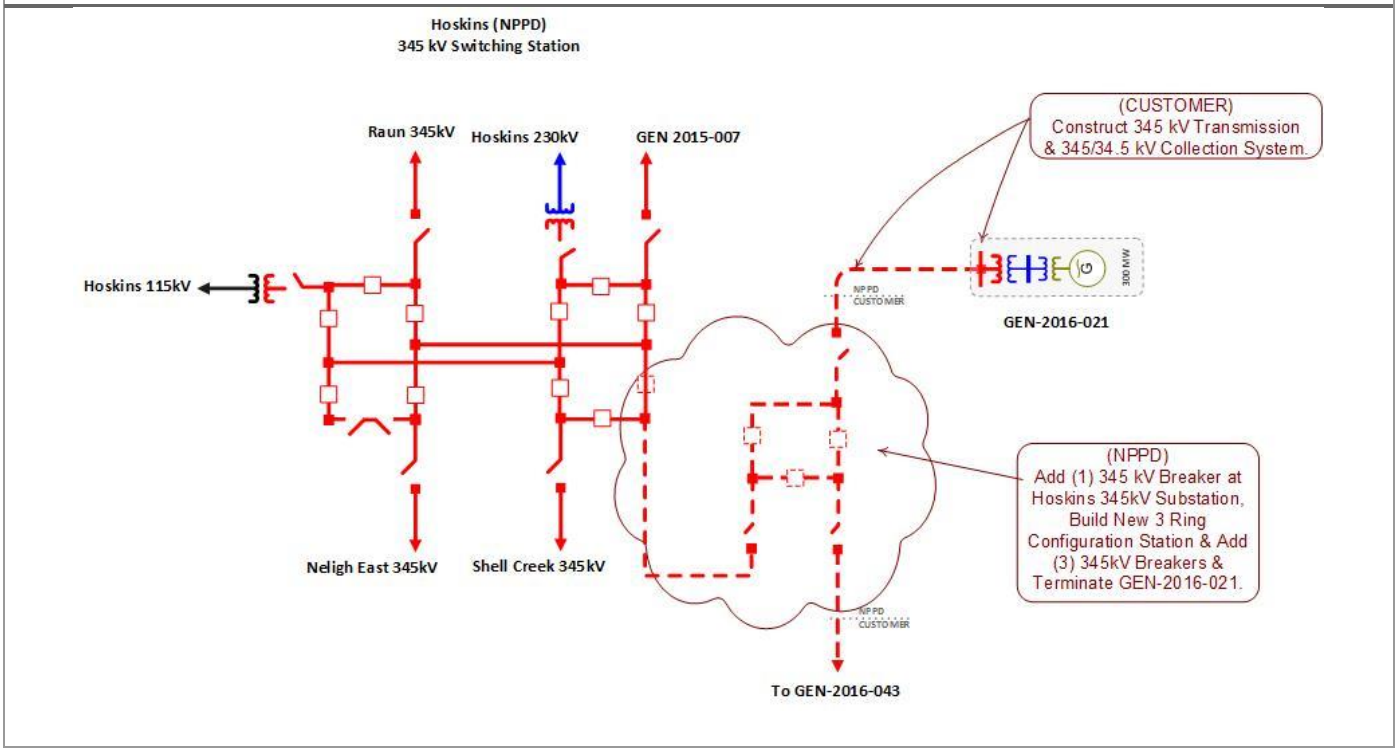
Interconnection Request: GEN-2016-017
Cluster Interconnection Costs: $19,264,793



Interconnection Request: GEN-2016-020
Cluster Interconnection Costs: $3,010,000

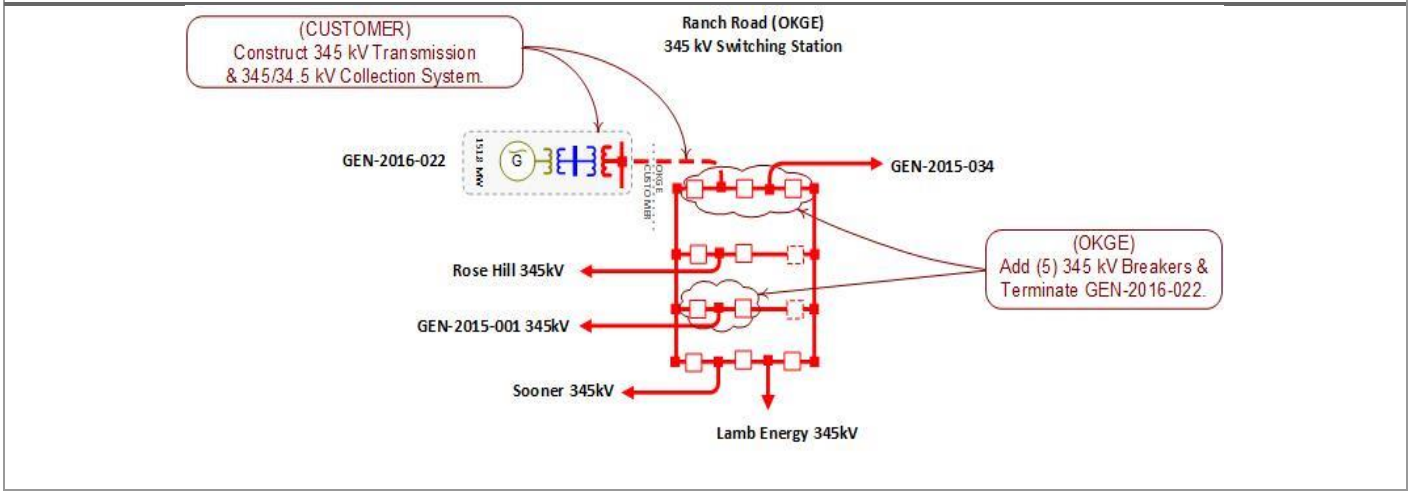


Interconnection Request: GEN-2016-021
Cluster Interconnection Costs: $7,250,000*
Stand Alone Interconnection Costs: $14,500,000*

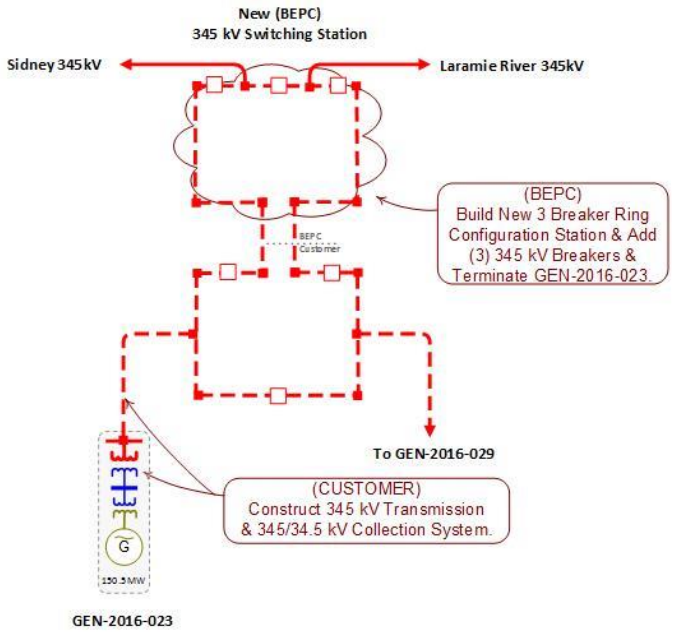


*Includes costs estimate for one breaker at Hoskins and construction of satellite 345kV ring bus substation.

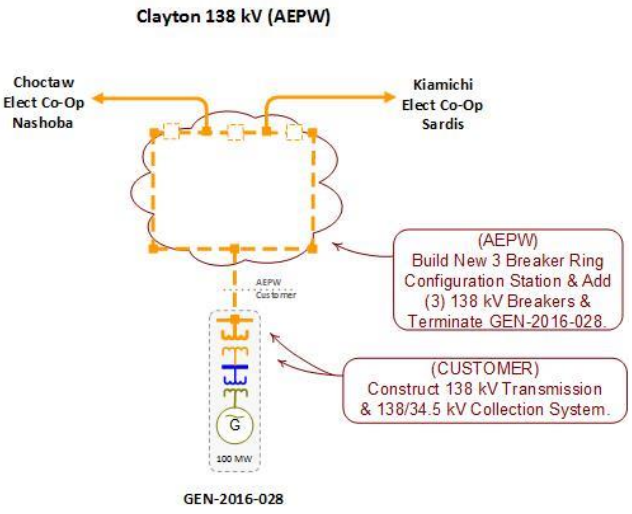
Interconnection Request: GEN-2016-022
Cluster Interconnection Costs: $4,450,650
Cluster Interconnection Costs: $10,000 (utilizing GEN-2015-001 generator lead)



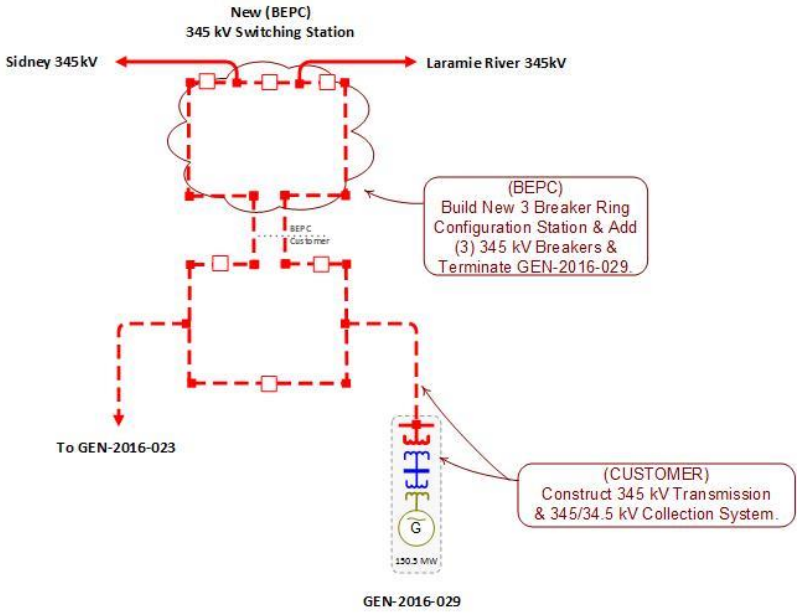
Interconnection Request: GEN-2016-023
Cluster Interconnection Costs: $9,632,397
Stand Alone Interconnection Costs: $19,264,793



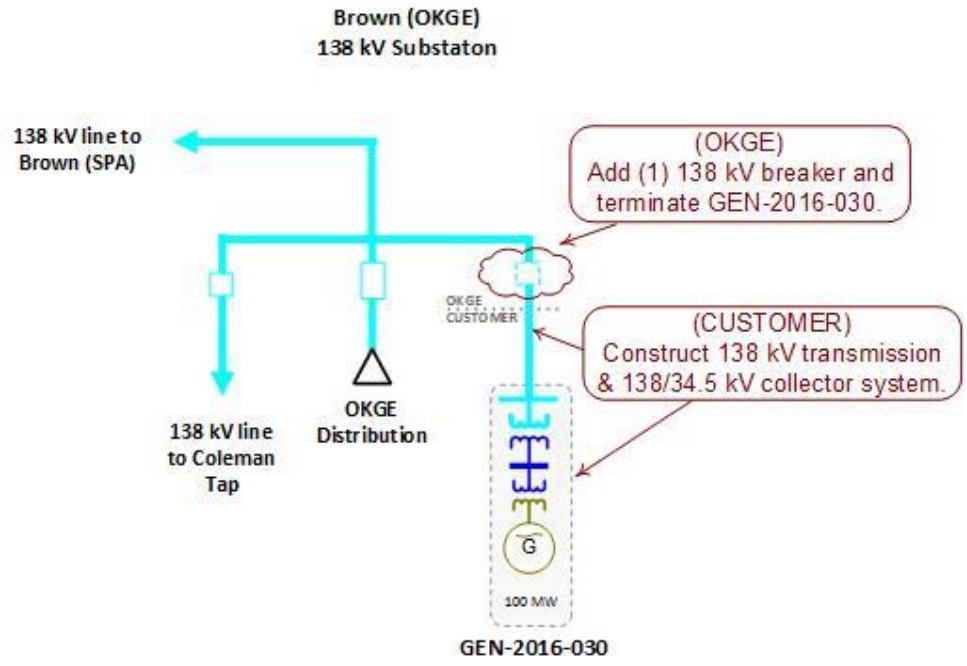
Interconnection Request: GEN-2016-028
Cluster Interconnection Costs: $9,081,447



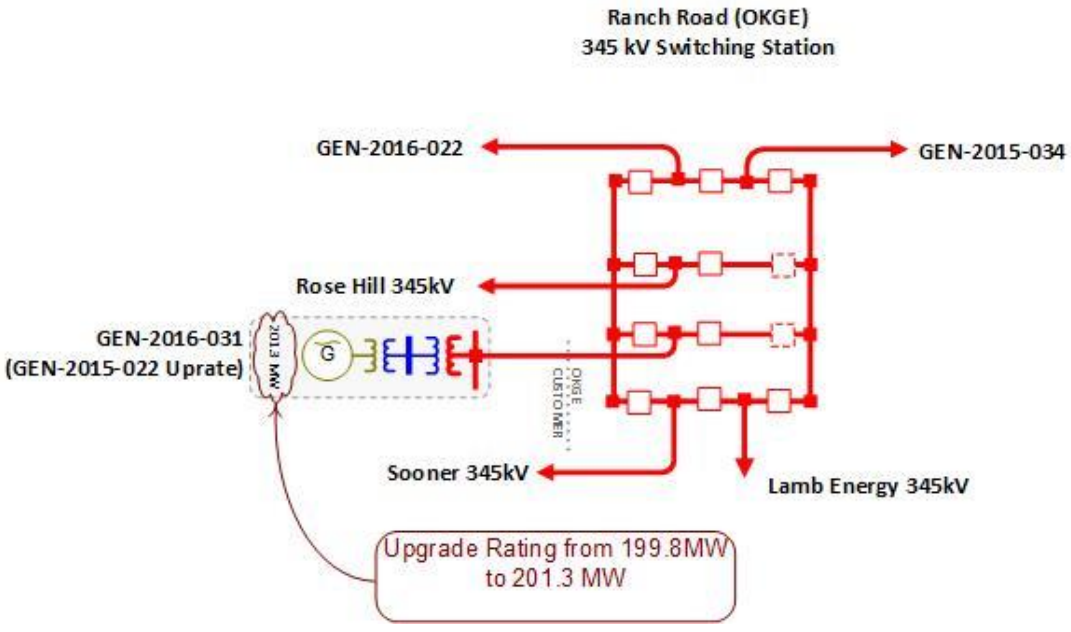
Interconnection Request: GEN-2016-029
Cluster Interconnection Costs: $9,632,397
Stand Alone Interconnection Costs: $19,264,793



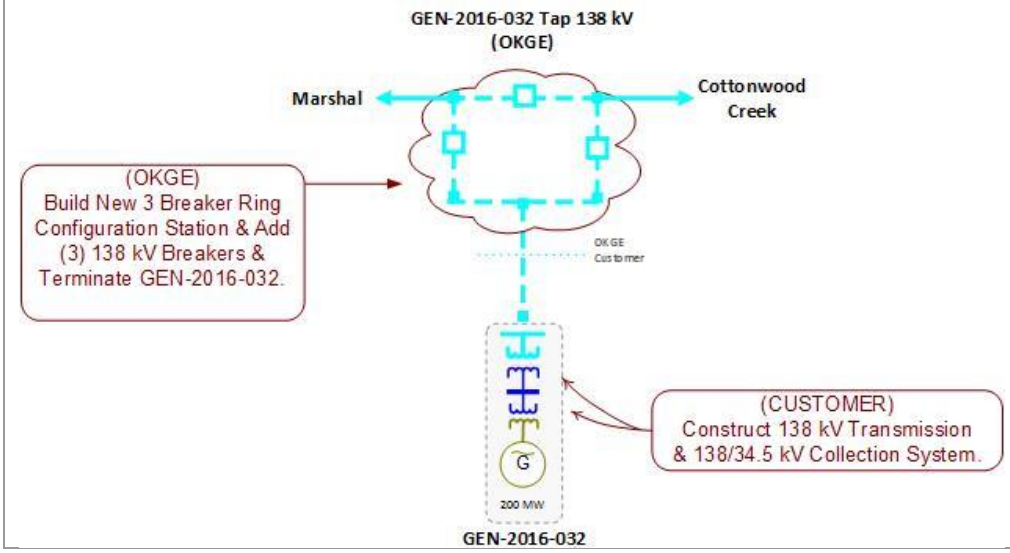
Interconnection Request: GEN-2016-030
Cluster Interconnection Costs: $2,183,000



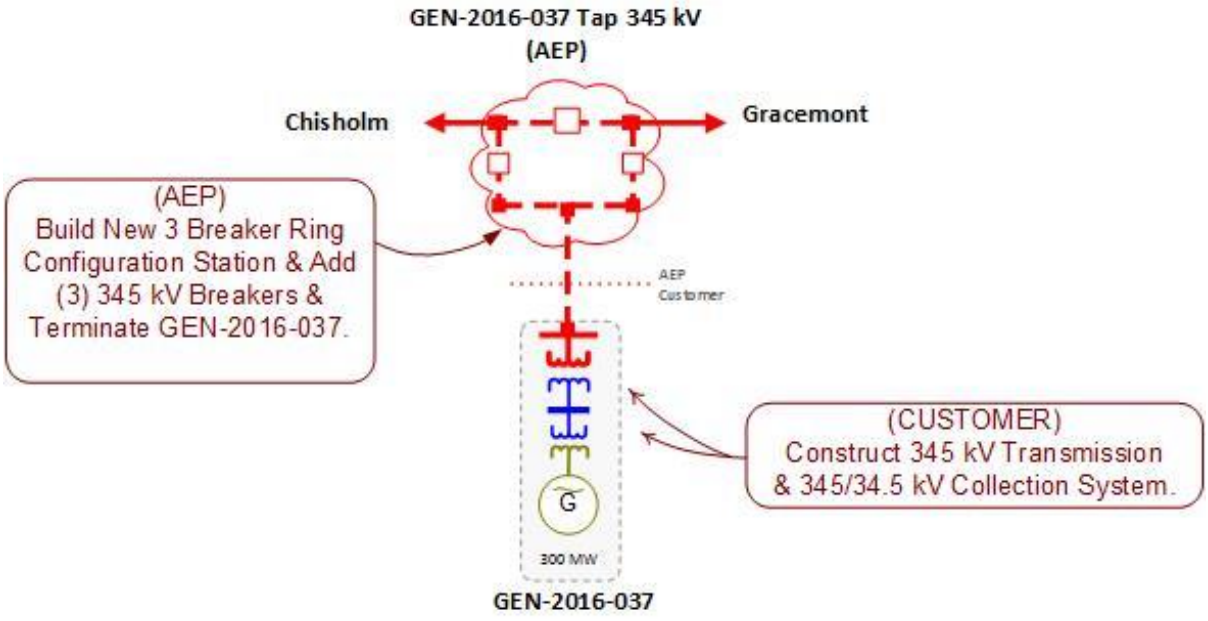
Interconnection Request: GEN-2016-031
Cluster Interconnection Costs: $0



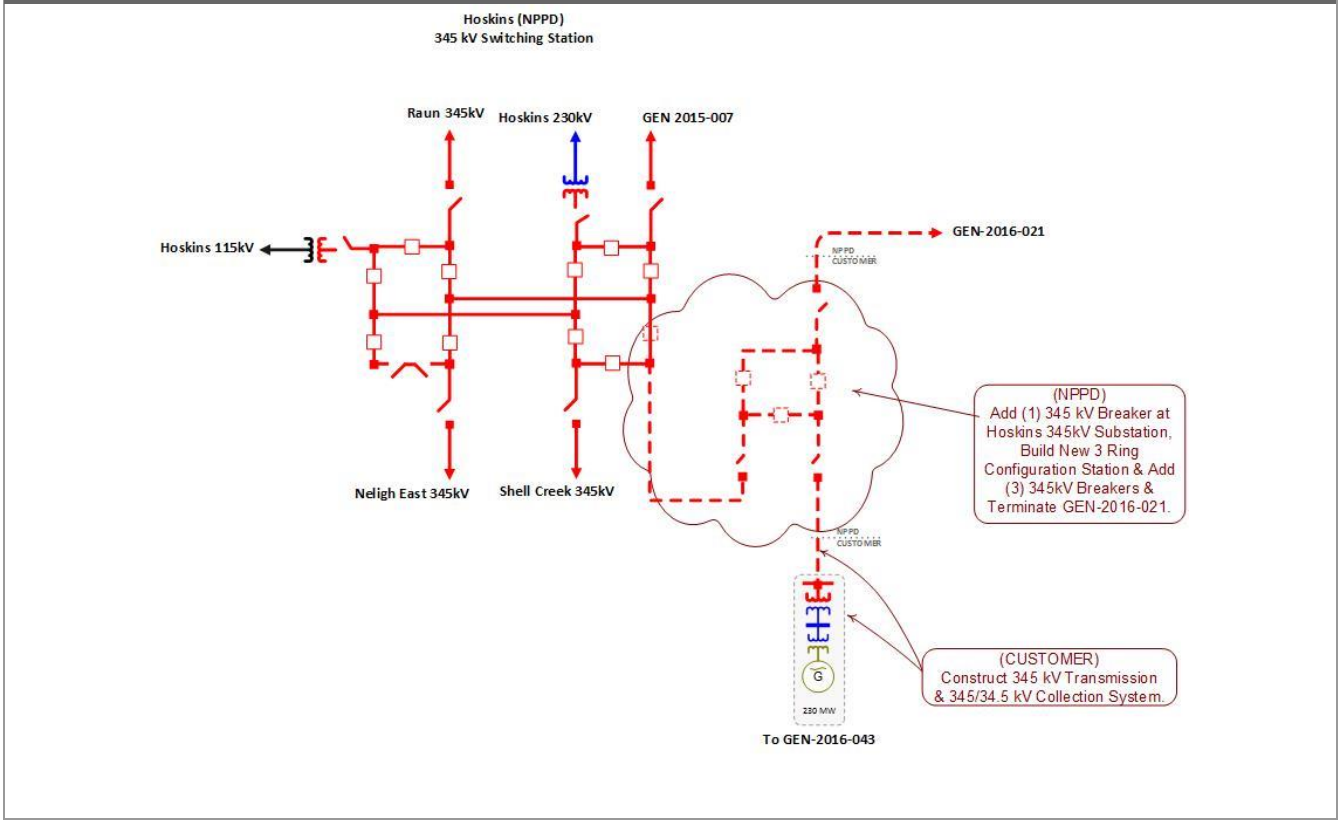
Interconnection Request: GEN-2016-032
Cluster Interconnection Costs: $3,288,799



Interconnection Request: GEN-2016-037
Cluster Interconnection Costs: $18,000,000

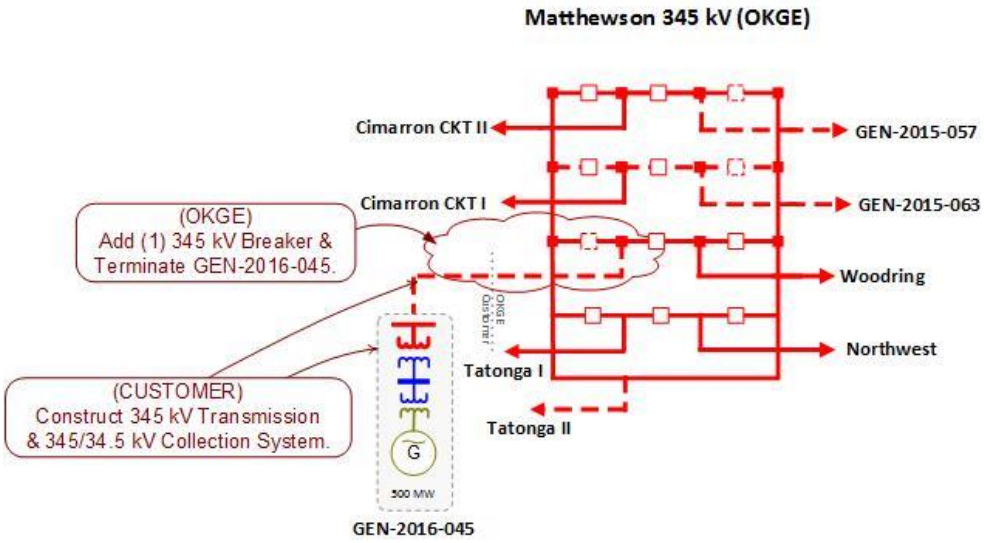


Interconnection Request: GEN-2016-043
Cluster Interconnection Costs: $7,250,000*
Stand Alone Interconnection Costs: $14,500,000*

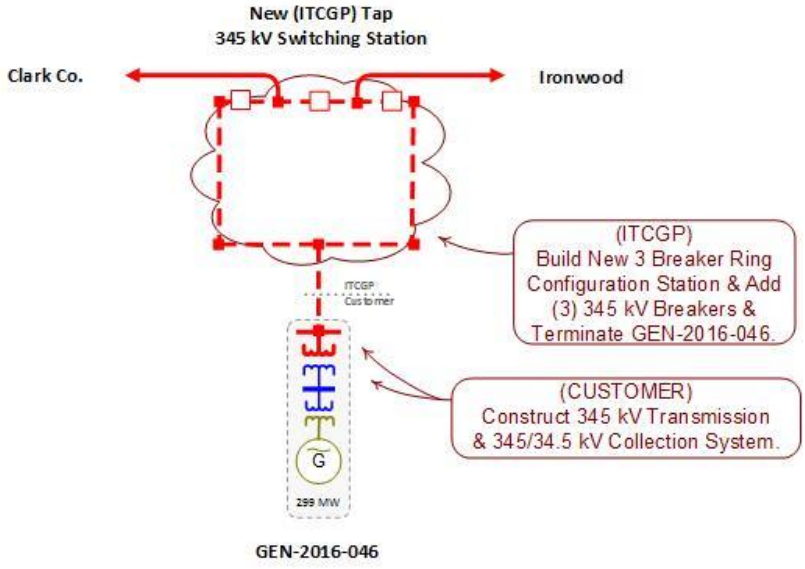


*Includes costs estimate for one breaker at Hoskins and construction of satellite 345kV ring bus substation.

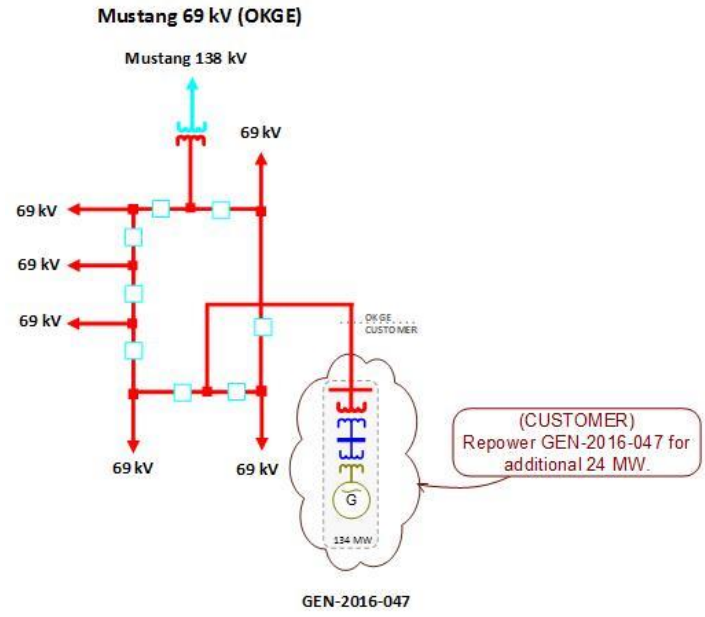
Interconnection Request: GEN-2016-045
Cluster Interconnection Costs: $15,103,955
(Includes generator lead stability mitigation)



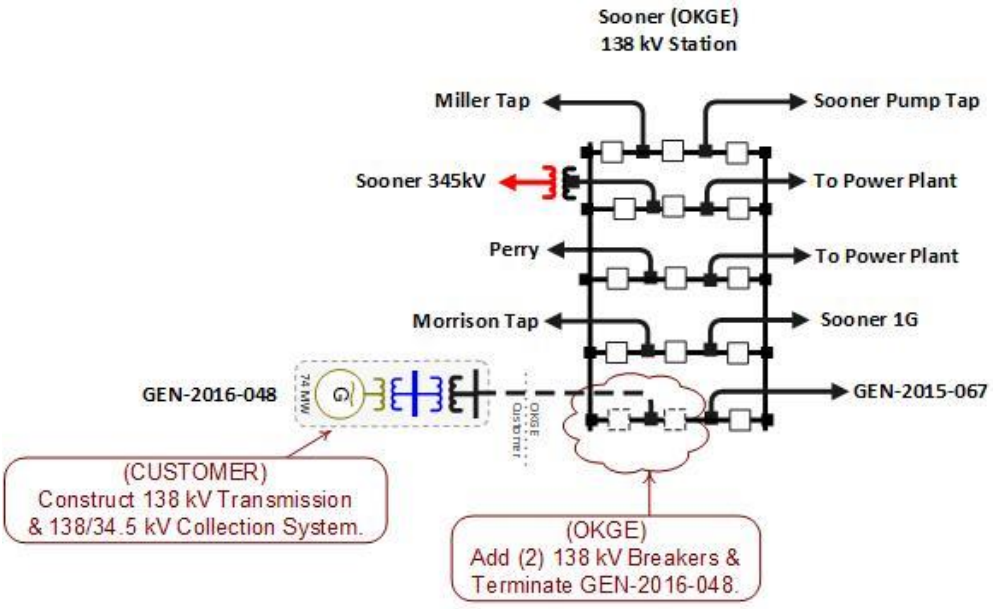
Interconnection Request: GEN-2016-046
Cluster Interconnection Costs: $9,162,302



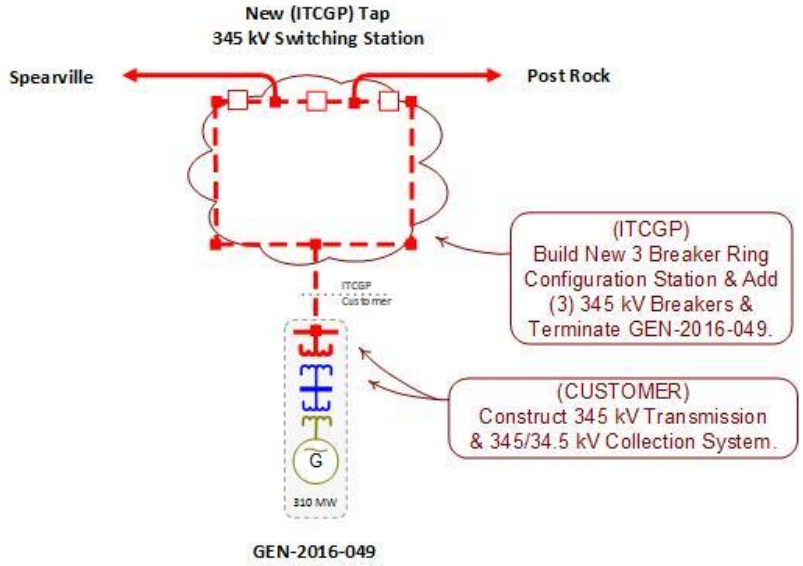
Interconnection Request: GEN-2016-047
Cluster Interconnection Costs: $0



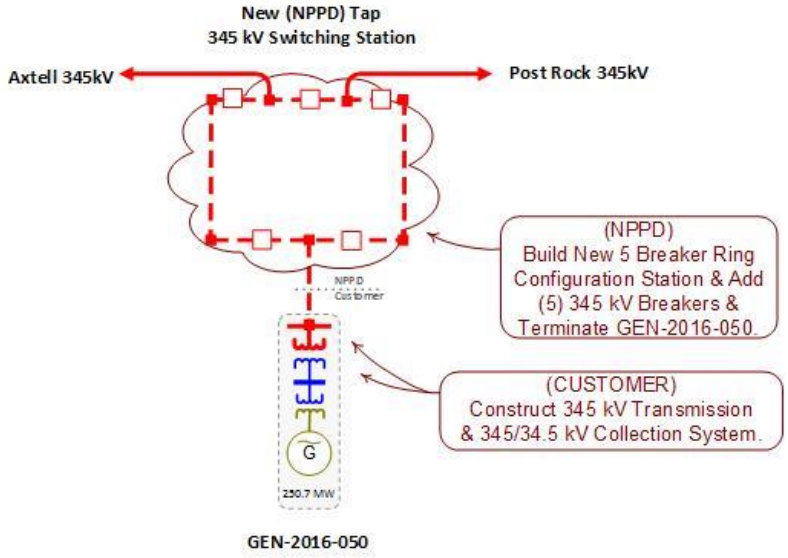
Interconnection Request: GEN-2016-048
Cluster Interconnection Costs: $3,521,000



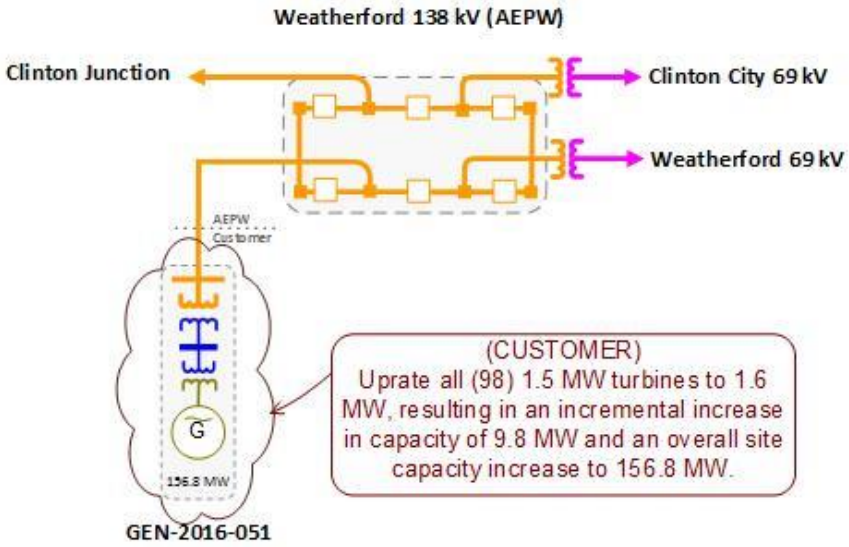
Interconnection Request: GEN-2016-049
Cluster Interconnection Costs: $13,409,295



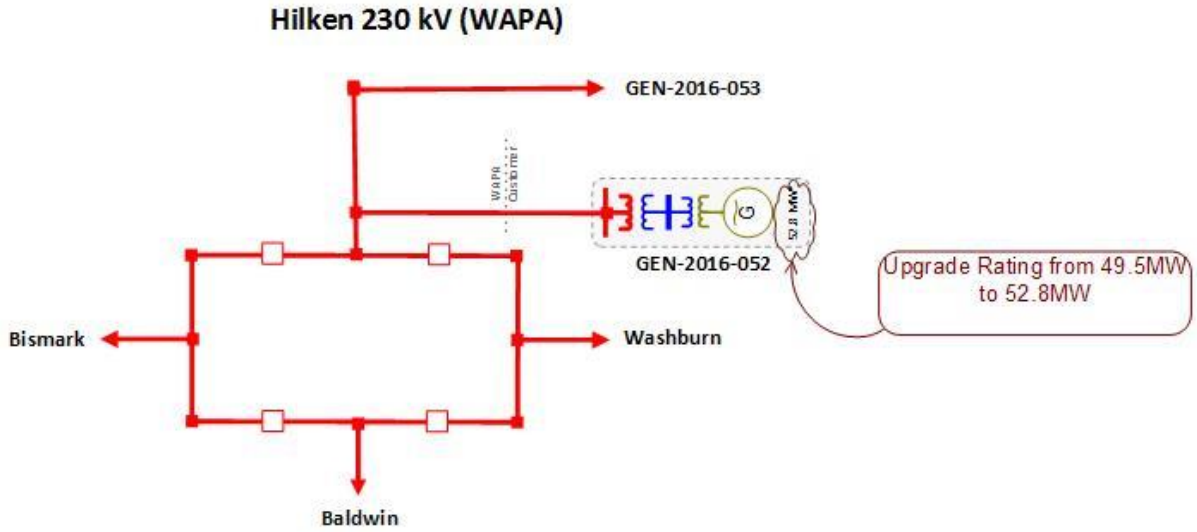
Interconnection Request: GEN-2016-050
Cluster Interconnection Costs: $16,000,000



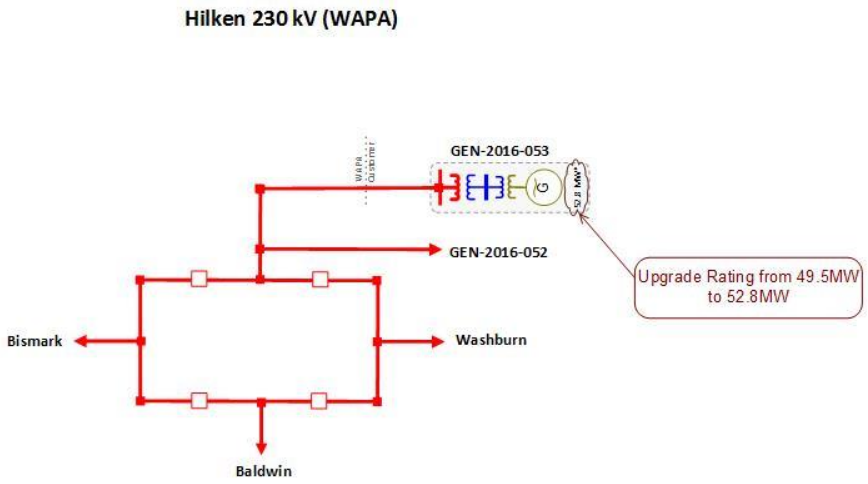
Interconnection Request: GEN-2016-051
Cluster Interconnection Costs: $0



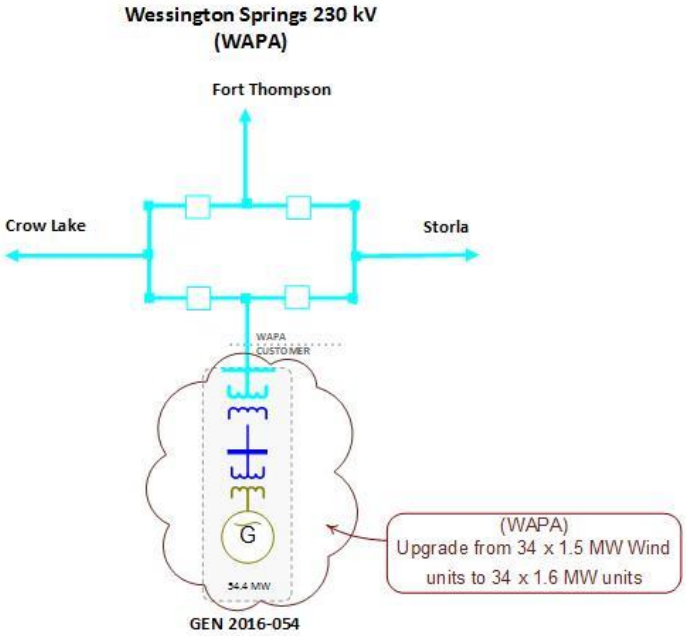
Interconnection Request: GEN-2016-052
Cluster Interconnection Costs: $0



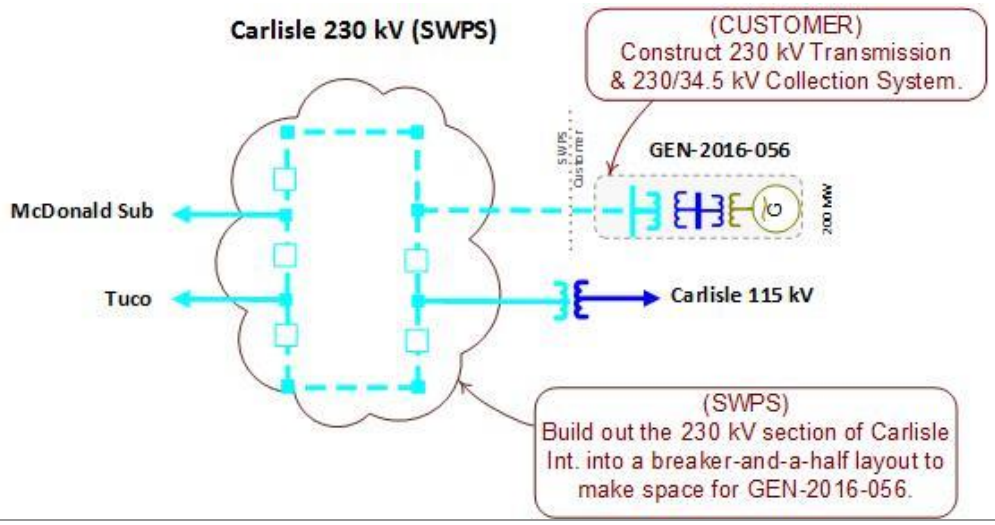
Interconnection Request: GEN-2016-053
Cluster Interconnection Costs: $0



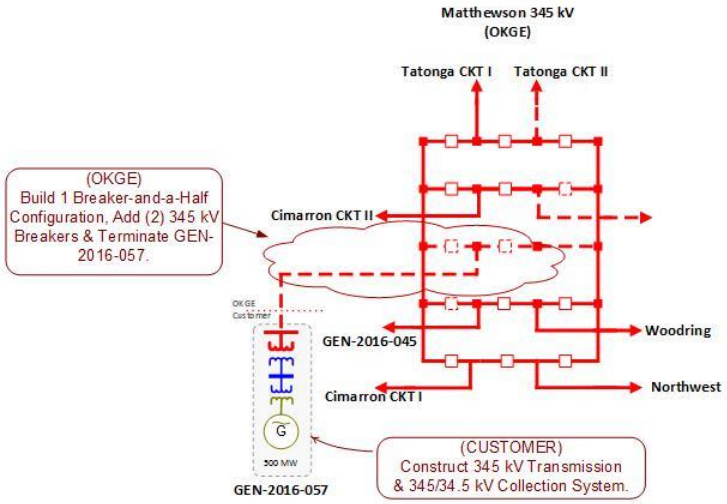
Interconnection Request: GEN-2016-054
Cluster Interconnection Costs: $0



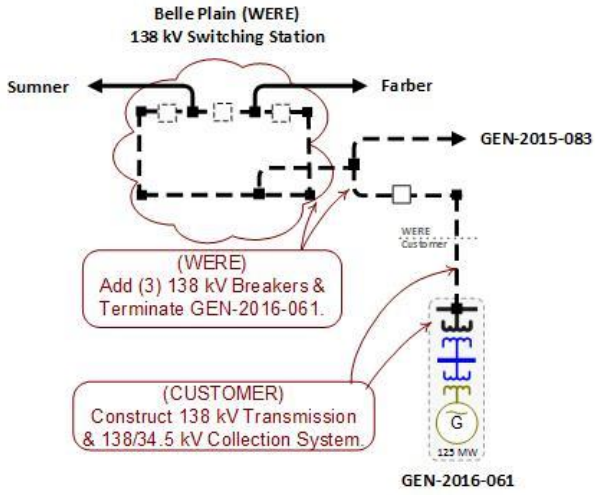
Interconnection Request: GEN-2016-056
Cluster Interconnection Costs: $4,215,059



Interconnection Request: GEN-2016-057
Cluster Interconnection Costs: $15,103,955
(Includes generator lead stability mitigation)

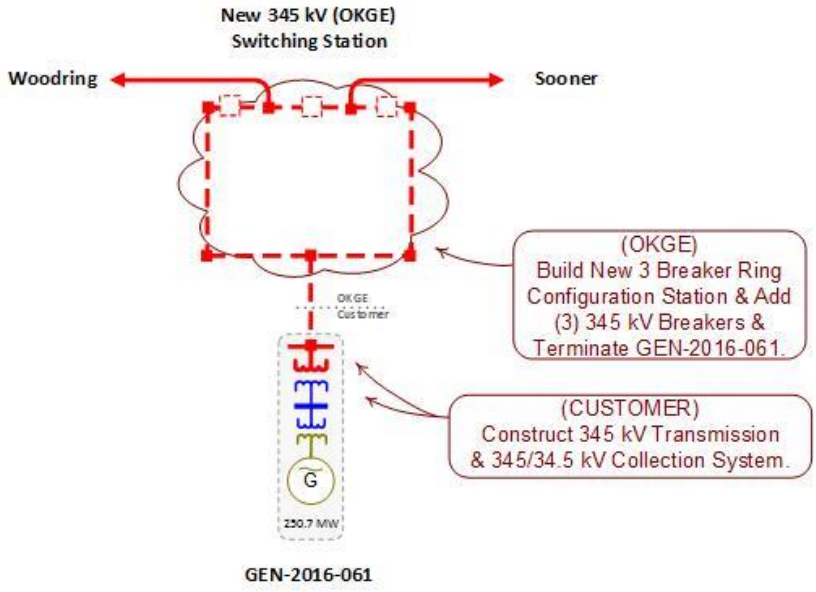


Interconnection Request: GEN-2016-060
Cluster Interconnection Costs: $34,133*

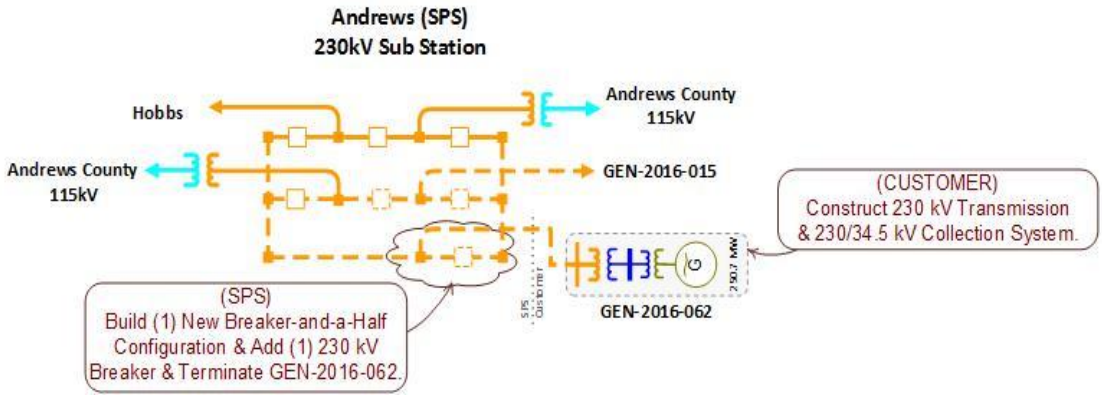


* If GEN-2015-083 withdraws, then GEN-2016-061 would be assigned $7,603,433

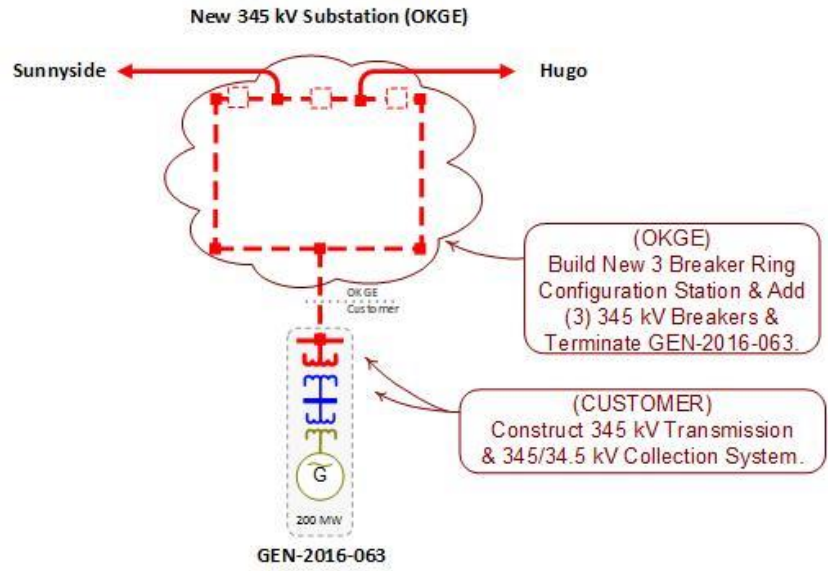
Interconnection Request: GEN-2016-061
Cluster Interconnection Costs: $11,000,000



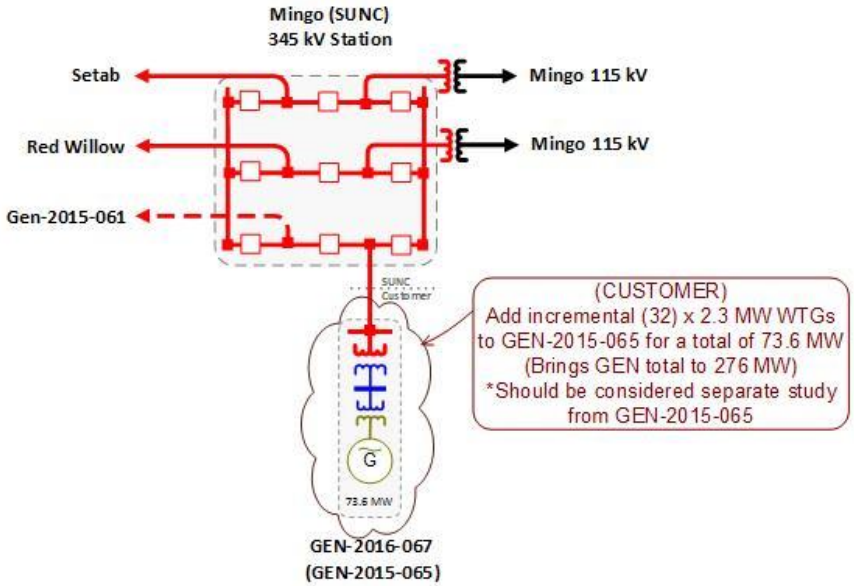
Interconnection Request: GEN-2016-062
Cluster Interconnection Costs: $2,197,565



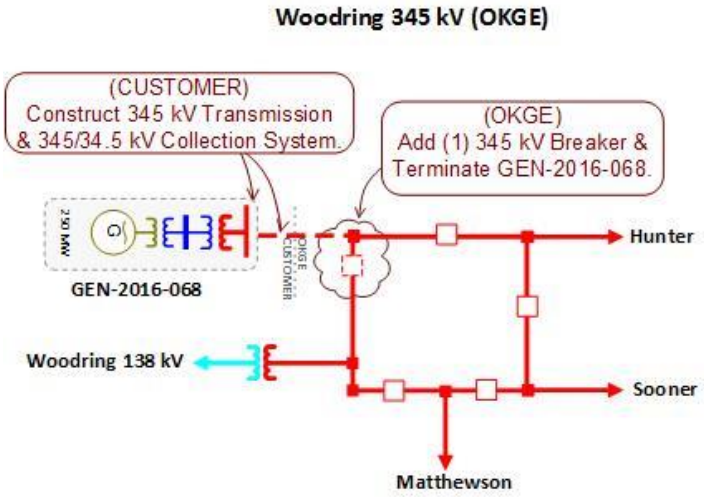
Interconnection Request: GEN-2016-063
Cluster Interconnection Costs: $11,550,000



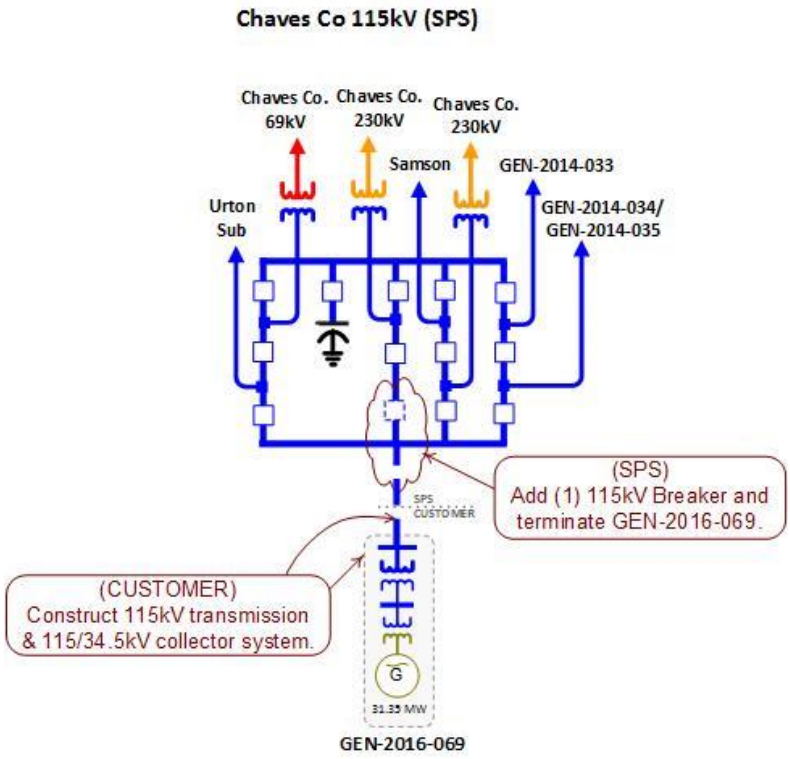
Interconnection Request: GEN-2016-067
Cluster Interconnection Costs: $15,000



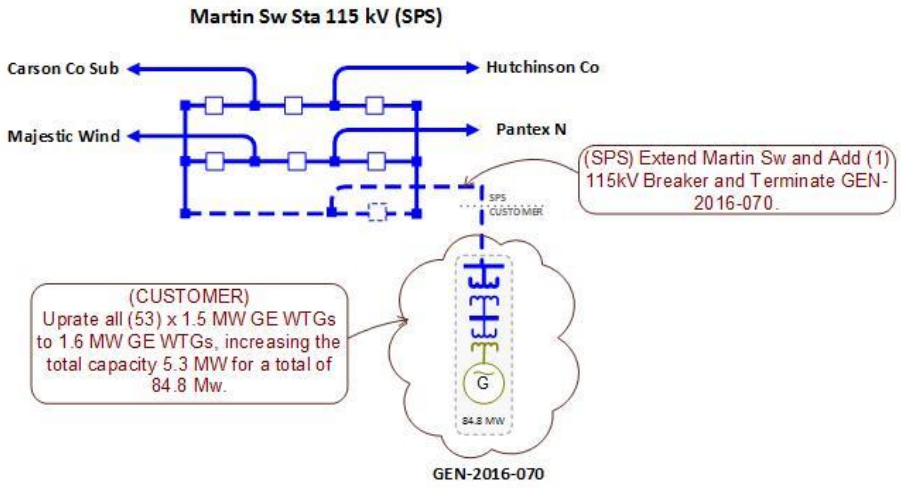
Interconnection Request: GEN-2016-068
Cluster Interconnection Costs: $1,900,000



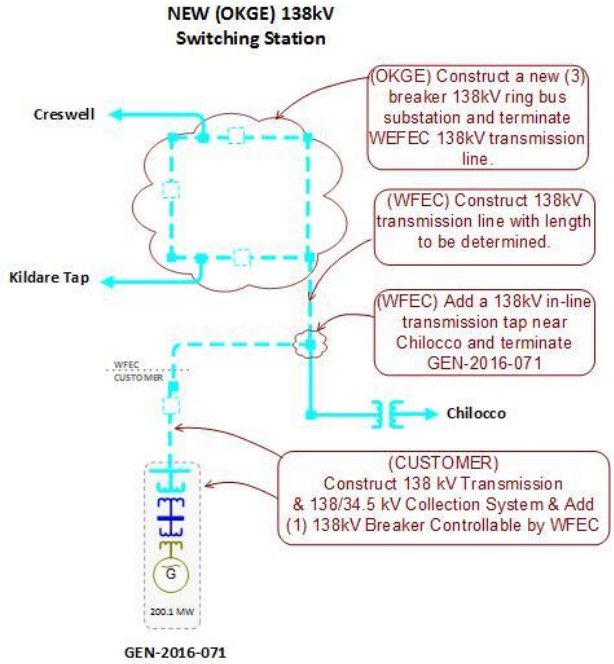
Interconnection Request: GEN-2016-069
Cluster Interconnection Costs: $2,309,814



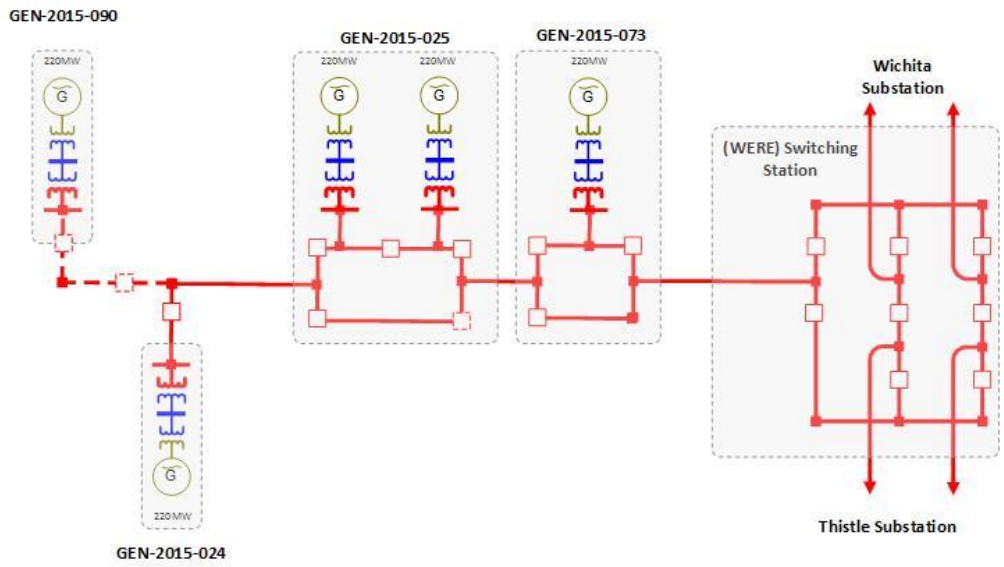
Interconnection Request: GEN-2016-070
Cluster Interconnection Costs: $0
Stand Alone Interconnection Costs: $0



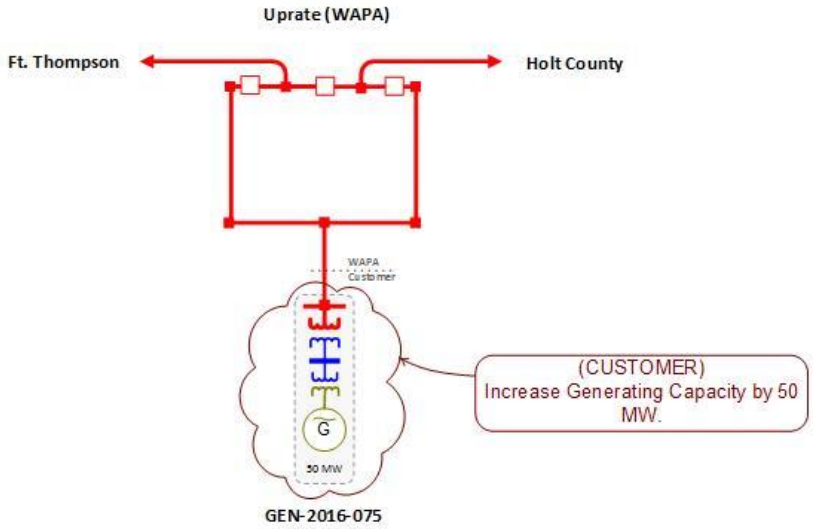
Interconnection Request: GEN-2016-071
Cluster Interconnection Costs: $6,127,190



Interconnection Request: GEN-2016-073
Cluster Interconnection Costs: $2,359,239



Interconnection Request: GEN-2016-075
Cluster Interconnection Costs: $0



11.5 E: COST ALLOCATION PER INTERCONNECTION REQUEST (INCLUDING PRIOR QUEUED UPGRADES)

Appendix E. Cost Allocation Per Request

(Including Previously Allocated Network Upgrades*)

Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
ASGI-2016-001			
ASGI-2016-001 Interconnection Costs See One-Line Diagram.	Current Study	$21,750	$21,750
Border 345kV Reactive Power Support Install (6)Steps of 50Mvar Capacitor Bank(s) and +300Mvar SVC at Border Substation	Current Study	$138,540	$32,633,384
Oklaunion 345kV Reactive Power Support Incremental Upgrade Install 150Mvar capacitor banks and +/-100Mvar SVC at Oklaunion	Current Study	$212,900	$50,000,000
Potter - Chisholm 345kV CKT 1 Build approximately 140 miles of new 345kV from Potter County - Chisholm	Current Study	$793,678	$194,910,000
Shamrock 115kV Capacitor Bank Add 20Mvar of Capacitor Bank(s) at Shamrock 115kV	Current Study	$10,613	$2,500,000
Tolk - Crawfish Draw 345kV CKT 1 Build approximately 64 miles of 345kV from Tolk - Crawfish Draw.	Current Study	$113,616	$88,170,000
Tolk - Potter County 345kV CKT 1 Build approximately 115 miles of 345kV from Tolk - Potter County	Current Study	$612,271	$156,000,000
Border - Chisholm 345kV CKT 1 & 2 Build 30 miles of double 345 kV circuit from Border (OKGE) - Chisholm (AEP); Upgrade Border and Chisholm substations	Previously Allocated		$84,546,835
Chisholm Substation Upgrade 345kV Cost included in Border - Chisholm CKT 1 & CKT 2 build	Previously Allocated		$0
Crawfish Draw - Border 345kV CKT 2 Build approximately 194 miles of second circuit 345kV from Crawfish Draw - Border	Previously Allocated		$234,229,687
Crawfish Draw - Tuco 345kV CKT 2 Build second circuit from Crawfish Draw - Tuco 345 kV	Previously Allocated		$3,600,000
Crawfish Draw - Yoakum 345kV Retermination Incremental Upgrade for SPP-NTC-200283 to reterminate TUCO terminal to Crawfish Draw terminal by adding approximately 3 miles of 345kV	Previously Allocated		$5,000,000
Crawfish Draw 345/230kV Substation Upgrade Tap Border-TUCO approximately 3 miles from TUCO, build Crawfish Draw 345kV substation, add 345/230/13.2kV transformer, and tie on TUCO-Swisher 230kV.	Previously Allocated		$24,764,205
Grapevine - Nichols 230kV CKT 1 Replace terminal equipment	Previously Allocated		$457,981

* Withdrawal of higher queued projects will cause a restudy and may result in higher costs

Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
Grapevine - Wheeler - Sweetwater 230kV CKT 1 Rebuild AEP facilties and SPS replace terminal equipment	Previously Allocated		$4,455,302
Oklaunion 345kV Reactive Power Install +50Mvar Capacitor Bank(s) at Oklaunion	Previously Allocated		$8,654,413
Potter County 345/230/13kV Transformer CKT 2 Build second 345/230/13kV transformer at Potter County	Previously Allocated		$5,924,670
Tatonga - Mathewson 345kV CKT 2 Build second 345kV circuit from Tatonga - Matthewson @ 3000 amps per ITP10.	Previously Allocated		$56,387,700
TUCO 345/230/13.2kV Transformer CKT 1 Replace existing TUCO 345/230/13.2kV Transformer circuit #1 with 640MVA.	Previously Allocated		$3,347,036
Woodward - Tatonga 345kV CKT 2 Build second 345 kV circuit from Woodward - Tatonga @ 3000 ampts per ITP10.	Previously Allocated		$50,594,040
	Current Study Total	$1,903,368	
ASGI-2016-002			
ASGI-2016-002 Interconnection Costs See One-Line Diagram.	Current Study	$21,750	$21,750
Border 345kV Reactive Power Support Install (6)Steps of 50Mvar Capacitor Bank(s) and +300Mvar SVC at Border Substation	Current Study	$19,532	$32,633,384
Oklaunion 345kV Reactive Power Support Incremental Upgrade Install 150Mvar capacitor banks and +/-100Mvar SVC at Oklaunion	Current Study	$30,111	$50,000,000
Potter - Chisholm 345kV CKT 1 Build approximately 140 miles of new 345kV from Potter County - Chisholm	Current Study	$108,513	$194,910,000
Shamrock 115kV Capacitor Bank Add 20Mvar of Capacitor Bank(s) at Shamrock 115kV	Current Study	$1,496	$2,500,000
Tolk - Crawfish Draw 345kV CKT 1 Build approximately 64 miles of 345kV from Tolk - Crawfish Draw.	Current Study	$27,828	$88,170,000
Tolk - Potter County 345kV CKT 1 Build approximately 115 miles of 345kV from Tolk - Potter County	Current Study	$83,920	$156,000,000
Border - Chisholm 345kV CKT 1 & 2 Build 30 miles of double 345 kV circuit from Border (OKGE) - Chisholm (AEP); Upgrade Border and Chisholm substations	Previously Allocated		$84,546,835
Chisholm Substation Upgrade 345kV Cost included in Border - Chisholm CKT 1 & CKT 2 build	Previously Allocated		$0

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Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
Crawfish Draw - Border 345kV CKT 2 Build approximately 194 miles of second circuit 345kV from Crawfish Draw - Border	Previously Allocated		$234,229,687
Crawfish Draw - Tuco 345kV CKT 2 Build second circuit from Crawfish Draw - Tuco 345 kV	Previously Allocated		$3,600,000
Crawfish Draw - Yoakum 345kV Retermination Incremental Upgrade for SPP-NTC-200283 to reterminate TUCO terminal to Crawfish Draw terminal by adding approximately 3 miles of 345kV	Previously Allocated		$5,000,000
Crawfish Draw 345/230kV Substation Upgrade Tap Border-TUCO approximately 3 miles from TUCO, build Crawfish Draw 345kV substation, add 345/230/13.2kV transformer, and tie on TUCO-Swisher 230kV.	Previously Allocated		$24,764,205
Grapevine - Nichols 230kV CKT 1 Replace terminal equipment	Previously Allocated		$457,981
Grapevine - Wheeler - Sweetwater 230kV CKT 1 Rebuild AEP facilties and SPS replace terminal equipment	Previously Allocated		$4,455,302
Oklaunion 345kV Reactive Power Install +50Mvar Capacitor Bank(s) at Oklaunion	Previously Allocated		$8,654,413
Potter County 345/230/13kV Transformer CKT 2 Build second 345/230/13kV transformer at Potter County	Previously Allocated		$5,924,670
Tatonga - Mathewson 345kV CKT 2 Build second 345kV circuit from Tatonga - Matthewson @ 3000 amps per ITP10.	Previously Allocated		$56,387,700
TUCO 345/230/13.2kV Transformer CKT 1 Replace existing TUCO 345/230/13.2kV Transformer circuit #1 with 640MVA.	Previously Allocated		$3,347,036
Woodward - Tatonga 345kV CKT 2 Build second 345 kV circuit from Woodward - Tatonga @ 3000 ampts per ITP10.	Previously Allocated		$50,594,040
	Current Study Total	$293,151	
ASGI-2016-003			
ASGI-2016-003 Interconnection Costs See One-Line Diagram.	Current Study	$10,000	$10,000
	Current Study Total	$10,000	
ASGI-2016-004			
ASGI-2016-004 Interconnection Costs See One-Line Diagram.	Current Study	$15,000	$15,000
Border 345kV Reactive Power Support Install (6)Steps of 50Mvar Capacitor Bank(s) and +300Mvar SVC at Border Substation	Current Study	$358,992	$32,633,384

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Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
Oklaunion 345kV Reactive Power Support Incremental Upgrade Install 150Mvar capacitor banks and +/-100Mvar SVC at Oklaunion	Current Study	$405,320	$50,000,000
Potter - Chisholm 345kV CKT 1 Build approximately 140 miles of new 345kV from Potter County - Chisholm	Current Study	$5,397,144	$194,910,000
Shamrock 115kV Capacitor Bank Add 20Mvar of Capacitor Bank(s) at Shamrock 115kV	Current Study	$27,502	$2,500,000
Tolk - Crawfish Draw 345kV CKT 1 Build approximately 64 miles of 345kV from Tolk - Crawfish Draw.	Current Study	$1,390,500	$88,170,000
Tolk - Potter County 345kV CKT 1 Build approximately 115 miles of 345kV from Tolk - Potter County	Current Study	$91,086	$156,000,000
Border - Chisholm 345kV CKT 1 & 2 Build 30 miles of double 345 kV circuit from Border (OKGE) - Chisholm (AEP); Upgrade Border and Chisholm substations	Previously Allocated		$84,546,835
Chisholm Substation Upgrade 345kV Cost included in Border - Chisholm CKT 1 & CKT 2 build	Previously Allocated		$0
Crawfish Draw - Border 345kV CKT 2 Build approximately 194 miles of second circuit 345kV from Crawfish Draw - Border	Previously Allocated		$234,229,687
Crawfish Draw - Tuco 345kV CKT 2 Build second circuit from Crawfish Draw - Tuco 345 kV	Previously Allocated		$3,600,000
Crawfish Draw - Yoakum 345kV Retermination Incremental Upgrade for SPP-NTC-200283 to reterminate TUCO terminal to Crawfish Draw terminal by adding approximately 3 miles of 345kV	Previously Allocated		$5,000,000
Crawfish Draw 345/230kV Substation Upgrade Tap Border-TUCO approximately 3 miles from TUCO, build Crawfish Draw 345kV substation, add 345/230/13.2kV transformer, and tie on TUCO-Swisher 230kV.	Previously Allocated		$24,764,205
Grapevine - Nichols 230kV CKT 1 Replace terminal equipment	Previously Allocated		$457,981
Grapevine - Wheeler - Sweetwater 230kV CKT 1 Rebuild AEP facilties and SPS replace terminal equipment	Previously Allocated		$4,455,302
Oklaunion 345kV Reactive Power Install +50Mvar Capacitor Bank(s) at Oklaunion	Previously Allocated		$8,654,413
Potter County 345/230/13kV Transformer CKT 2 Build second 345/230/13kV transformer at Potter County	Previously Allocated		$5,924,670
Tatonga - Mathewson 345kV CKT 2 Build second 345kV circuit from Tatonga - Matthewson @ 3000 amps per ITP10.	Previously Allocated		$56,387,700

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Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
TUCO 345/230/13.2kV Transformer CKT 1 Replace existing TUCO 345/230/13.2kV Transformer circuit #1 with 640MVA.	Previously Allocated		$3,347,036
Woodward - Tatonga 345kV CKT 2 Build second 345 kV circuit from Woodward - Tatonga @ 3000 ampts per ITP10.	Previously Allocated		$50,594,040
	Current Study Total	$7,685,544	
GEN-2015-036			
GEN-2015-036 Interconnection Costs See One-Line Diagram.	Current Study	$2,025,000	$2,025,000
	Current Study Total	$2,025,000	
GEN-2015-041			
Crawfish Draw 230/115/13kV Transformer CKT 1 NRIS only required upgrade: Build 115kV yard, re-terminate Hale County - TUCO 115kV, build 230/115/13kV transformer 1	Current Study	$12,000,000	$12,000,000
GEN-2015-041 Interconnection Costs See One-Line Diagram.	Current Study	$0	$0
Hitchland 345/230/13kV Transformer CKT 3 NRIS only required upgrade: Build third 345/230/13kV Transformer	Current Study	$10,000,000	$10,000,000
Lubbock Holly 230/69/13kV CKT 2 NRIS only required upgrade: Install second Lubbock Holly 230/69/13kV Transformer	Current Study	$4,000,000	$4,000,000
	Current Study Total	$26,000,000	
GEN-2015-082			
GEN-2015-082 Interconnection Costs See One-Line Diagram.	Current Study	$1,930,000	$1,930,000
Beaver County 345kV Reactive Power Support Install +100Mvar SVC at Beaver County Substation.	Previously Allocated		$26,264,777
Cleo Corner - Cleo Plant Tap 138kV CKT 1 Replace terminal equipment to at least 1200 amps	Previously Allocated		$61,890
Potter County 345/230/13kV Transformer CKT 2 Build second 345/230/13kV transformer at Potter County	Previously Allocated		$5,924,670
	Current Study Total	$1,930,000	
GEN-2015-089			
Atwood Capacitive Reactive Power Support Install 10 Mvars of Capicator Bank(s)	Current Study	$170,244	$2,000,000

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Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
GEN-2015-089 Interconnection Costs See One-Line Diagram.	Current Study	$2,000,000	$2,000,000
MISO Affected System Study See section 4 power flow analysis.	Current Study	$TBD	$TBD
Albion - Petersburg - North Petersburg 115kV CKT 1 Reconductor 115kV lines and replace all terminal equipment for at least a 193MVA rate.	Previously Allocated		$2,500,000
Gentleman - Thedford 345kV CKT 1 Build approximately 76 Miles of 345kV from Gentleman to Thedford per SPP-NTC-200220 (Total Project E&C Cost Shown).	Previously Allocated		$311,717,040
Hoskins - Dixon County - Twin Church 230kV Rerate per NPPD Facility Study	Previously Allocated		$500,000
Thedford - Holt County 345kV CKT 1 Build approximately 146 Miles of 345kV from Thedford to Holt County per SPP-NTC-200220 (Total Project E&C Cost Shown).	Previously Allocated		$311,717,040
Thedford 345/115kV Transformer CKT 1 Install Thedford 345/115kV transformer per SPP-NTC-200277 (Total Project E&C Cost Shown).	Previously Allocated		$311,717,040
	Current Study Total	$2,170,244	
GEN-2015-095			
GEN-2015-095 Interconnection Costs See One-Line Diagram.	Current Study	$942,000	$942,000
Cimarron - Draper Lake 345kV CKT 1 Replace terminal equipment to at least per SPP-NTC-200416	Previously Allocated		$1,500,000
Cleo Corner - Cleo Plant Tap 138kV CKT 1 Replace terminal equipment to at least 1200 amps	Previously Allocated		$61,890
	Current Study Total	$942,000	
GEN-2016-003			
GEN-2016-003 Interconnection Costs See One-Line Diagram.	Current Study	$15,000,000	$15,000,000
Bucker - Spearville 345V CKT 1 Replace Terminal equipment	Previously Allocated		$1,480,238
Cimarron - Draper Lake 345kV CKT 1 Replace terminal equipment to at least per SPP-NTC-200416	Previously Allocated		$1,500,000
Cleo Corner - Cleo Plant Tap 138kV CKT 1 Replace terminal equipment to at least 1200 amps	Previously Allocated		$61,890

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Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
	Current Study Total	$15,000,000	
GEN-2016-004			
GEN-2016-004 Interconnection Costs See One-Line Diagram.	Current Study	$2,871,212	$2,871,212
Glenham - Mound City 230kV CKT 1 Uprate CT	Current Study	$50,000	$50,000
Jamestown - Center 345kV CKT 1 MPC mitigation for Jamestown - Center 345kV	Current Study	$800,000	$800,000
MISO Affected System Study See section 4 power flow analysis.	Current Study	$TBD	$TBD
Gentleman - Thedford 345kV CKT 1 Build approximately 76 Miles of 345kV from Gentleman to Thedford per SPP-NTC-200220 (Total Project E&C Cost Shown).	Previously Allocated		$311,717,040
Thedford - Holt County 345kV CKT 1 Build approximately 146 Miles of 345kV from Thedford to Holt County per SPP-NTC-200220 (Total Project E&C Cost Shown).	Previously Allocated		$311,717,040
Thedford 345/115kV Transformer CKT 1 Install Thedford 345/115kV transformer per SPP-NTC-200277 (Total Project E&C Cost Shown).	Previously Allocated		$311,717,040
	Current Study Total	$3,721,212	
GEN-2016-005			
Beaver County - Clark County 345kV CKT 1 Build approximately 125 miles of new 345kV from Grapevine - Chisholm	Current Study	$31,059,691	$150,000,000
GEN-2016-005 Interconnection Costs See One-Line Diagram.	Current Study	$8,614,897	$8,614,897
Bucker - Spearville 345V CKT 1 Replace Terminal equipment	Previously Allocated		$1,480,238
Knoll - Post Rock 230kV CKT 2 Build second 230kV circuit between Knoll - Post Rock assigned in 2017 ITP10 per SPP-NTC-200429	Previously Allocated		$3,872,285
	Current Study Total	$39,674,588	
GEN-2016-007			
GEN-2016-007 Interconnection Costs See One-Line Diagram.	Current Study	$1,100,000	$1,100,000
MISO Affected System Study See section 4 power flow analysis.	Current Study	$TBD	$TBD

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Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
	Current Study Total	$1,100,000	
GEN-2016-009			
GEN-2016-009 Interconnection Costs See One-Line Diagram.	Current Study	$956,218	$956,218
	Current Study Total	$956,218	
GEN-2016-013			
GEN-2016-013 Interconnection Costs See One-Line Diagram.	Current Study	$50,000	$50,000
Neosho - Riverton 161kV CKT 1 Rebuild approximately 28 miles of 161kV	Current Study	$12,112,637	$24,225,274
	Current Study Total	$12,162,637	
GEN-2016-014			
GEN-2016-014 Interconnection Costs See One-Line Diagram.	Current Study	$50,000	$50,000
Neosho - Riverton 161kV CKT 1 Rebuild approximately 28 miles of 161kV	Current Study	$12,112,637	$24,225,274
	Current Study Total	$12,162,637	
GEN-2016-015			
Andrews 345/115/13kV Transformer CKT 1 Replace 230/115kV transformer CKT 1 with 345/115kV transformer	Current Study	$2,281,152	$8,000,000
Andrews 345/115/13kV Transformer CKT 2 Replace 230/115kV transformer CKT 2 with 345/115kV transformer	Current Study	$2,281,152	$8,000,000
Andrews Substation Voltage Conversion Convert Andrews 230kV to 345kV	Current Study	$2,851,440	$10,000,000
Border 345kV Reactive Power Support Install (6)Steps of 50Mvar Capacitor Bank(s) and +300Mvar SVC at Border Substation	Current Study	$5,430,333	$32,633,384
Drinkard - Drinkard Tap 115kV CKT 1 Rebuild approximately 2 miles from Drinkard to Drinkard Tap	Current Study	$427,716	$1,500,000
Drinkard Tap - West Hobbs 115kV CKT 1 Rebuild approximately 12.5 miles from Drinkard Tap to West Hobbs	Current Study	$2,673,225	$9,375,000
GEN-2016-015 Interconnection Costs See One-Line Diagram.	Current Study	$6,625,863	$6,625,863

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Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
GEN-2016-015 Interconnection Facilities Upgrade Mitigate frequency tripping (Refer to stability report for details)	Current Study	$TBD	$TBD
National Enrichment Plant - Drinkard 115kV CKT 1 Rebuild approximately 7.5 miles from NEF Plant to Drinkard	Current Study	$1,603,935	$5,625,000
Oklaunion 345kV Reactive Power Support Incremental Upgrade Install 150Mvar capacitor banks and +/-100Mvar SVC at Oklaunion	Current Study	$8,293,160	$50,000,000
Potter - Chisholm 345kV CKT 1 Build approximately 140 miles of new 345kV from Potter County - Chisholm	Current Study	$34,072,400	$194,910,000
Shamrock 115kV Capacitor Bank Add 20Mvar of Capacitor Bank(s) at Shamrock 115kV	Current Study	$416,011	$2,500,000
Tolk - Crawfish Draw 345kV CKT 1 Build approximately 64 miles of 345kV from Tolk - Crawfish Draw.	Current Study	$11,206,746	$88,170,000
Tolk - Potter County 345kV CKT 1 Build approximately 115 miles of 345kV from Tolk - Potter County	Current Study	$28,283,087	$156,000,000
Border - Chisholm 345kV CKT 1 & 2 Build 30 miles of double 345 kV circuit from Border (OKGE) - Chisholm (AEP); Upgrade Border and Chisholm substations	Previously Allocated		$84,546,835
Chisholm Substation Upgrade 345kV Cost included in Border - Chisholm CKT 1 & CKT 2 build	Previously Allocated		$0
Crawfish Draw - Border 345kV CKT 2 Build approximately 194 miles of second circuit 345kV from Crawfish Draw - Border	Previously Allocated		$234,229,687
Crawfish Draw - Tuco 345kV CKT 2 Build second circuit from Crawfish Draw - Tuco 345 kV	Previously Allocated		$3,600,000
Crawfish Draw - Yoakum 345kV Retermination Incremental Upgrade for SPP-NTC-200283 to reterminate TUCO terminal to Crawfish Draw terminal by adding approximately 3 miles of 345kV	Previously Allocated		$5,000,000
Crawfish Draw 345/230kV Substation Upgrade Tap Border-TUCO approximately 3 miles from TUCO, build Crawfish Draw 345kV substation, add 345/230/13.2kV transformer, and tie on TUCO-Swisher 230kV.	Previously Allocated		$24,764,205
Grapevine - Nichols 230kV CKT 1 Replace terminal equipment	Previously Allocated		$457,981
Grapevine - Wheeler - Sweetwater 230kV CKT 1 Rebuild AEP facilties and SPS replace terminal equipment	Previously Allocated		$4,455,302
National Enrichment Plant-Targa 115kV CKT 1 Rebuild approximately 4 miles of 115kV from National Enrichment Plant to Targa per 2015 ITPNT.	Previously Allocated		$2,909,669

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Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
Oklaunion 345kV Reactive Power Install +50Mvar Capacitor Bank(s) at Oklaunion	Previously Allocated		$8,654,413
Potter County 345/230/13kV Transformer CKT 2 Build second 345/230/13kV transformer at Potter County	Previously Allocated		$5,924,670
South Jal - Teague 115kV CKT 1 Rebuild approximately 10 miles from Jal to Teague assigned in SPP-2014-AG1-AFS-6 per SPP-NTC-200365	Previously Allocated		$6,640,592
Targa-Cardinal 115kV CKT 1 Rebuild approximately 3 miles of 115kV from Targa to Cardinal per 2015 ITPNT.	Previously Allocated		$2,049,062
Tatonga - Mathewson 345kV CKT 2 Build second 345kV circuit from Tatonga - Matthewson @ 3000 amps per ITP10.	Previously Allocated		$56,387,700
Tolk - Plant X 230kV CKT 1 & 2 Rebuild circuit 1 and 2 betweek Tolk - Plant X 230kV to 1200 amps each.	Previously Allocated		$9,921,693
TUCO 345/230/13.2kV Transformer CKT 1 Replace existing TUCO 345/230/13.2kV Transformer circuit #1 with 640MVA.	Previously Allocated		$3,347,036
Woodward - Tatonga 345kV CKT 2 Build second 345 kV circuit from Woodward - Tatonga @ 3000 ampts per ITP10.	Previously Allocated		$50,594,040
	Current Study Total	$106,446,219	
GEN-2016-016			
Beaver County - Clark County 345kV CKT 1 Build approximately 125 miles of new 345kV from Grapevine - Chisholm	Current Study	$6,805,921	$150,000,000
GEN-2016-016 Interconnection Costs See One-Line Diagram.	Current Study	$4,761,014	$4,761,014
Kinsley - Pawnee 115kV CKT 1 Increase conductor clearance	Current Study	$30,520	$30,520
Anthony - Harper 138kV CKT 1 HPILS assigned upgrades per SPP-NTC-200335	Previously Allocated		$12,974,733
Bucker - Spearville 345V CKT 1 Replace Terminal equipment	Previously Allocated		$1,480,238
Clearwater - Viola 138kV CKT 1 SPP 2013 ITP NT assigneg upgrade per SPP-NTC-200228 for 12/31/2018 in-service.	Previously Allocated		$31,492,903
Viola - Sumner County 138kV CKT 1 SPP 2014 ITP NT assigned upgrade per SPP-NTC-200296 for 6/1/2019 in-service.	Previously Allocated		$51,513,963

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Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
Viola 345/138 kV Transformer CKT 1 SPP 2013 ITP NT assigned upgrade per SPP-NTC-200288 for 6/1/2019 in-service.	Previously Allocated		$18,339,327
Viola HPILS Upgrade Project 138kV CKT 1 HPILS assigned upgrades per SPP-NTC-20363 & 200362. Build Anthony - Bluff City - Caldwell - Mayfield - Milan - Viola 138 kV Ckt 1	Previously Allocated		$49,070,637
	Current Study Total	$11,597,455	
GEN-2016-017			
GEN-2016-017 345kV Reactor Pending BEPC facility study	Current Study	$TBD	$TBD
GEN-2016-017 Interconnection Costs See One-Line Diagram.	Current Study	$19,264,793	$19,264,793
MISO Affected System Study See section 4 power flow analysis.	Current Study	$TBD	$TBD
	Current Study Total	$19,264,793	
GEN-2016-020			
GEN-2016-020 Interconnection Costs See One-Line Diagram.	Current Study	$3,010,000	$3,010,000
Cimarron - Draper Lake 345kV CKT 1 Replace terminal equipment to at least per SPP-NTC-200416	Previously Allocated		$1,500,000
Cleo Corner - Cleo Plant Tap 138kV CKT 1 Replace terminal equipment to at least 1200 amps	Previously Allocated		$61,890
	Current Study Total	$3,010,000	
GEN-2016-021			
Atwood Capacitive Reactive Power Support Install 10 Mvars of Capicator Bank(s)	Current Study	$271,433	$2,000,000
GEN-2016-021 Interconnection Costs See One-Line Diagram.	Current Study	$7,250,000	$7,250,000
MISO Affected System Study See section 4 power flow analysis.	Current Study	$TBD	$TBD
Albion - Petersburg - North Petersburg 115kV CKT 1 Reconductor 115kV lines and replace all terminal equipment for at least a 193MVA rate.	Previously Allocated		$2,500,000
Gavins Point - Yankton Junction 115kV CKT 1 Rebuild approximately 5 miles of 115kV from Gavins to Yankton	Previously Allocated		$1,048,341

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Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
Gentleman - Thedford 345kV CKT 1 Build approximately 76 Miles of 345kV from Gentleman to Thedford per SPP-NTC-200220 (Total Project E&C Cost Shown).	Previously Allocated		$311,717,040
Thedford - Holt County 345kV CKT 1 Build approximately 146 Miles of 345kV from Thedford to Holt County per SPP-NTC-200220 (Total Project E&C Cost Shown).	Previously Allocated		$311,717,040
Thedford 345/115kV Transformer CKT 1 Install Thedford 345/115kV transformer per SPP-NTC-200277 (Total Project E&C Cost Shown).	Previously Allocated		$311,717,040
Twin Church - Dixon County 230kV Increase conductor clearances to accommodate 320MVA facility rating	Previously Allocated		$100,000
	Current Study Total	$7,521,433	
GEN-2016-022			
GEN-2016-022 Interconnection Costs See One-Line Diagram.	Current Study	$10,000	$10,000
GEN-2015-063 Tap - Mathewson 345kV CKT 1 Replace 89 structures	Previously Allocated		$4,277,161
	Current Study Total	$10,000	
GEN-2016-023			
Atwood Capacitive Reactive Power Support Install 10 Mvars of Capicator Bank(s)	Current Study	$195,394	$2,000,000
Banner County - Keystone 345kV CKT 1 Build approximately 140 of new 345kV from Banner County to Keystone. Banner County and Keystone Substation Work.	Current Study	$129,765,557	$259,100,000
BEPC Laramie Stability Limit Potential mitigation for BEPC Laramie Stability Limit	Current Study	$TBD	$TBD
GEN-2016-023 Interconnection Costs See One-Line Diagram.	Current Study	$9,632,397	$9,632,397
Gerald Gentleman Station Flowgate Stability Limit Mitigation Potential Mitigation for GGS Flowgate Stability Limit. TBD in the Facilities Study with NPPD.	Current Study	$TBD	$TBD
Keystone - Gentleman 345kV CKT 2 Build approximately 30 miles of new 345kV. Gentleman and Keystone Substation Work.	Current Study	$35,008,153	$69,900,000
MISO Affected System Study See section 4 power flow analysis.	Current Study	$TBD	$TBD
Belvidere - Fairbury 115kV CKT 1 Uprate Belvidere - Fairbury to at least 107MVA per NPPD facility study	Previously Allocated		$1,700,000

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Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
Gentleman - Thedford 345kV CKT 1 Build approximately 76 Miles of 345kV from Gentleman to Thedford per SPP-NTC-200220 (Total Project E&C Cost Shown).	Previously Allocated		$311,717,040
Hoskins - Dixon County - Twin Church 230kV Rerate per NPPD Facility Study	Previously Allocated		$500,000
Thedford 345/115kV Transformer CKT 1 Install Thedford 345/115kV transformer per SPP-NTC-200277 (Total Project E&C Cost Shown).	Previously Allocated		$311,717,040
Twin Church - Dixon County 230kV Increase conductor clearances to accommodate 320MVA facility rating	Previously Allocated		$100,000
	Current Study Total	$174,601,502	
GEN-2016-028			
GEN-2016-028 Interconnection Costs See One-Line Diagram.	Current Study	$9,081,447	$9,081,447
	Current Study Total	$9,081,447	
GEN-2016-029			
Atwood Capacitive Reactive Power Support Install 10 Mvars of Capicator Bank(s)	Current Study	$194,745	$2,000,000
Banner County - Keystone 345kV CKT 1 Build approximately 140 of new 345kV from Banner County to Keystone. Banner County and Keystone Substation Work.	Current Study	$129,334,443	$259,100,000
BEPC Laramie Stability Limit Potential mitigation for BEPC Laramie Stability Limit	Current Study	$TBD	$TBD
GEN-2016-029 Interconnection Costs See One-Line Diagram.	Current Study	$9,632,397	$9,632,397
Gerald Gentleman Station Flowgate Stability Limit Mitigation Potential Mitigation for GGS Flowgate Stability Limit. TBD in the Facilities Study with NPPD.	Current Study	$TBD	$TBD
Keystone - Gentleman 345kV CKT 2 Build approximately 30 miles of new 345kV. Gentleman and Keystone Substation Work.	Current Study	$34,891,847	$69,900,000
MISO Affected System Study See section 4 power flow analysis.	Current Study	$TBD	$TBD
Belvidere - Fairbury 115kV CKT 1 Uprate Belvidere - Fairbury to at least 107MVA per NPPD facility study	Previously Allocated		$1,700,000
Gentleman - Thedford 345kV CKT 1 Build approximately 76 Miles of 345kV from Gentleman to Thedford per SPP-NTC-200220 (Total Project E&C Cost Shown).	Previously Allocated		$311,717,040

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Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
Thedford 345/115kV Transformer CKT 1 Install Thedford 345/115kV transformer per SPP-NTC-200277 (Total Project E&C Cost Shown).	Previously Allocated		$311,717,040
Twin Church - Dixon County 230kV Increase conductor clearances to accommodate 320MVA facility rating	Previously Allocated		$100,000
	Current Study Total	$174,053,432	
GEN-2016-030			
GEN-2016-030 Interconnection Costs See One-Line Diagram.	Current Study	$2,183,000	$2,183,000
GEN-2016-030 Interconnection Facilities Upgrade Mitigate frequency tripping (Refer to Stability Report for details)	Current Study	$TBD	$TBD
	Current Study Total	$2,183,000	
GEN-2016-031			
GEN-2016-031 Interconnection Costs See One-Line Diagram.	Current Study	$0	$0
GEN-2015-063 Tap - Mathewson 345kV CKT 1 Replace 89 structures	Previously Allocated		$4,277,161
	Current Study Total	$0	
GEN-2016-032			
GEN-2016-032 Interconnection Costs See One-Line Diagram.	Current Study	$3,288,799	$3,288,799
GEN-2015-063 Tap - Mathewson 345kV CKT 1 Replace 89 structures	Previously Allocated		$4,277,161
	Current Study Total	$3,288,799	
GEN-2016-037			
GEN-2016-037 Interconnection Costs See One-Line Diagram.	Current Study	$18,000,000	$18,000,000
Border - Chisholm 345kV CKT 1 & 2 Build 30 miles of double 345 kV circuit from Border (OKGE) - Chisholm (AEP); Upgrade Border and Chisholm substations	Previously Allocated		$84,546,835
Chisholm Substation Upgrade 345kV Cost included in Border - Chisholm CKT 1 & CKT 2 build	Previously Allocated		$0
Cornville Tap - Naples Tap 138kV CKT 1 Rebuild approximately 11 miles of 138kV from Cornville Tap to Naples Tap	Previously Allocated		$5,775,000

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Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
Grapevine - Wheeler - Sweetwater 230kV CKT 1 Rebuild AEP facilties and SPS replace terminal equipment	Previously Allocated		$4,455,302
Naples Tap - Payne 138kV CKT 1 Rebuild approximately 8 miles of 138kV from Naples Tap to Payne	Previously Allocated		$4,200,000
Norge - Southwest Station 138kV CKT 1 Rebuild approximately 23 miles of 138kV from Norge to Southwest Station	Previously Allocated		$23,000,000
Oklaunion 345kV Reactive Power Install +50Mvar Capacitor Bank(s) at Oklaunion	Previously Allocated		$8,654,413
	Current Study Total	$18,000,000	
GEN-2016-043			
Atwood Capacitive Reactive Power Support Install 10 Mvars of Capicator Bank(s)	Current Study	$208,098	$2,000,000
GEN-2016-043 Interconnection Costs See One-Line Diagram.	Current Study	$7,250,000	$7,250,000
MISO Affected System Study See section 4 power flow analysis.	Current Study	$TBD	$TBD
Albion - Petersburg - North Petersburg 115kV CKT 1 Reconductor 115kV lines and replace all terminal equipment for at least a 193MVA rate.	Previously Allocated		$2,500,000
Gavins Point - Yankton Junction 115kV CKT 1 Rebuild approximately 5 miles of 115kV from Gavins to Yankton	Previously Allocated		$1,048,341
Gentleman - Thedford 345kV CKT 1 Build approximately 76 Miles of 345kV from Gentleman to Thedford per SPP-NTC-200220 (Total Project E&C Cost Shown).	Previously Allocated		$311,717,040
Thedford - Holt County 345kV CKT 1 Build approximately 146 Miles of 345kV from Thedford to Holt County per SPP-NTC-200220 (Total Project E&C Cost Shown).	Previously Allocated		$311,717,040
Thedford 345/115kV Transformer CKT 1 Install Thedford 345/115kV transformer per SPP-NTC-200277 (Total Project E&C Cost Shown).	Previously Allocated		$311,717,040
Twin Church - Dixon County 230kV Increase conductor clearances to accommodate 320MVA facility rating	Previously Allocated		$100,000
	Current Study Total	$7,458,098	
GEN-2016-045			
GEN-2016-045 345kV Reactor Pending EMTP Study	Current Study	$TBD	$TBD

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Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
GEN-2016-045 Interconnection Costs See One-Line Diagram.	Current Study	$15,103,955	$15,103,955
Cimarron - Draper Lake 345kV CKT 1 Replace terminal equipment to at least per SPP-NTC-200416	Previously Allocated		$1,500,000
	Current Study Total	$15,103,955	
GEN-2016-046			
Beaver County - Clark County 345kV CKT 1 Build approximately 125 miles of new 345kV from Grapevine - Chisholm	Current Study	$66,782,562	$150,000,000
GEN-2016-046 Interconnection Costs See One-Line Diagram.	Current Study	$9,162,302	$9,162,302
Bucker - Spearville 345V CKT 1 Replace Terminal equipment	Previously Allocated		$1,480,238
Knoll - Post Rock 230kV CKT 2 Build second 230kV circuit between Knoll - Post Rock assigned in 2017 ITP10 per SPP-NTC-200429	Previously Allocated		$3,872,285
	Current Study Total	$75,944,864	
GEN-2016-047			
GEN-2016-047 Interconnection Costs See One-Line Diagram.	Current Study	$0	$0
	Current Study Total	$0	
GEN-2016-048			
Cleveland - Cleveland 138kV CKT Z1 NRIS only rquired upgrade: Replace bus tie breaker with a three breaker ring	Current Study	$1,200,000	$1,200,000
Cleveland 345/138/13kV Transformer CKT 2 NRIS only required upgrade: Install second 345/138kV Transformer	Current Study	$5,100,000	$5,100,000
Fairfax Tap - Shidler 138kV CKT 1 NRIS only required upgrade: Rebuild approximately 2.4 miles of 138kV	Current Study	$3,250,000	$3,250,000
Farber - Belle Plains 138kV CKT 1 Rebuild approximately 10.3 miles of 138kV from Farber to Belle Plains	Current Study	$355,404	$9,000,000
GEN-2016-048 Interconnection Costs See One-Line Diagram.	Current Study	$3,521,000	$3,521,000
Kinze - McElroy 138kV CKT 1 Rebuild approximately 2 miles of 138kV from Kinze to McElroy	Current Study	$1,500,000	$1,500,000

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Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
Osage - Webb Tap 138kV CKT 1 Rebuild approximately 22 miles of 138kV from Osage to Webb City	Current Study	$4,119,752	$17,750,000
Webb City Tap - Fairfax Tap 138kV CKT 1 NRIS only required upgrade: Rebuild approximately 0.3 miles of 138kV. Costs included in Fairfax Tap - Shilder Upgrade	Current Study	$0	$0
Cleveland - Silver City 138kV CKT 1 AECI Affected System Mitigation	Previously Allocated		$790,900
GEN-2015-063 Tap - Mathewson 345kV CKT 1 Replace 89 structures	Previously Allocated		$4,277,161
	Current Study Total	$19,046,156	
GEN-2016-049			
Beaver County - Clark County 345kV CKT 1 Build approximately 125 miles of new 345kV from Grapevine - Chisholm	Current Study	$45,351,826	$150,000,000
GEN-2016-049 Interconnection Costs See One-Line Diagram.	Current Study	$13,409,295	$13,409,295
Bucker - Spearville 345V CKT 1 Replace Terminal equipment	Previously Allocated		$1,480,238
Knoll - Post Rock 230kV CKT 2 Build second 230kV circuit between Knoll - Post Rock assigned in 2017 ITP10 per SPP-NTC-200429	Previously Allocated		$3,872,285
	Current Study Total	$58,761,121	
GEN-2016-050			
Atwood Capacitive Reactive Power Support Install 10 Mvars of Capicator Bank(s)	Current Study	$899,253	$2,000,000
GEN-2016-050 Interconnection Costs See One-Line Diagram.	Current Study	$16,000,000	$16,000,000
MISO Affected System Study See section 4 power flow analysis.	Current Study	$TBD	$TBD
Belvidere - Fairbury 115kV CKT 1 Uprate Belvidere - Fairbury to at least 107MVA per NPPD facility study	Previously Allocated		$1,700,000
Gavins Point - Yankton Junction 115kV CKT 1 Rebuild approximately 5 miles of 115kV from Gavins to Yankton	Previously Allocated		$1,048,341
Twin Church - Dixon County 230kV Increase conductor clearances to accommodate 320MVA facility rating	Previously Allocated		$100,000

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Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
	Current Study Total	$16,899,253	
GEN-2016-051			
GEN-2016-051 Interconnection Costs See One-Line Diagram.	Current Study	$0	$0
Border - Chisholm 345kV CKT 1 & 2 Build 30 miles of double 345 kV circuit from Border (OKGE) - Chisholm (AEP); Upgrade Border and Chisholm substations	Previously Allocated		$84,546,835
Chisholm Substation Upgrade 345kV Cost included in Border - Chisholm CKT 1 & CKT 2 build	Previously Allocated		$0
Cornville Tap - Naples Tap 138kV CKT 1 Rebuild approximately 11 miles of 138kV from Cornville Tap to Naples Tap	Previously Allocated		$5,775,000
Grapevine - Wheeler - Sweetwater 230kV CKT 1 Rebuild AEP facilties and SPS replace terminal equipment	Previously Allocated		$4,455,302
Naples Tap - Payne 138kV CKT 1 Rebuild approximately 8 miles of 138kV from Naples Tap to Payne	Previously Allocated		$4,200,000
Norge - Southwest Station 138kV CKT 1 Rebuild approximately 23 miles of 138kV from Norge to Southwest Station	Previously Allocated		$23,000,000
Oklaunion 345kV Reactive Power Install +50Mvar Capacitor Bank(s) at Oklaunion	Previously Allocated		$8,654,413
	Current Study Total	$0	
GEN-2016-052			
GEN-2016-052 Interconnection Costs See One-Line Diagram.	Current Study	$0	$0
MISO Affected System Study See section 4 power flow analysis.	Current Study	$TBD	$TBD
	Current Study Total	$0	
GEN-2016-053			
GEN-2016-053 Interconnection Costs See One-Line Diagram.	Current Study	$0	$0
MISO Affected System Study See section 4 power flow analysis.	Current Study	$TBD	$TBD
	Current Study Total	$0	

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Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
GEN-2016-054			
GEN-2016-054 Interconnection Costs See One-Line Diagram.	Current Study	$0	$0
MISO Affected System Study See section 4 power flow analysis.	Current Study	$TBD	$TBD
	Current Study Total	$0	
GEN-2016-056			
Border 345kV Reactive Power Support Install (6)Steps of 50Mvar Capacitor Bank(s) and +300Mvar SVC at Border Substation	Current Study	$11,449,225	$32,633,384
GEN-2016-056 Interconnection Costs See One-Line Diagram.	Current Study	$4,215,059	$4,215,059
Oklaunion 345kV Reactive Power Support Incremental Upgrade Install 150Mvar capacitor banks and +/-100Mvar SVC at Oklaunion	Current Study	$17,864,540	$50,000,000
Potter - Chisholm 345kV CKT 1 Build approximately 140 miles of new 345kV from Potter County - Chisholm	Current Study	$56,768,784	$194,910,000
Shamrock 115kV Capacitor Bank Add 20Mvar of Capacitor Bank(s) at Shamrock 115kV	Current Study	$877,110	$2,500,000
Tolk - Crawfish Draw 345kV CKT 1 Build approximately 64 miles of 345kV from Tolk - Crawfish Draw.	Current Study	$36,104,083	$88,170,000
Tolk - Potter County 345kV CKT 1 Build approximately 115 miles of 345kV from Tolk - Potter County	Current Study	$45,979,319	$156,000,000
Border - Chisholm 345kV CKT 1 & 2 Build 30 miles of double 345 kV circuit from Border (OKGE) - Chisholm (AEP); Upgrade Border and Chisholm substations	Previously Allocated		$84,546,835
Chisholm Substation Upgrade 345kV Cost included in Border - Chisholm CKT 1 & CKT 2 build	Previously Allocated		$0
Crawfish Draw - Border 345kV CKT 2 Build approximately 194 miles of second circuit 345kV from Crawfish Draw - Border	Previously Allocated		$234,229,687
Crawfish Draw - Tuco 345kV CKT 2 Build second circuit from Crawfish Draw - Tuco 345 kV	Previously Allocated		$3,600,000
Crawfish Draw - Yoakum 345kV Retermination Incremental Upgrade for SPP-NTC-200283 to reterminate TUCO terminal to Crawfish Draw terminal by adding approximately 3 miles of 345kV	Previously Allocated		$5,000,000
Crawfish Draw 345/230kV Substation Upgrade Tap Border-TUCO approximately 3 miles from TUCO, build Crawfish Draw 345kV substation, add 345/230/13.2kV transformer, and tie on TUCO-Swisher 230kV.	Previously Allocated		$24,764,205

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Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
Grapevine - Nichols 230kV CKT 1 Replace terminal equipment	Previously Allocated		$457,981
Grapevine - Wheeler - Sweetwater 230kV CKT 1 Rebuild AEP facilties and SPS replace terminal equipment	Previously Allocated		$4,455,302
Oklaunion 345kV Reactive Power Install +50Mvar Capacitor Bank(s) at Oklaunion	Previously Allocated		$8,654,413
Potter County 345/230/13kV Transformer CKT 2 Build second 345/230/13kV transformer at Potter County	Previously Allocated		$5,924,670
Tatonga - Mathewson 345kV CKT 2 Build second 345kV circuit from Tatonga - Matthewson @ 3000 amps per ITP10.	Previously Allocated		$56,387,700
Tolk - Plant X 230kV CKT 1 & 2 Rebuild circuit 1 and 2 betweek Tolk - Plant X 230kV to 1200 amps each.	Previously Allocated		$9,921,693
TUCO 345/230/13.2kV Transformer CKT 1 Replace existing TUCO 345/230/13.2kV Transformer circuit #1 with 640MVA.	Previously Allocated		$3,347,036
Woodward - Tatonga 345kV CKT 2 Build second 345 kV circuit from Woodward - Tatonga @ 3000 ampts per ITP10.	Previously Allocated		$50,594,040
	Current Study Total	$173,258,120	
GEN-2016-057			
GEN-2016-057 345kV Reactor Pending EMTP Study	Current Study	$TBD	$TBD
GEN-2016-057 Interconnection Costs See One-Line Diagram.	Current Study	$15,103,955	$15,103,955
Cimarron - Draper Lake 345kV CKT 1 Replace terminal equipment to at least per SPP-NTC-200416	Previously Allocated		$1,500,000
	Current Study Total	$15,103,955	
GEN-2016-060			
Farber - Belle Plains 138kV CKT 1 Rebuild approximately 10.3 miles of 138kV from Farber to Belle Plains	Current Study	$2,263,052	$9,000,000
GEN-2016-060 Interconnection Costs See One-Line Diagram.	Current Study	$34,133	$34,133
GEN-2015-063 Tap - Mathewson 345kV CKT 1 Replace 89 structures	Previously Allocated		$4,277,161

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Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
Viola - Sumner County 138kV CKT 1 SPP 2014 ITP NT assigned upgrade per SPP-NTC-200296 for 6/1/2019 in-service.	Previously Allocated		$51,513,963
	Current Study Total	$2,297,185	
GEN-2016-061			
GEN-2015-063 Tap - Woodring 345kV CKT 1 Replace 53 structures	Current Study	$1,116,352	$2,700,000
GEN-2016-061 Interconnection Costs See One-Line Diagram.	Current Study	$11,000,000	$11,000,000
Northwest - Spring Creek 345kV CKT 1 Replace terminal equipment	Current Study	$2,500,000	$2,500,000
Cleveland - Silver City 138kV CKT 1 AECI Affected System Mitigation	Previously Allocated		$790,900
GEN-2015-063 Tap - Mathewson 345kV CKT 1 Replace 89 structures	Previously Allocated		$4,277,161
	Current Study Total	$14,616,352	
GEN-2016-062			
Andrews 345/115/13kV Transformer CKT 1 Replace 230/115kV transformer CKT 1 with 345/115kV transformer	Current Study	$5,718,848	$8,000,000
Andrews 345/115/13kV Transformer CKT 2 Replace 230/115kV transformer CKT 2 with 345/115kV transformer	Current Study	$5,718,848	$8,000,000
Andrews Substation Voltage Conversion Convert Andrews 230kV to 345kV	Current Study	$7,148,560	$10,000,000
Border 345kV Reactive Power Support Install (6)Steps of 50Mvar Capacitor Bank(s) and +300Mvar SVC at Border Substation	Current Study	$13,613,844	$32,633,384
Drinkard - Drinkard Tap 115kV CKT 1 Rebuild approximately 2 miles from Drinkard to Drinkard Tap	Current Study	$1,072,284	$1,500,000
Drinkard Tap - West Hobbs 115kV CKT 1 Rebuild approximately 12.5 miles from Drinkard Tap to West Hobbs	Current Study	$6,701,775	$9,375,000
GEN-2016-062 Interconnection Costs See One-Line Diagram.	Current Study	$2,197,565	$2,197,565
National Enrichment Plant - Drinkard 115kV CKT 1 Rebuild approximately 7.5 miles from NEF Plant to Drinkard	Current Study	$4,021,065	$5,625,000

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Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
Oklaunion 345kV Reactive Power Support Incremental Upgrade Install 150Mvar capacitor banks and +/-100Mvar SVC at Oklaunion	Current Study	$20,790,952	$50,000,000
Potter - Chisholm 345kV CKT 1 Build approximately 140 miles of new 345kV from Potter County - Chisholm	Current Study	$85,419,507	$194,910,000
Shamrock 115kV Capacitor Bank Add 20Mvar of Capacitor Bank(s) at Shamrock 115kV	Current Study	$1,042,938	$2,500,000
Tolk - Crawfish Draw 345kV CKT 1 Build approximately 64 miles of 345kV from Tolk - Crawfish Draw.	Current Study	$28,095,312	$88,170,000
Tolk - Potter County 345kV CKT 1 Build approximately 115 miles of 345kV from Tolk - Potter County	Current Study	$70,905,700	$156,000,000
Border - Chisholm 345kV CKT 1 & 2 Build 30 miles of double 345 kV circuit from Border (OKGE) - Chisholm (AEP); Upgrade Border and Chisholm substations	Previously Allocated		$84,546,835
Chisholm Substation Upgrade 345kV Cost included in Border - Chisholm CKT 1 & CKT 2 build	Previously Allocated		$0
Crawfish Draw - Border 345kV CKT 2 Build approximately 194 miles of second circuit 345kV from Crawfish Draw - Border	Previously Allocated		$234,229,687
Crawfish Draw - Tuco 345kV CKT 2 Build second circuit from Crawfish Draw - Tuco 345 kV	Previously Allocated		$3,600,000
Crawfish Draw - Yoakum 345kV Retermination Incremental Upgrade for SPP-NTC-200283 to reterminate TUCO terminal to Crawfish Draw terminal by adding approximately 3 miles of 345kV	Previously Allocated		$5,000,000
Crawfish Draw 345/230kV Substation Upgrade Tap Border-TUCO approximately 3 miles from TUCO, build Crawfish Draw 345kV substation, add 345/230/13.2kV transformer, and tie on TUCO-Swisher 230kV.	Previously Allocated		$24,764,205
Grapevine - Nichols 230kV CKT 1 Replace terminal equipment	Previously Allocated		$457,981
Grapevine - Wheeler - Sweetwater 230kV CKT 1 Rebuild AEP facilties and SPS replace terminal equipment	Previously Allocated		$4,455,302
National Enrichment Plant-Targa 115kV CKT 1 Rebuild approximately 4 miles of 115kV from National Enrichment Plant to Targa per 2015 ITPNT.	Previously Allocated		$2,909,669
Oklaunion 345kV Reactive Power Install +50Mvar Capacitor Bank(s) at Oklaunion	Previously Allocated		$8,654,413
Potter County 345/230/13kV Transformer CKT 2 Build second 345/230/13kV transformer at Potter County	Previously Allocated		$5,924,670

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Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
South Jal - Teague 115kV CKT 1 Rebuild approximately 10 miles from Jal to Teague assigned in SPP-2014-AG1-AFS-6 per SPP-NTC-200365	Previously Allocated		$6,640,592
Targa-Cardinal 115kV CKT 1 Rebuild approximately 3 miles of 115kV from Targa to Cardinal per 2015 ITPNT.	Previously Allocated		$2,049,062
Tatonga - Mathewson 345kV CKT 2 Build second 345kV circuit from Tatonga - Matthewson @ 3000 amps per ITP10.	Previously Allocated		$56,387,700
Tolk - Plant X 230kV CKT 1 & 2 Rebuild circuit 1 and 2 betweek Tolk - Plant X 230kV to 1200 amps each.	Previously Allocated		$9,921,693
TUCO 345/230/13.2kV Transformer CKT 1 Replace existing TUCO 345/230/13.2kV Transformer circuit #1 with 640MVA.	Previously Allocated		$3,347,036
Woodward - Tatonga 345kV CKT 2 Build second 345 kV circuit from Woodward - Tatonga @ 3000 ampts per ITP10.	Previously Allocated		$50,594,040
	Current Study Total	$252,447,198	
GEN-2016-063			
GEN-2016-063 Interconnection Costs See One-Line Diagram.	Current Study	$11,550,000	$11,550,000
	Current Study Total	$11,550,000	
GEN-2016-067			
GEN-2016-067 Interconnection Costs See One-Line Diagram.	Current Study	$15,000	$15,000
	Current Study Total	$15,000	
GEN-2016-068			
GEN-2015-063 Tap - Woodring 345kV CKT 1 Replace 53 structures	Current Study	$1,583,648	$2,700,000
GEN-2016-068 Interconnection Costs See One-Line Diagram.	Current Study	$1,900,000	$1,900,000
GEN-2015-063 Tap - Mathewson 345kV CKT 1 Replace 89 structures	Previously Allocated		$4,277,161
	Current Study Total	$3,483,648	
GEN-2016-069			
Border 345kV Reactive Power Support Install (6)Steps of 50Mvar Capacitor Bank(s) and +300Mvar SVC at Border Substation	Current Study	$1,622,919	$32,633,384

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Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
GEN-2016-069 Interconnection Costs See One-Line Diagram.	Current Study	$2,309,814	$2,309,814
Oklaunion 345kV Reactive Power Support Incremental Upgrade Install 150Mvar capacitor banks and +/-100Mvar SVC at Oklaunion	Current Study	$2,403,017	$50,000,000
Potter - Chisholm 345kV CKT 1 Build approximately 140 miles of new 345kV from Potter County - Chisholm	Current Study	$12,349,973	$194,910,000
Shamrock 115kV Capacitor Bank Add 20Mvar of Capacitor Bank(s) at Shamrock 115kV	Current Study	$124,330	$2,500,000
Tolk - Crawfish Draw 345kV CKT 1 Build approximately 64 miles of 345kV from Tolk - Crawfish Draw.	Current Study	$11,231,916	$88,170,000
Tolk - Potter County 345kV CKT 1 Build approximately 115 miles of 345kV from Tolk - Potter County	Current Study	$10,044,618	$156,000,000
Tolk 345/230/13kV Transformer CKT 2 Build second 345/230/13kV transformer at Tolk	Current Study	$15,000,000	$15,000,000
Border - Chisholm 345kV CKT 1 & 2 Build 30 miles of double 345 kV circuit from Border (OKGE) - Chisholm (AEP); Upgrade Border and Chisholm substations	Previously Allocated		$84,546,835
Chisholm Substation Upgrade 345kV Cost included in Border - Chisholm CKT 1 & CKT 2 build	Previously Allocated		$0
Crawfish Draw - Border 345kV CKT 2 Build approximately 194 miles of second circuit 345kV from Crawfish Draw - Border	Previously Allocated		$234,229,687
Crawfish Draw - Tuco 345kV CKT 2 Build second circuit from Crawfish Draw - Tuco 345 kV	Previously Allocated		$3,600,000
Crawfish Draw - Yoakum 345kV Retermination Incremental Upgrade for SPP-NTC-200283 to reterminate TUCO terminal to Crawfish Draw terminal by adding approximately 3 miles of 345kV	Previously Allocated		$5,000,000
Crawfish Draw 345/230kV Substation Upgrade Tap Border-TUCO approximately 3 miles from TUCO, build Crawfish Draw 345kV substation, add 345/230/13.2kV transformer, and tie on TUCO-Swisher 230kV.	Previously Allocated		$24,764,205
Grapevine - Nichols 230kV CKT 1 Replace terminal equipment	Previously Allocated		$457,981
Grapevine - Wheeler - Sweetwater 230kV CKT 1 Rebuild AEP facilties and SPS replace terminal equipment	Previously Allocated		$4,455,302
Oklaunion 345kV Reactive Power Install +50Mvar Capacitor Bank(s) at Oklaunion	Previously Allocated		$8,654,413

* Withdrawal of higher queued projects will cause a restudy and may result in higher costs

Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
Potter County 345/230/13kV Transformer CKT 2 Build second 345/230/13kV transformer at Potter County	Previously Allocated		$5,924,670
Tatonga - Mathewson 345kV CKT 2 Build second 345kV circuit from Tatonga - Matthewson @ 3000 amps per ITP10.	Previously Allocated		$56,387,700
Tolk - Plant X 230kV CKT 1 & 2 Rebuild circuit 1 and 2 betweek Tolk - Plant X 230kV to 1200 amps each.	Previously Allocated		$9,921,693
TUCO 345/230/13.2kV Transformer CKT 1 Replace existing TUCO 345/230/13.2kV Transformer circuit #1 with 640MVA.	Previously Allocated		$3,347,036
Woodward - Tatonga 345kV CKT 2 Build second 345 kV circuit from Woodward - Tatonga @ 3000 ampts per ITP10.	Previously Allocated		$50,594,040
	Current Study Total	$55,086,586	
GEN-2016-070			
GEN-2016-070 Interconnection Costs See One-Line Diagram.	Current Study	$0	$0
Beaver County 345kV Reactive Power Support Install +100Mvar SVC at Beaver County Substation.	Previously Allocated		$26,264,777
Bushland - Potter County 230kV CKT 1 Replace line traps at both terminals	Previously Allocated		$250,000
Cleo Corner - Cleo Plant Tap 138kV CKT 1 Replace terminal equipment to at least 1200 amps	Previously Allocated		$61,890
Highland Park Tap - Pantex South 115kV CKT 1 Upgrade terminal equipment assigned in 2017 ITP10 per SPP-NTC-200444	Previously Allocated		$324,392
Martin - Pantex North 115kV CKT 1 Upgrade terminal equipment assigned in 2017 ITP10 per SPP-NTC-200444	Previously Allocated		$324,392
Potter County 345/230/13kV Transformer CKT 2 Build second 345/230/13kV transformer at Potter County	Previously Allocated		$5,924,670
	Current Study Total	$0	
GEN-2016-071			
Farber - Belle Plains 138kV CKT 1 Rebuild approximately 10.3 miles of 138kV from Farber to Belle Plains	Current Study	$6,381,544	$9,000,000
GEN-2016-071 Interconnection Costs See One-Line Diagram.	Current Study	$6,127,190	$6,127,190

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Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
Kildare - White Eagle 138kV CKT 1 Rebuild approximately 11 miles of 138kV from Kildare to White Eagle	Current Study	$7,000,000	$7,000,000
Middleton Tap - Chilocco 138kV CKT 1 Rebuild approximately 3.45 miles of 138kV from Middleton to Chilocco	Current Study	$2,000,000	$2,000,000
Osage - Webb Tap 138kV CKT 1 Rebuild approximately 22 miles of 138kV from Osage to Webb City	Current Study	$13,630,248	$17,750,000
Osage - White Eagle 138kV CKT 1 Rebuild approximately 3 miles of 138kV from Osage to White Eagle	Current Study	$2,000,000	$2,000,000
GEN-2015-063 Tap - Mathewson 345kV CKT 1 Replace 89 structures	Previously Allocated		$4,277,161
	Current Study Total	$37,138,982	
GEN-2016-073			
GEN-2016-073 Interconnection Costs See One-Line Diagram.	Current Study	$2,359,239	$2,359,239
GEN-2015-063 Tap - Mathewson 345kV CKT 1 Replace 89 structures	Previously Allocated		$4,277,161
	Current Study Total	$2,359,239	
GEN-2016-075			
Atwood Capacitive Reactive Power Support Install 10 Mvars of Capicator Bank(s)	Current Study	$60,832	$2,000,000
GEN-2016-075 Interconnection Costs See One-Line Diagram.	Current Study	$0	$0
MISO Affected System Study See section 4 power flow analysis.	Current Study	$TBD	$TBD
Belvidere - Fairbury 115kV CKT 1 Uprate Belvidere - Fairbury to at least 107MVA per NPPD facility study	Previously Allocated		$1,700,000
Gentleman - Thedford 345kV CKT 1 Build approximately 76 Miles of 345kV from Gentleman to Thedford per SPP-NTC-200220 (Total Project E&C Cost Shown).	Previously Allocated		$311,717,040
Thedford - Holt County 345kV CKT 1 Build approximately 146 Miles of 345kV from Thedford to Holt County per SPP-NTC-200220 (Total Project E&C Cost Shown).	Previously Allocated		$311,717,040
Twin Church - Dixon County 230kV Increase conductor clearances to accommodate 320MVA facility rating	Previously Allocated		$100,000

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Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
	Current Study Total	$60,832	
	TOTAL CURRENT STUDY COSTS:	**$1,417,425,222***	

*Total costs do no include potential stability mitigations as listed through out Appendix E and F. Total cost does not include MISOAffected System costs.

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11.6 E1: STAND-ALONE COST ALLOCATION PER INTERCONNECTION REQUEST (INCLUDING PRIOR-QUEUED UPGRADES)

Please refer to Appendix E. Stand Alone cost allocation in cluster analysis cost allocation since all DISIS-2016-001-1 requests have executed Interconnection Facilities Study Agreements.

11.7 F: COST ALLOCATION PER PROPOSED STUDY NETWORK UPGRADE

Appendix F. Cost Allocation by Upgrade

Andrews 345/115/13kV Transformer CKT 1		**$8,000,000**
Replace 230/115kV transformer CKT 1 with 345/115kV transformer		
GEN-2016-015	$2,281,152	
GEN-2016-062	$5,718,848	
Total Allocated Costs	**$8,000,000**	
Andrews 345/115/13kV Transformer CKT 2		**$8,000,000**
Replace 230/115kV transformer CKT 2 with 345/115kV transformer		
GEN-2016-015	$2,281,152	
GEN-2016-062	$5,718,848	
Total Allocated Costs	**$8,000,000**	
Andrews Substation Voltage Conversion		**$10,000,000**
Convert Andrews 230kV to 345kV		
GEN-2016-015	$2,851,440	
GEN-2016-062	$7,148,560	
Total Allocated Costs	**$10,000,000**	
ASGI-2016-001 Interconnection Costs		**$21,750**
See One-Line Diagram.		
ASGI-2016-001	$21,750	
Total Allocated Costs	**$21,750**	
ASGI-2016-002 Interconnection Costs		**$21,750**
See One-Line Diagram.		
ASGI-2016-002	$21,750	
Total Allocated Costs	**$21,750**	
ASGI-2016-003 Interconnection Costs		**$10,000**
See One-Line Diagram.		
ASGI-2016-003	$10,000	
Total Allocated Costs	**$10,000**	
ASGI-2016-004 Interconnection Costs		**$15,000**
See One-Line Diagram.		
ASGI-2016-004	$15,000	
Total Allocated Costs	**$15,000**	

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Atwood Capacitive Reactive Power Support		**$2,000,000**
Install 10 Mvars of Capicator Bank(s)		
	GEN-2015-089	$170,244
	GEN-2016-021	$271,433
	GEN-2016-023	$195,394
	GEN-2016-029	$194,745
	GEN-2016-043	$208,098
	GEN-2016-050	$899,253
	GEN-2016-075	$60,832
	Total Allocated Costs	**$2,000,000**
Banner County - Keystone 345kV CKT 1		**$259,100,000**
Build approximately 140 of new 345kV from Banner County to Keystone. Banner County and Keystone Substation Work.		
	GEN-2016-023	$129,765,557
	GEN-2016-029	$129,334,443
	Total Allocated Costs	**$259,100,000**
Beaver County - Clark County 345kV CKT 1		**$150,000,000**
Build approximately 125 miles of new 345kV from Grapevine - Chisholm		
	GEN-2016-005	$31,059,691
	GEN-2016-016	$6,805,921
	GEN-2016-046	$66,782,562
	GEN-2016-049	$45,351,826
	Total Allocated Costs	**$150,000,000**
BEPC Laramie Stability Limit		**$TBD**
Potential mitigation for BEPC Laramie Stability Limit		
	GEN-2016-023	$TBD
	GEN-2016-029	$TBD
	Total Allocated Costs	**$TBD**

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Border 345kV Reactive Power Support		**$32,633,384**
Install (6)Steps of 50Mvar Capacitor Bank(s) and +300Mvar SVC at Border Substation		
	ASGI-2016-001	$138,540
	ASGI-2016-002	$19,532
	ASGI-2016-004	$358,992
	GEN-2016-015	$5,430,333
	GEN-2016-056	$11,449,225
	GEN-2016-062	$13,613,844
	GEN-2016-069	$1,622,919
	Total Allocated Costs	**$32,633,384**
Cleveland - Cleveland 138kV CKT Z1		**$1,200,000**
NRIS only rquired upgrade: Replace bus tie breaker with a three breaker ring		
	GEN-2016-048	$1,200,000
	Total Allocated Costs	**$1,200,000**
Cleveland 345/138/13kV Transformer CKT 2		**$5,100,000**
NRIS only required upgrade: Install second 345/138kV Transformer		
	GEN-2016-048	$5,100,000
	Total Allocated Costs	**$5,100,000**
Crawfish Draw 230/115/13kV Transformer CKT 1		**$12,000,000**
NRIS only required upgrade: Build 115kV yard, re-terminate Hale County - TUCO 115kV, build 230/115/13kV transformer 1		
	GEN-2015-041	$12,000,000
	Total Allocated Costs	**$12,000,000**
Drinkard - Drinkard Tap 115kV CKT 1		**$1,500,000**
Rebuild approximately 2 miles from Drinkard to Drinkard Tap		
	GEN-2016-015	$427,716
	GEN-2016-062	$1,072,284
	Total Allocated Costs	**$1,500,000**
Drinkard Tap - West Hobbs 115kV CKT 1		**$9,375,000**
Rebuild approximately 12.5 miles from Drinkard Tap to West Hobbs		
	GEN-2016-015	$2,673,225
	GEN-2016-062	$6,701,775
	Total Allocated Costs	**$9,375,000**

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Fairfax Tap - Shidler 138kV CKT 1			**$3,250,000**
NRIS only required upgrade: Rebuild approximately 2.4 miles of 138kV			
	GEN-2016-048	$3,250,000	
	Total Allocated Costs	**$3,250,000**	
Farber - Belle Plains 138kV CKT 1			**$9,000,000**
Rebuild approximately 10.3 miles of 138kV from Farber to Belle Plains			
	GEN-2016-048	$355,404	
	GEN-2016-060	$2,263,052	
	GEN-2016-071	$6,381,544	
	Total Allocated Costs	**$9,000,000**	
GEN-2015-036 Interconnection Costs			**$2,025,000**
See One-Line Diagram.			
	GEN-2015-036	$2,025,000	
	Total Allocated Costs	**$2,025,000**	
GEN-2015-041 Interconnection Costs			**$0**
See One-Line Diagram.			
	GEN-2015-041	$0	
	Total Allocated Costs	**$0**	
GEN-2015-063 Tap - Woodring 345kV CKT 1			**$2,700,000**
Replace 53 structures			
	GEN-2016-061	$1,116,352	
	GEN-2016-068	$1,583,648	
	Total Allocated Costs	**$2,700,000**	
GEN-2015-082 Interconnection Costs			**$1,930,000**
See One-Line Diagram.			
	GEN-2015-082	$1,930,000	
	Total Allocated Costs	**$1,930,000**	
GEN-2015-089 Interconnection Costs			**$2,000,000**
See One-Line Diagram.			
	GEN-2015-089	$2,000,000	
	Total Allocated Costs	**$2,000,000**	

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GEN-2015-095 Interconnection Costs		**$942,000**
See One-Line Diagram.		
	GEN-2015-095	$942,000
	Total Allocated Costs	**$942,000**
GEN-2016-003 Interconnection Costs		**$15,000,000**
See One-Line Diagram.		
	GEN-2016-003	$15,000,000
	Total Allocated Costs	**$15,000,000**
GEN-2016-004 Interconnection Costs		**$2,871,212**
See One-Line Diagram.		
	GEN-2016-004	$2,871,212
	Total Allocated Costs	**$2,871,212**
GEN-2016-005 Interconnection Costs		**$8,614,897**
See One-Line Diagram.		
	GEN-2016-005	$8,614,897
	Total Allocated Costs	**$8,614,897**
GEN-2016-007 Interconnection Costs		**$1,100,000**
See One-Line Diagram.		
	GEN-2016-007	$1,100,000
	Total Allocated Costs	**$1,100,000**
GEN-2016-009 Interconnection Costs		**$956,218**
See One-Line Diagram.		
	GEN-2016-009	$956,218
	Total Allocated Costs	**$956,218**
GEN-2016-013 Interconnection Costs		**$50,000**
See One-Line Diagram.		
	GEN-2016-013	$50,000
	Total Allocated Costs	**$50,000**
GEN-2016-014 Interconnection Costs		**$50,000**
See One-Line Diagram.		
	GEN-2016-014	$50,000
	Total Allocated Costs	**$50,000**

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GEN-2016-015 Interconnection Costs		**$6,625,863**
See One-Line Diagram.		
	GEN-2016-015	$6,625,863
	Total Allocated Costs	**$6,625,863**
GEN-2016-015 Interconnection Facilities Upgrade		**$TBD**
Mitigate frequency tripping (Refer to stability report for details)		
	GEN-2016-015	$TBD
	Total Allocated Costs	**$TBD**
GEN-2016-016 Interconnection Costs		**$4,761,014**
See One-Line Diagram.		
	GEN-2016-016	$4,761,014
	Total Allocated Costs	**$4,761,014**
GEN-2016-017 345kV Reactor		**$TBD**
Pending BEPC facility study		
	GEN-2016-017	$TBD
	Total Allocated Costs	**$TBD**
GEN-2016-017 Interconnection Costs		**$19,264,793**
See One-Line Diagram.		
	GEN-2016-017	$19,264,793
	Total Allocated Costs	**$19,264,793**
GEN-2016-020 Interconnection Costs		**$3,010,000**
See One-Line Diagram.		
	GEN-2016-020	$3,010,000
	Total Allocated Costs	**$3,010,000**
GEN-2016-021 Interconnection Costs		**$7,250,000**
See One-Line Diagram.		
	GEN-2016-021	$7,250,000
	Total Allocated Costs	**$7,250,000**
GEN-2016-022 Interconnection Costs		**$10,000**
See One-Line Diagram.		
	GEN-2016-022	$10,000
	Total Allocated Costs	**$10,000**

* Withdrawal of higher queued projects will cause a restudy and may result in higher costs

GEN-2016-023 Interconnection Costs		**$9,632,397**
See One-Line Diagram.		
	GEN-2016-023	$9,632,397
	Total Allocated Costs	**$9,632,397**
GEN-2016-028 Interconnection Costs		**$9,081,447**
See One-Line Diagram.		
	GEN-2016-028	$9,081,447
	Total Allocated Costs	**$9,081,447**
GEN-2016-029 Interconnection Costs		**$9,632,397**
See One-Line Diagram.		
	GEN-2016-029	$9,632,397
	Total Allocated Costs	**$9,632,397**
GEN-2016-030 Interconnection Costs		**$2,183,000**
See One-Line Diagram.		
	GEN-2016-030	$2,183,000
	Total Allocated Costs	**$2,183,000**
GEN-2016-030 Interconnection Facilities Upgrade		**$TBD**
Mitigate frequency tripping (Refer to Stability Report for details)		
	GEN-2016-030	$TBD
	Total Allocated Costs	**$TBD**
GEN-2016-031 Interconnection Costs		**$0**
See One-Line Diagram.		
	GEN-2016-031	$0
	Total Allocated Costs	**$0**
GEN-2016-032 Interconnection Costs		**$3,288,799**
See One-Line Diagram.		
	GEN-2016-032	$3,288,799
	Total Allocated Costs	**$3,288,799**
GEN-2016-037 Interconnection Costs		**$18,000,000**
See One-Line Diagram.		
	GEN-2016-037	$18,000,000
	Total Allocated Costs	**$18,000,000**

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GEN-2016-043 Interconnection Costs		**$7,250,000**
See One-Line Diagram.		
	GEN-2016-043	$7,250,000
	Total Allocated Costs	**$7,250,000**
GEN-2016-045 345kV Reactor		**$TBD**
Pending EMTP Study		
	GEN-2016-045	$TBD
	Total Allocated Costs	**$TBD**
GEN-2016-045 Interconnection Costs		**$15,103,955**
See One-Line Diagram.		
	GEN-2016-045	$15,103,955
	Total Allocated Costs	**$15,103,955**
GEN-2016-046 Interconnection Costs		**$9,162,302**
See One-Line Diagram.		
	GEN-2016-046	$9,162,302
	Total Allocated Costs	**$9,162,302**
GEN-2016-047 Interconnection Costs		**$0**
See One-Line Diagram.		
	GEN-2016-047	$0
	Total Allocated Costs	**$0**
GEN-2016-048 Interconnection Costs		**$3,521,000**
See One-Line Diagram.		
	GEN-2016-048	$3,521,000
	Total Allocated Costs	**$3,521,000**
GEN-2016-049 Interconnection Costs		**$13,409,295**
See One-Line Diagram.		
	GEN-2016-049	$13,409,295
	Total Allocated Costs	**$13,409,295**
GEN-2016-050 Interconnection Costs		**$16,000,000**
See One-Line Diagram.		
	GEN-2016-050	$16,000,000
	Total Allocated Costs	**$16,000,000**

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GEN-2016-051 Interconnection Costs			**$0**
See One-Line Diagram.			
	GEN-2016-051	$0	
	Total Allocated Costs	**$0**	
GEN-2016-052 Interconnection Costs			**$0**
See One-Line Diagram.			
	GEN-2016-052	$0	
	Total Allocated Costs	**$0**	
GEN-2016-053 Interconnection Costs			**$0**
See One-Line Diagram.			
	GEN-2016-053	$0	
	Total Allocated Costs	**$0**	
GEN-2016-054 Interconnection Costs			**$0**
See One-Line Diagram.			
	GEN-2016-054	$0	
	Total Allocated Costs	**$0**	
GEN-2016-056 Interconnection Costs			**$4,215,059**
See One-Line Diagram.			
	GEN-2016-056	$4,215,059	
	Total Allocated Costs	**$4,215,059**	
GEN-2016-057 345kV Reactor			**$TBD**
Pending EMTP Study			
	GEN-2016-057	$TBD	
	Total Allocated Costs	**$TBD**	
GEN-2016-057 Interconnection Costs			**$15,103,955**
See One-Line Diagram.			
	GEN-2016-057	$15,103,955	
	Total Allocated Costs	**$15,103,955**	
GEN-2016-060 Interconnection Costs			**$34,133**
See One-Line Diagram.			
	GEN-2016-060	$34,133	
	Total Allocated Costs	**$34,133**	

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GEN-2016-061 Interconnection Costs		**$11,000,000**
See One-Line Diagram.		
	GEN-2016-061	$11,000,000
	Total Allocated Costs	**$11,000,000**
GEN-2016-062 Interconnection Costs		**$2,197,565**
See One-Line Diagram.		
	GEN-2016-062	$2,197,565
	Total Allocated Costs	**$2,197,565**
GEN-2016-063 Interconnection Costs		**$11,550,000**
See One-Line Diagram.		
	GEN-2016-063	$11,550,000
	Total Allocated Costs	**$11,550,000**
GEN-2016-067 Interconnection Costs		**$15,000**
See One-Line Diagram.		
	GEN-2016-067	$15,000
	Total Allocated Costs	**$15,000**
GEN-2016-068 Interconnection Costs		**$1,900,000**
See One-Line Diagram.		
	GEN-2016-068	$1,900,000
	Total Allocated Costs	**$1,900,000**
GEN-2016-069 Interconnection Costs		**$2,309,814**
See One-Line Diagram.		
	GEN-2016-069	$2,309,814
	Total Allocated Costs	**$2,309,814**
GEN-2016-070 Interconnection Costs		**$0**
See One-Line Diagram.		
	GEN-2016-070	$0
	Total Allocated Costs	**$0**
GEN-2016-071 Interconnection Costs		**$6,127,190**
See One-Line Diagram.		
	GEN-2016-071	$6,127,190
	Total Allocated Costs	**$6,127,190**

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GEN-2016-073 Interconnection Costs		**$2,359,239**
See One-Line Diagram.		
	GEN-2016-073	$2,359,239
	Total Allocated Costs	**$2,359,239**
GEN-2016-075 Interconnection Costs		**$0**
See One-Line Diagram.		
	GEN-2016-075	$0
	Total Allocated Costs	**$0**
Gerald Gentleman Station Flowgate Stability Limit Mitigation		**$TBD**
Potential Mitigation for GGS Flowgate Stability Limit. TBD in the Facilities Study with NPPD.		
	GEN-2016-023	$TBD
	GEN-2016-029	$TBD
	Total Allocated Costs	**$TBD**
Glenham - Mound City 230kV CKT 1		**$50,000**
Uprate CT		
	GEN-2016-004	$50,000
	Total Allocated Costs	**$50,000**
Hitchland 345/230/13kV Transformer CKT 3		**$10,000,000**
NRIS only required upgrade: Build third 345/230/13kV Transformer		
	GEN-2015-041	$10,000,000
	Total Allocated Costs	**$10,000,000**
Jamestown - Center 345kV CKT 1		**$800,000**
MPC mitigation for Jamestown - Center 345kV		
	GEN-2016-004	$800,000
	Total Allocated Costs	**$800,000**
Keystone - Gentleman 345kV CKT 2		**$69,900,000**
Build approximately 30 miles of new 345kV. Gentleman and Keystone Substation Work.		
	GEN-2016-023	$35,008,153
	GEN-2016-029	$34,891,847
	Total Allocated Costs	**$69,900,000**

* Withdrawal of higher queued projects will cause a restudy and may result in higher costs

Kildare - White Eagle 138kV CKT 1			**$7,000,000**
Rebuild approximately 11 miles of 138kV from Kildare to White Eagle			
	GEN-2016-071	$7,000,000	
	Total Allocated Costs	**$7,000,000**	
Kinsley - Pawnee 115kV CKT 1			**$30,520**
Increase conductor clearance			
	GEN-2016-016	$30,520	
	Total Allocated Costs	**$30,520**	
Kinze - McElroy 138kV CKT 1			**$1,500,000**
Rebuild approximately 2 miles of 138kV from Kinze to McElroy			
	GEN-2016-048	$1,500,000	
	Total Allocated Costs	**$1,500,000**	
Lubbock Holly 230/69/13kV CKT 2			**$4,000,000**
NRIS only required upgrade: Install second Lubbock Holly 230/69/13kV Transformer			
	GEN-2015-041	$4,000,000	
	Total Allocated Costs	**$4,000,000**	
Middleton Tap - Chilocco 138kV CKT 1			**$2,000,000**
Rebuild approximately 3.45 miles of 138kV from Middleton to Chilocco			
	GEN-2016-071	$2,000,000	
	Total Allocated Costs	**$2,000,000**	

* Withdrawal of higher queued projects will cause a restudy and may result in higher costs

MISO Affected System Study			**$TBD**
See section 4 power flow analysis.			
	GEN-2015-089	$TBD	
	GEN-2016-004	$TBD	
	GEN-2016-007	$TBD	
	GEN-2016-017	$TBD	
	GEN-2016-021	$TBD	
	GEN-2016-023	$TBD	
	GEN-2016-029	$TBD	
	GEN-2016-043	$TBD	
	GEN-2016-050	$TBD	
	GEN-2016-052	$TBD	
	GEN-2016-053	$TBD	
	GEN-2016-054	$TBD	
	GEN-2016-075	$TBD	
	Total Allocated Costs	**$TBD**	
National Enrichment Plant - Drinkard 115kV CKT 1			**$5,625,000**
Rebuild approximately 7.5 miles from NEF Plant to Drinkard			
	GEN-2016-015	$1,603,935	
	GEN-2016-062	$4,021,065	
	Total Allocated Costs	**$5,625,000**	
Neosho - Riverton 161kV CKT 1			**$24,225,274**
Rebuild approximately 28 miles of 161kV			
	GEN-2016-013	$12,112,637	
	GEN-2016-014	$12,112,637	
	Total Allocated Costs	**$24,225,274**	
Northwest - Spring Creek 345kV CKT 1			**$2,500,000**
Replace terminal equipment			
	GEN-2016-061	$2,500,000	
	Total Allocated Costs	**$2,500,000**	

* Withdrawal of higher queued projects will cause a restudy and may result in higher costs

Oklaunion 345kV Reactive Power Support Incremental Upgrade		**$50,000,000**
Install 150Mvar capacitor banks and +/-100Mvar SVC at Oklaunion		
	ASGI-2016-001	$212,900
	ASGI-2016-002	$30,111
	ASGI-2016-004	$405,320
	GEN-2016-015	$8,293,160
	GEN-2016-056	$17,864,540
	GEN-2016-062	$20,790,952
	GEN-2016-069	$2,403,017
	Total Allocated Costs	**$50,000,000**
Osage - Webb Tap 138kV CKT 1		**$17,750,000**
Rebuild approximately 22 miles of 138kV from Osage to Webb City		
	GEN-2016-048	$4,119,752
	GEN-2016-071	$13,630,248
	Total Allocated Costs	**$17,750,000**
Osage - White Eagle 138kV CKT 1		**$2,000,000**
Rebuild approximately 3 miles of 138kV from Osage to White Eagle		
	GEN-2016-071	$2,000,000
	Total Allocated Costs	**$2,000,000**
Potter - Chisholm 345kV CKT 1		**$194,910,000**
Build approximately 140 miles of new 345kV from Potter County - Chisholm		
	ASGI-2016-001	$793,678
	ASGI-2016-002	$108,513
	ASGI-2016-004	$5,397,144
	GEN-2016-015	$34,072,400
	GEN-2016-056	$56,768,784
	GEN-2016-062	$85,419,507
	GEN-2016-069	$12,349,973
	Total Allocated Costs	**$194,910,000**

* Withdrawal of higher queued projects will cause a restudy and may result in higher costs

Shamrock 115kV Capacitor Bank **$2,500,000**

Add 20Mvar of Capacitor Bank(s) at Shamrock 115kV

ASGI-2016-001	$10,613
ASGI-2016-002	$1,496
ASGI-2016-004	$27,502
GEN-2016-015	$416,011
GEN-2016-056	$877,110
GEN-2016-062	$1,042,938
GEN-2016-069	$124,330
Total Allocated Costs	**$2,500,000**

Tolk - Crawfish Draw 345kV CKT 1 **$88,170,000**

Build approximately 64 miles of 345kV from Tolk - Crawfish Draw.

ASGI-2016-001	$113,616
ASGI-2016-002	$27,828
ASGI-2016-004	$1,390,500
GEN-2016-015	$11,206,746
GEN-2016-056	$36,104,083
GEN-2016-062	$28,095,312
GEN-2016-069	$11,231,916
Total Allocated Costs	**$88,170,000**

Tolk - Potter County 345kV CKT 1 **$156,000,000**

Build approximately 115 miles of 345kV from Tolk - Potter County

ASGI-2016-001	$612,271
ASGI-2016-002	$83,920
ASGI-2016-004	$91,086
GEN-2016-015	$28,283,087
GEN-2016-056	$45,979,319
GEN-2016-062	$70,905,700
GEN-2016-069	$10,044,618
Total Allocated Costs	**$156,000,000**

Tolk 345/230/13kV Transformer CKT 2 **$15,000,000**

Build second 345/230/13kV transformer at Tolk

GEN-2016-069	$15,000,000
Total Allocated Costs	**$15,000,000**

* Withdrawal of higher queued projects will cause a restudy and may result in higher costs

Webb City Tap - Fairfax Tap 138kV CKT 1	**$0**
NRIS only required upgrade: Rebuild approximately 0.3 miles of 138kV. Costs included in Fairfax Tap - Shilder Upgrade	
GEN-2016-048	$0
Total Allocated Costs	**$0**

* Withdrawal of higher queued projects will cause a restudy and may result in higher costs

11.8 G-T: THERMAL POWER FLOW ANALYSIS (CONSTRAINTS REQUIRING TRANSMISSION REINFORCEMENT)

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	427.05	427.05	0.24424	-	JONES STATION - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	427.05	427.05	0.24424	-	JONES STATION - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	1022.0	1124.0	0.21582	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	1022.0	1124.0	0.21582	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	560.0	644.0	0.19543	-	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	560.0	644.0	0.19543	-	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	616.0	700.0	0.19543	-	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	616.0	700.0	0.19543	-	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	956.0	956.0	0.18800	-	CIMARRON - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	1195.0	1195.0	0.18800	-	GRACEMONT - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	560.0	560.0	0.17718	-	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	1792.0	1972.0	0.17611	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	1792.0	1972.0	0.17611	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	1792.0	1972.0	0.17505	-	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	1792.0	1792.0	0.17160	-	BORDER 7345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	1330.0	1940.0	0.16814	-	CHISHOLM7 345.00 - G16-037-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	1330.0	1940.0	0.16814	-	G16-037-TAP 345.00 - GRACEMONT 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	987.2	1082.8	0.16462	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	987.2	1082.8	0.16462	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	987.16	1082.77	0.13510	-	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	956.09	1051.7	0.13510	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	956.09	1051.7	0.13510	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	0.0	0.0	0.11953	-	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	557.0	557.0	0.11583	-	BUSHLAND INTERCHANGE - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	557.0	557.0	0.11583	-	BUSHLAND INTERCHANGE - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	0.0	0.0	0.10704	-	P12:230:AEPW-SPS:SWEETWT6:WHEELER 6
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	329.05	360.92	0.10461	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	329.05	360.92	0.10461	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	557.0	557.0	0.10431	-	NEWHART 230 - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	329.0	360.9	0.10224	-	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	329.0	360.9	0.10224	-	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	556.53	611.5	0.09521	-	NEWHART 230 - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	1420.0	1775.0	0.09491	-	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	1420.0	1775.0	0.09491	-	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	329.05	360.92	0.09307	-	AMARILLO SOUTH INTERCHANGE - G15031_T 230.00 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	1793.0	1793.0	0.07341	-	G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	1716.0	1793.0	0.07341	-	G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	439.0	439.0	0.06601	-	CHISHOLM6 230.00 - ELK CITY 230KV 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	450.0	450.0	0.06601	-	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	450.0	450.0	0.06601	-	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	556.92	556.92	0.05954	-	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	556.92	556.92	0.05954	-	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	439.0	439.0	0.05352	-	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	557.0	557.0	0.05352	-	STATELINE INTERCHANGE - STLN-DEMARC6 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	500.0	723.0	0.05352	-	STLN-DEMARC6 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	329.05	360.92	0.04989	-	MOORE COUNTY INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	329.05	360.92	0.04989	-	MOORE COUNTY INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	329.05	360.92	0.04633	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	329.05	360.92	0.04633	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	557.0	557.0	0.04561	-	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_01		Non-Converged Contingency	557.0	557.0	0.04561	-	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	497.6	547.4	0.23858	-	JONES STATION - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	497.6	547.4	0.23858	-	JONES STATION - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	497.0	547.0	0.23330	-	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	956.0	1042.0	0.21035	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	956.0	1042.0	0.21035	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	478.0	502.0	0.19464	-	CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	478.0	502.0	0.19464	-	CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	560.0	644.0	0.19062	-	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	560.0	644.0	0.19062	-	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	560.0	644.0	0.19062	-	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	560.0	644.0	0.19062	-	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	956.0	956.0	0.18395	-	CIMARRON - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	1195.0	1195.0	0.18395	-	GRACEMONT - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	560.0	560.0	0.17227	-	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	1792.0	1972.0	0.17157	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	1792.0	1972.0	0.17157	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	1792.0	1972.0	0.17088	-	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	1792.0	1792.0	0.16553	-	BORDER 7345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	1330.0	1940.0	0.16371	-	CHISHOLM7 345.00 - G16-037-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	1330.0	1940.0	0.16371	-	G16-037-TAP 345.00 - GRACEMONT 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	956.1	1051.7	0.15533	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	956.1	1051.7	0.15533	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	1398.0	1549.0	0.12875	-	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	1493.0	1493.0	0.12875	-	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	956.09	1051.7	0.12531	-	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	956.09	1051.7	0.12531	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	956.09	1051.7	0.12531	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	478.0	502.0	0.11406	-	BUSHLAND INTERCHANGE - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	478.0	502.0	0.11406	-	BUSHLAND INTERCHANGE - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	0.0	0.0	0.11363	-	P12:230:AEPW:ELKCITY6:SWEETWT6

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	478.0	502.0	0.10303	-	NEWHART 230 - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	318.7	350.57	0.10266	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	318.7	350.57	0.10266	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	318.7	350.6	0.10075	-	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	318.7	350.6	0.10075	-	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	0.0	0.0	0.09972	-	P12:230:AEPW-SPS:SWEETWT6:WHEELER 6
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	0.0	0.0	0.09469	-	P12:345:SPS:J15.1.XRDS.TOLK
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	1420.0	1775.0	0.09422	-	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	1420.0	1775.0	0.09422	-	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	478.05	547.36	0.09314	-	NEWHART 230 - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	318.7	350.57	0.09295	-	AMARILLO SOUTH INTERCHANGE - G15031_T 230.00 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	318.7	350.57	0.09295	-	G15031_T 230.00 - SWISHER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	1792.0	1792.0	0.08881	-	BORDER 7345.00 - CHISHOLM7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	1792.0	1792.0	0.08881	-	BORDER 7345.00 - CHISHOLM7 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	1532.0	1793.0	0.07165	-	G1524G1525 345.00 - THISTLE7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	1532.0	1793.0	0.07165	-	G1524G1525 345.00 - THISTLE7 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	1793.0	1793.0	0.07008	-	G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	1716.0	1793.0	0.07008	-	G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	439.0	439.0	0.06377	-	CHISHOLM6 230.00 - ELK CITY 230KV 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	450.0	450.0	0.06377	-	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	450.0	450.0	0.06377	-	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	717.1	717.1	0.05833	-	HOLCOMB - SETAB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	717.1	717.1	0.05833	-	HOLCOMB - SETAB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	501.95	501.95	0.05608	-	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	501.95	501.95	0.05608	-	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	1413.0	1517.0	0.05208	-	BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	439.0	439.0	0.04986	-	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	502.0	502.0	0.04986	-	STATELINE INTERCHANGE - STLN-DEMARC6 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	500.0	723.0	0.04986	-	STLN-DEMARC6 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	318.7	350.57	0.04727	-	MOORE COUNTY INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	318.7	350.57	0.04727	-	MOORE COUNTY INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	318.7	350.57	0.04337	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	318.7	350.57	0.04337	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	502.0	502.0	0.04251	-	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	502.0	502.0	0.04251	-	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	717.0	926.0	0.03156	-	CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	560.0	560.0	0.03156	-	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_01		Non-Converged Contingency	560.0	560.0	0.03156	-	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17SP	ASGI_16_01		Non-Converged Contingency	956.0	1042.0	0.21695	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17SP	ASGI_16_01		Non-Converged Contingency	1792.0	1972.0	0.17795	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17SP	ASGI_16_01		Non-Converged Contingency	1792.0	1972.0	0.17795	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	478.0	502.0	0.23803	-	CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	478.0	502.0	0.23803	-	CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	497.0	547.0	0.21141	-	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	0.0	0.0	0.20481	-	P12:345:SPS:J07.1.FINN.HITCH
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	956.0	1042.0	0.18071	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	956.0	1042.0	0.18071	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	956.0	1042.0	0.18071	-	OKLAUNION 345KV SWITCHED SHUNT
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	1792.0	1972.0	0.17825	-	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	497.6	547.4	0.17388	-	JONES STATION - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	497.6	547.4	0.17388	-	JONES STATION - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	956.0	956.0	0.16215	-	CIMARRON - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	1195.0	1195.0	0.16215	-	GRACEMONT - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	1792.0	1792.0	0.16195	-	BORDER 7345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	1792.0	1972.0	0.15458	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	1792.0	1972.0	0.15458	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	560.0	644.0	0.14968	-	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	560.0	644.0	0.14968	-	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	560.0	644.0	0.14968	-	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	560.0	644.0	0.14968	-	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	560.0	560.0	0.13091	-	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	1584.0	2098.0	0.12916	-	CHISHOLM7 345.00 - G16-037-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	1584.0	2098.0	0.12916	-	G16-037-TAP 345.00 - GRACEMONT 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	956.1	1051.7	0.12751	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	956.1	1051.7	0.12751	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	956.09	1051.7	0.10859	-	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	956.09	1051.7	0.10859	-	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	1398.0	1549.0	0.10504	-	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	1493.0	1493.0	0.10504	-	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	956.09	1051.7	0.09622	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	956.09	1051.7	0.09622	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	956.09	1051.7	0.09622	-	FINNEY SWITCHING STATION - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	956.09	1051.7	0.09622	-	FINNEY SWITCHING STATION - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	0.0	0.0	0.08851	-	P12:138:WFEC:MSL03
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	478.0	502.0	0.08663	-	BUSHLAND INTERCHANGE - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	478.0	502.0	0.08663	-	BUSHLAND INTERCHANGE - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	478.0	502.0	0.08663	-	BUSHLAND INTERCHANGE 230KV SWITCHED SHUNT
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	478.0	502.0	0.08650	-	NEWHART 230 - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	0.0	0.0	0.08470	-	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	478.0	502.0	0.08419	-	AMARILLO SOUTH INTERCHANGE - G15031_T 230.00 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	478.0	502.0	0.08419	-	G15031_T 230.00 - SWISHER COUNTY INTERCHANGE 230KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	497.0	547.0	0.08050	-	CRAWFISH_DR2230.00 - SWISHER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	318.7	350.57	0.07893	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	318.7	350.57	0.07893	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	318.7	350.6	0.07587	-	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	318.7	350.6	0.07587	-	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	1792.0	1792.0	0.07360	-	BORDER 7345.00 - CHISHOLM7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	1792.0	1792.0	0.07360	-	BORDER 7345.00 - CHISHOLM7 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	1561.0	1793.0	0.07105	-	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	1561.0	1793.0	0.07105	-	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	1561.0	1793.0	0.07105	-	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	1561.0	1793.0	0.07105	-	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	0.0	0.0	0.06665	-	P12:230:AEPW-SPS:SWEETWT6:WHEELER 6
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	560.0	560.0	0.06375	-	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	560.0	560.0	0.06375	-	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	560.0	560.0	0.06375	-	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	1792.0	1792.0	0.05959	-	TUCO INTERCHANGE - YOAKUM_345 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	0.0	0.0	0.05795	-	P12:115:SPS:W40.1.WCANYON.DFSMTH
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	478.05	547.36	0.05645	-	NEWHART 230 - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	1420.0	1775.0	0.05603	-	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	1420.0	1775.0	0.05603	-	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	1420.0	1775.0	0.05603	-	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	1420.0	1775.0	0.05603	-	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	1792.0	1792.0	0.05454	-	BVRCNTY7 345.00 - OPTIMA 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	1792.0	1792.0	0.05454	-	BVRCNTY7 345.00 - OPTIMA 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	1793.0	1793.0	0.05454	-	G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	1716.0	1793.0	0.05454	-	G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	1793.0	1793.0	0.05454	-	G16-003-TAP 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	1716.0	1793.0	0.05454	-	G16-003-TAP 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	1532.0	1793.0	0.05437	-	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	0.0	0.0	0.05316	-	P12:115:SPS:T66.1.RNDALL.HAPPY
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	0.0	0.0	0.05316	-	P12:115:SPS:T67.1.HAPPY.KRESS
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	439.0	439.0	0.05138	-	CHISHOLM6 230.00 - ELK CITY 230KV 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	450.0	450.0	0.05138	-	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	450.0	450.0	0.05138	-	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	785.0	785.0	0.05131	-	MINGO - RED WILLOW 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	785.0	785.0	0.05131	-	MINGO - RED WILLOW 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	0.0	0.0	0.05106	-	P12:115:SPS:T59.1.CARGIL.CURRY
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	762.5	762.5	0.05045	-	MINGO - SETAB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	762.5	762.5	0.05045	-	MINGO - SETAB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	717.1	717.1	0.05018	-	HOLCOMB - SETAB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	717.1	717.1	0.05018	-	HOLCOMB - SETAB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	1195.0	1195.0	0.04887	-	JOHNSON COUNTY - SUNNYSIDE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	1195.0	1195.0	0.04813	-	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	0.0	0.0	0.04804	-	P12:138:WFEC:MSL14
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	501.95	501.95	0.04609	-	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	501.95	501.95	0.04609	-	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	478.05	501.55	0.04525	-	AMARILLO SOUTH INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	478.05	501.55	0.04525	-	AMARILLO SOUTH INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	1505.0	1793.0	0.04390	-	G13-010T 345.00 - POST ROCK 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	1505.0	1793.0	0.04390	-	G16-049-TAP 345.00 - SPEARVILLE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	0.0	0.0	0.04384	-	917X
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	1504.0	1792.0	0.04275	-	AXTELL - G16-050-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	1504.0	1792.0	0.04275	-	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	1141.0	1195.0	0.03880	-	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	1141.0	1195.0	0.03880	-	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	318.7	350.57	0.03878	-	MOORE COUNTY INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	318.7	350.57	0.03878	-	MOORE COUNTY INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	726.6	726.6	0.03766	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	726.6	726.6	0.03766	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	1413.0	1517.0	0.03766	-	BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	1413.0	1517.0	0.03766	-	BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	0.0	0.0	0.03462	-	P12:115:SPS:T04.1.DFSMTH.CASTRO
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	421.0	439.0	0.03333	-	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	348.58	381.24	0.03333	-	STATELINE INTERCHANGE - STLN-DEMARC6 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	500.0	723.0	0.03333	-	STLN-DEMARC6 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	0.0	0.0	0.03072	-	P12:138:AEPW:REDROCKRD4:WTH_JCT4
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_01		Non-Converged Contingency	0.0	0.0	0.03008	-	P12:230:SPS:K43.1.PRNGLE.HARR_E
FDNSLock-Blown up	06ALL	0	20SP	ASGI_16_01		Non-Converged Contingency	956.0	1042.0	0.21698	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	ASGI_16_01		Non-Converged Contingency	1022.0	1124.0	0.21182	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	ASGI_16_01		Non-Converged Contingency	1792.0	1972.0	0.21099	-	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	ASGI_16_01		Non-Converged Contingency	1792.0	1792.0	0.18417	-	BORDER 7345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	ASGI_16_01		Non-Converged Contingency	1792.0	1972.0	0.17816	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	ASGI_16_01		Non-Converged Contingency	1792.0	1972.0	0.17816	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20WP	ASGI_16_01		Non-Converged Contingency	1195.0	1195.0	0.17468	-	GRACEMONT - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	ASGI_16_01		Non-Converged Contingency	987.2	1082.8	0.15462	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	ASGI_16_01		Non-Converged Contingency	1584.0	2098.0	0.15402	-	CHISHOLM7 345.00 - G16-037-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	ASGI_16_01		Non-Converged Contingency	1584.0	2098.0	0.15402	-	G16-037-TAP 345.00 - GRACEMONT 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	ASGI_16_01		Non-Converged Contingency	987.16	1082.77	0.12925	-	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	ASGI_16_01		Non-Converged Contingency	956.09	1051.7	0.11489	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	ASGI_16_01		Non-Converged Contingency	987.16	1082.77	0.11489	-	FINNEY SWITCHING STATION - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	ASGI_16_01		Non-Converged Contingency	557.0	557.0	0.10118	-	BUSHLAND INTERCHANGE - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNSLock-Blown up	06ALL	0	20WP	ASGI_16_01		Non-Converged Contingency	557.0	557.0	0.09804	-	NEWHART 230 - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	ASGI_16_01		Non-Converged Contingency	1792.0	1792.0	0.09489	-	TUCO INTERCHANGE - YOAKUM_345 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	ASGI_16_01		Non-Converged Contingency	478.0	502.0	0.09253	-	AMARILLO SOUTH INTERCHANGE - G15031_T 230.00 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	ASGI_16_01		Non-Converged Contingency	329.05	360.92	0.09223	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	ASGI_16_01		Non-Converged Contingency	329.0	360.9	0.08919	-	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	ASGI_16_01		Non-Converged Contingency	421.0	439.0	0.04430	-	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	ASGI_16_01		Non-Converged Contingency	329.05	360.92	0.03879	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	2	16WP	ASGI_16_01		Non-Converged Contingency	1022.0	1124.0	0.21578	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20L	ASGI_16_01		Non-Converged Contingency	956.0	1042.0	0.18104	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20L	ASGI_16_01		Non-Converged Contingency	956.0	1042.0	0.18104	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20L	ASGI_16_01		Non-Converged Contingency	1792.0	1972.0	0.15565	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20L	ASGI_16_01		Non-Converged Contingency	1792.0	1972.0	0.15565	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	2	20L	ASGI_16_01		Non-Converged Contingency	956.1	1051.7	0.12833	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20L	ASGI_16_01		Non-Converged Contingency	956.1	1051.7	0.12833	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20WP	ASGI_16_01		Non-Converged Contingency	1022.0	1124.0	0.21157	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20WP	ASGI_16_01		Non-Converged Contingency	1022.0	1124.0	0.21157	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20WP	ASGI_16_01		Non-Converged Contingency	1792.0	1972.0	0.17890	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20WP	ASGI_16_01		Non-Converged Contingency	1792.0	1972.0	0.17890	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	3	17G	ASGI_16_01		Non-Converged Contingency	956.0	1042.0	0.21785	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	3	20L	ASGI_16_01		Non-Converged Contingency	956.0	1042.0	0.18249	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	3	20L	ASGI_16_01		Non-Converged Contingency	956.0	1042.0	0.18249	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	3	20L	ASGI_16_01		Non-Converged Contingency	1792.0	1972.0	0.15706	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	3	20L	ASGI_16_01		Non-Converged Contingency	1792.0	1972.0	0.15706	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	3	20WP	ASGI_16_01		Non-Converged Contingency	1022.0	1124.0	0.21343	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	3	20WP	ASGI_16_01		Non-Converged Contingency	1022.0	1124.0	0.21343	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	0	20WP	ASGI_16_01	FROM->TO	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1	329.05	360.92	0.09223	101.1848	BASE CASE
FDNS	06ALL	0	20WP	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23710	119.3308	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	0	16WP	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25313	118.0707	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	0	20WP	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23710	114.0226	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	0	16WP	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25313	113.137	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	0	17SP	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25419	111.5106	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	0	17SP	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25419	106.2194	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	0	20SP	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24369	102.8346	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	0	17SP	ASGI_16_01	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.32588	160.0401	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	0	20SP	ASGI_16_01	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.32763	159.952	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	0	20SP	ASGI_16_01	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.32763	154.1703	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	0	17SP	ASGI_16_01	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.32588	153.9968	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	0	20WP	ASGI_16_01	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.21287	103.5915	TUCO INTERCHANGE (GE_M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	20WP	ASGI_16_01	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.21287	103.5915	TUCO INTERCHANGE (GE_M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	20WP	ASGI_16_01	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.21287	103.5915	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	0	20WP	ASGI_16_01	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.21287	103.5915	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	0	20WP	ASGI_16_01	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.21287	99	TUCO INTERCHANGE (GE_M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	20WP	ASGI_16_01	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.21287	99	TUCO INTERCHANGE (GE_M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	20WP	ASGI_16_01	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.21287	99	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	0	20WP	ASGI_16_01	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.21287	99	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	0	20SP	ASGI_16_01	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.40649	187.3884	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	0	17SP	ASGI_16_01	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.39369	185.0941	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	0	20WP	ASGI_16_01	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	552.0	608.0	0.29788	100.1549	TUCO INTERCHANGE (GE_M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	20WP	ASGI_16_01	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	552.0	608.0	0.29788	100.1549	TUCO INTERCHANGE (GE_M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	20WP	ASGI_16_01	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	552.0	608.0	0.29788	100.1549	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	0	20WP	ASGI_16_01	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	552.0	608.0	0.29788	100.1549	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	0	17SP	ASGI_16_01	TO->FROM	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1	318.7	350.6	0.09845	114.5202	BASE CASE
FDNS	06ALL	0	20SP	ASGI_16_01	TO->FROM	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1	318.7	350.6	0.09160	108.9563	BASE CASE
FDNS	06ALL	0	17G	ASGI_16_01	TO->FROM	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1	318.7	350.57	0.04337	100.3944	BASE CASE
FDNS	00	0	25SP	ASGI_16_01	TO->FROM	TERRY COUNTY INTERCHANGE - WOLFFORTH INTERCHANGE 115KV CKT 1	119.51	153.97	0.19919	107.3161	TUCO INTERCHANGE - YOAKUM_345 345.00 345KV CKT 1
FDNS	06ALL	2	17G	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24795	116.7163	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	2	16WP	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25348	115.1362	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	2	20WP	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23746	114.0499	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	2	17G	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24795	111.498	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	2	20L	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.21452	110.6646	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	2	17SP	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25423	110.352	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	2	16WP	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25348	109.7596	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	2	20WP	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23746	108.768	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	2	20L	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.21452	105.663	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	2	17SP	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25423	104.9863	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	2	20SP	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24367	101.7908	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	2	16WP	ASGI_16_01	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.26266	111.1535	TUCO INTERCHANGE (GE_M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	16WP	ASGI_16_01	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.26266	111.1535	TUCO INTERCHANGE (GE_M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	16WP	ASGI_16_01	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.26266	111.1535	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	16WP	ASGI_16_01	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.26266	111.1535	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	16WP	ASGI_16_01	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.26266	109.6686	TUCO INTERCHANGE (GE_M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	16WP	ASGI_16_01	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.26266	109.6686	TUCO INTERCHANGE (GE_M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	16WP	ASGI_16_01	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.26266	109.6686	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	16WP	ASGI_16_01	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.26266	109.6686	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17G	ASGI_16_01	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.25574	105.2982	TUCO INTERCHANGE (GE_M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17G	ASGI_16_01	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.25574	105.2982	TUCO INTERCHANGE (GE_M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17G	ASGI_16_01	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.25574	105.2982	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17G	ASGI_16_01	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.25574	105.2982	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17G	ASGI_16_01	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.25574	103.5752	TUCO INTERCHANGE (GE_M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17G	ASGI_16_01	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.25574	103.5752	TUCO INTERCHANGE (GE_M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17G	ASGI_16_01	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.25574	103.5752	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	06ALL	2	17G	ASGI_16_01	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.25574	103.5752	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	20WP	ASGI_16_01	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.21084	99.2	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	20WP	ASGI_16_01	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.21084	99.2	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	20WP	ASGI_16_01	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.21084	99.2	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	20WP	ASGI_16_01	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.21084	99.2	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	20L	ASGI_16_01	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.27504	100.9609	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	20L	ASGI_16_01	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.27504	100.9609	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	20L	ASGI_16_01	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.27504	100.9609	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	20L	ASGI_16_01	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.27504	100.9609	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17G	ASGI_16_01	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.31904	100.5203	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17G	ASGI_16_01	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.31904	100.5203	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17G	ASGI_16_01	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.31904	100.5203	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17G	ASGI_16_01	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.31904	100.5203	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17SP	ASGI_16_01	TO->FROM	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1	318.7	350.6	0.09846	111.1037	BASE CASE
FDNS	06ALL	2	20SP	ASGI_16_01	TO->FROM	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1	318.7	350.6	0.09160	105.6192	BASE CASE
FDNS	06ALL	2	16WP	ASGI_16_01	FROM->TO	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	560.0	644.0	0.29443	101.527	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	16WP	ASGI_16_01	FROM->TO	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	560.0	644.0	0.29443	101.527	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	16WP	ASGI_16_01	FROM->TO	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	560.0	644.0	0.29443	99.4	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	16WP	ASGI_16_01	FROM->TO	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	560.0	644.0	0.29443	99.4	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	3	17G	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25354	118.6959	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	3	16WP	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25935	117.0897	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	3	20WP	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23894	115.2141	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	3	17G	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25354	113.4916	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	3	20L	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.21594	111.7529	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	3	17SP	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25894	111.7525	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	3	16WP	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25935	111.7148	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	3	20WP	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23894	110.0424	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	3	20L	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.21594	106.7271	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	3	17SP	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25894	106.4339	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	3	20SP	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24500	102.7473	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	4	17G	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24117	116.0714	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	4	16WP	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24687	114.334	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	4	20WP	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.22589	112.0627	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	4	17G	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24117	110.887	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	4	16WP	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24687	109.0011	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	4	20L	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.20515	108.4948	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	4	17SP	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24638	108.3281	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	4	20WP	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.22589	106.6907	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	4	20L	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.20515	103.5292	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	4	17SP	ASGI_16_01	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24638	102.9885	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	0.0	0.0	0.26685	-	P12:230:AEPW-SPS:SWEETWT6:WHEELER 6
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	987.2	1082.8	0.24770	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	987.2	1082.8	0.24770	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	0.0	0.0	0.19922	-	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	987.16	1082.77	0.17404	-	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	956.09	1051.7	0.17404	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	956.09	1051.7	0.17404	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	1330.0	1940.0	0.15658	-	CHISHOLM7 345.00 - G16-037-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	1330.0	1940.0	0.15658	-	G16-037-TAP 345.00 - GRACEMONT 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	956.0	956.0	0.14881	-	CIMARRON - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	1195.0	1195.0	0.14881	-	GRACEMONT - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	1022.0	1124.0	0.13923	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	1022.0	1124.0	0.13923	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	439.0	439.0	0.13343	-	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	557.0	557.0	0.13343	-	STATELINE INTERCHANGE - STLN-DEMARC6 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	500.0	723.0	0.13343	-	STLN-DEMARC6 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	1793.0	1793.0	0.13202	-	G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	1716.0	1793.0	0.13202	-	G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	560.0	560.0	0.12409	-	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	1420.0	1775.0	0.11892	-	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	1420.0	1775.0	0.11892	-	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	557.0	557.0	0.11255	-	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	557.0	557.0	0.11255	-	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	329.05	360.92	0.10680	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	329.05	360.92	0.10680	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	560.0	644.0	0.09896	-	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	560.0	644.0	0.09896	-	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	616.0	700.0	0.09896	-	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	616.0	700.0	0.09896	-	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	1792.0	1792.0	0.09383	-	BORDER 7345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	556.92	556.92	0.09254	-	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	556.92	556.92	0.09254	-	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	1792.0	1972.0	0.09139	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	1792.0	1972.0	0.09139	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	329.05	360.92	0.06918	-	MOORE COUNTY INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	329.05	360.92	0.06918	-	MOORE COUNTY INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	439.0	439.0	0.06579	-	CHISHOLM6 230.00 - ELK CITY 230KV 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	450.0	450.0	0.06579	-	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	450.0	450.0	0.06579	-	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	1792.0	1972.0	0.05869	-	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	552.14	607.52	0.05527	-	TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	552.14	607.52	0.05527	-	TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	329.05	360.92	0.03326	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	ASGI_16_04		Non-Converged Contingency	329.05	360.92	0.03326	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	0.0	0.0	0.25953	-	P12:230:AEPW-SPS:SWEETWT6:WHEELER 6
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	956.1	1051.7	0.23840	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	956.1	1051.7	0.23840	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	0.0	0.0	0.19332	-	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	956.09	1051.7	0.16425	-	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	956.09	1051.7	0.16425	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	956.09	1051.7	0.16425	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	1330.0	1940.0	0.15215	-	CHISHOLM7 345.00 - G16-037-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	1330.0	1940.0	0.15215	-	G16-037-TAP 345.00 - GRACEMONT 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	956.0	956.0	0.14477	-	CIMARRON - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	1195.0	1195.0	0.14477	-	GRACEMONT - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	956.0	1042.0	0.13377	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	956.0	1042.0	0.13377	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	439.0	439.0	0.12976	-	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	502.0	502.0	0.12976	-	STATELINE INTERCHANGE - STLN-DEMARC6 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	500.0	723.0	0.12976	-	STLN-DEMARC6 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	1793.0	1793.0	0.12870	-	G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	1716.0	1793.0	0.12870	-	G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	560.0	560.0	0.11918	-	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	1420.0	1775.0	0.11823	-	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	1420.0	1775.0	0.11823	-	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	502.0	502.0	0.10946	-	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	502.0	502.0	0.10946	-	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	1398.0	1549.0	0.10517	-	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	1493.0	1493.0	0.10517	-	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	318.7	350.57	0.10384	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	318.7	350.57	0.10384	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	560.0	644.0	0.09415	-	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	560.0	644.0	0.09415	-	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	560.0	644.0	0.09415	-	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	560.0	644.0	0.09415	-	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	501.95	501.95	0.08908	-	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	501.95	501.95	0.08908	-	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	1792.0	1792.0	0.08776	-	BORDER 7345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	1792.0	1972.0	0.08685	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	1792.0	1972.0	0.08685	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	1532.0	1793.0	0.08204	-	G1524G1525 345.00 - THISTLE7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	1532.0	1793.0	0.08204	-	G1524G1525 345.00 - THISTLE7 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	1413.0	1517.0	0.07706	-	BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	717.1	717.1	0.06985	-	HOLCOMB - SETAB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	717.1	717.1	0.06985	-	HOLCOMB - SETAB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	318.7	350.57	0.06656	-	MOORE COUNTY INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	318.7	350.57	0.06656	-	MOORE COUNTY INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	439.0	439.0	0.06355	-	CHISHOLM6 230.00 - ELK CITY 230KV 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	450.0	450.0	0.06355	-	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	450.0	450.0	0.06355	-	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	1792.0	1972.0	0.05453	-	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	0.0	0.0	0.05332	-	P12:115:SPS:V29.1.NICHLS.KNGSMLL
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	478.05	546.96	0.05256	-	TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	478.05	546.96	0.05256	-	TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	1792.0	1792.0	0.04297	-	BORDER 7345.00 - CHISHOLM7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	1792.0	1792.0	0.04297	-	BORDER 7345.00 - CHISHOLM7 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	318.7	350.57	0.03131	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	318.7	350.57	0.03131	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	ASGI_16_04		Non-Converged Contingency	159.0	175.0	0.03053	-	CONWAY SUB - NICHOLS STATION 115KV CKT 1
FDNSLock-Blown up	06ALL	0	17SP	ASGI_16_04		Non-Converged Contingency	956.0	1042.0	0.13870	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17SP	ASGI_16_04		Non-Converged Contingency	1792.0	1972.0	0.09153	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17SP	ASGI_16_04		Non-Converged Contingency	1792.0	1972.0	0.09153	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	251.0	251.0	0.72741	-	PALO DURO SUB - RANDALL COUNTY INTERCHANGE 115KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	0.0	0.0	0.45481	-	P12:115:SPS:T66.1.RNDALL.HAPPY
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	0.0	0.0	0.28273	-	P12:345:SPS:J07.1.FINN.HITCH
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	0.0	0.0	0.23226	-	P12:230:AEPW-SPS:SWEETWT6:WHEELER 6
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	956.1	1051.7	0.21643	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	956.1	1051.7	0.21643	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	0.0	0.0	0.16668	-	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	478.0	502.0	0.15375	-	CHERRY1 - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	478.0	502.0	0.15375	-	CHERRY1 - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	956.09	1051.7	0.14984	-	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	956.09	1051.7	0.14984	-	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	318.7	350.57	0.13307	-	Harrington Station East Bus - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	318.7	350.57	0.13307	-	Harrington Station East Bus - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	956.09	1051.7	0.13289	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	956.09	1051.7	0.13289	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	956.09	1051.7	0.13289	-	FINNEY SWITCHING STATION - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	956.09	1051.7	0.13289	-	FINNEY SWITCHING STATION - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	956.0	956.0	0.11774	-	CIMARRON - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	1195.0	1195.0	0.11774	-	GRACEMONT - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	1792.0	1792.0	0.11684	-	BVRCNTY7 345.00 - OPTIMA 345.00 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	1792.0	1792.0	0.11684	-	BVRCNTY7 345.00 - OPTIMA 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	1793.0	1793.0	0.11684	-	G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	1716.0	1793.0	0.11684	-	G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	1793.0	1793.0	0.11684	-	G16-003-TAP 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	1716.0	1793.0	0.11684	-	G16-003-TAP 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	421.0	439.0	0.11613	-	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	348.58	381.24	0.11613	-	STATELINE INTERCHANGE - STLN-DEMARC6 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	500.0	723.0	0.11613	-	STLN-DEMARC6 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	1584.0	2098.0	0.11418	-	CHISHOLM7 345.00 - G16-037-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	1584.0	2098.0	0.11418	-	G16-037-TAP 345.00 - GRACEMONT 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	560.0	560.0	0.10821	-	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	560.0	560.0	0.10821	-	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	560.0	560.0	0.10821	-	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	956.0	1042.0	0.09919	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	956.0	1042.0	0.09919	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	956.0	1042.0	0.09919	-	OKLAUNION 345KV SWITCHED SHUNT
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	318.7	350.57	0.09787	-	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	318.7	350.57	0.09787	-	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	560.0	560.0	0.09494	-	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	318.7	350.57	0.09215	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	318.7	350.57	0.09215	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	478.05	501.55	0.08773	-	AMARILLO SOUTH INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	478.05	501.55	0.08773	-	AMARILLO SOUTH INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	1792.0	1792.0	0.08321	-	BORDER 7345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	501.95	501.95	0.08113	-	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	501.95	501.95	0.08113	-	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	1398.0	1549.0	0.07968	-	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	1493.0	1493.0	0.07968	-	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	1420.0	1775.0	0.07452	-	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	1420.0	1775.0	0.07452	-	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	1420.0	1775.0	0.07452	-	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	1420.0	1775.0	0.07452	-	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	0.0	0.0	0.07423	-	P12:138:WFEC:MSL03
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	1561.0	1793.0	0.07138	-	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	1561.0	1793.0	0.07138	-	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	1561.0	1793.0	0.07138	-	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	1561.0	1793.0	0.07138	-	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	560.0	644.0	0.06998	-	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	560.0	644.0	0.06998	-	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	560.0	644.0	0.06998	-	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	560.0	644.0	0.06998	-	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	1792.0	1972.0	0.06590	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	1792.0	1972.0	0.06590	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	675.0	743.0	0.06558	-	CHISHOLM7 345.00 () 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	1532.0	1793.0	0.06319	-	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	726.6	726.6	0.06305	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	726.6	726.6	0.06305	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	1413.0	1517.0	0.06305	-	BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	1413.0	1517.0	0.06305	-	BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	762.5	762.5	0.06165	-	MINGO - SETAB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	762.5	762.5	0.06165	-	MINGO - SETAB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	717.1	717.1	0.06155	-	HOLCOMB - SETAB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	717.1	717.1	0.06155	-	HOLCOMB - SETAB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	785.0	785.0	0.06138	-	MINGO - RED WILLOW 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	785.0	785.0	0.06138	-	MINGO - RED WILLOW 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	318.7	350.57	0.05997	-	MOORE COUNTY INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	318.7	350.57	0.05997	-	MOORE COUNTY INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	0.0	0.0	0.05671	-	P12:230:SPS:K43.1.PRNGLE.HARR_E
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	0.0	0.0	0.05486	-	P12:115:SPS:T53.1.NICHLS.KIRBY
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	0.0	0.0	0.05276	-	P12:115:SPS:W08.1.HITCH.LASLEY
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	1195.0	1195.0	0.05058	-	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	439.0	439.0	0.05055	-	CHISHOLM6 230.00 - ELK CITY 230KV 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	450.0	450.0	0.05055	-	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	450.0	450.0	0.05055	-	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	1505.0	1793.0	0.05020	-	G13-010T 345.00 - POST ROCK 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	1505.0	1793.0	0.05020	-	G16-049-TAP 345.00 - SPEARVILLE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	0.0	0.0	0.04902	-	P12:115:SPS:V29.1.NICHLS.KNGSMLL
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	1504.0	1792.0	0.04649	-	AXTELL - G16-050-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	1504.0	1792.0	0.04649	-	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	0.0	0.0	0.04639	-	917X
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	0.0	0.0	0.04436	-	P12:345:SPS:J14.1.EDDY.XRDS
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	0.0	0.0	0.04053	-	P12:138:WFEC:MSL14
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	0.0	0.0	0.03964	-	P12:115:SPS:T54.1.KIRBY.SHM(520)
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	0.0	0.0	0.03964	-	P12:138:AEPW:SHAM4WT:CHILD4WT
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	1141.0	1195.0	0.03911	-	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	1141.0	1195.0	0.03911	-	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	159.35	159.95	0.03888	-	Hansford County Switch Station - SPEARMAN INTERCHANGE 115KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	159.35	159.95	0.03888	-	Hansford County Switch Station - SPEARMAN INTERCHANGE 115KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	159.95	159.95	0.03888	-	HITCHLAND INTERCHANGE - Hansford County Switch Station 115KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	159.95	159.95	0.03888	-	HITCHLAND INTERCHANGE - Hansford County Switch Station 115KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	0.0	0.0	0.03876	-	P12:69:AEPW:NWMEMPH2:CHLDR2WT

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	1792.0	1972.0	0.03687	-	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	1195.0	1195.0	0.03644	-	JOHNSON COUNTY - SUNNYSIDE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	158.95	159.95	0.03459	-	PRINGLE INTERCHANGE - SPEARMAN INTERCHANGE 115KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	158.95	159.95	0.03459	-	PRINGLE INTERCHANGE - SPEARMAN INTERCHANGE 115KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	239.0	239.0	0.03340	-	MOORE COUNTY INTERCHANGE EAST BUS 115KV SWITCHED SHUNT
FDNSLock-Blown up	06ALL	0	20L	ASGI_16_04		Non-Converged Contingency	478.0	478.0	0.03043	-	EDDY COUNTY INTERCHANGE - EDDY_NORTH 6230.00 230KV CKT @1
FDNSLock-Blown up	06ALL	0	20SP	ASGI_16_04		Non-Converged Contingency	956.0	1042.0	0.13547	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	ASGI_16_04		Non-Converged Contingency	987.2	1082.8	0.24352	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	ASGI_16_04		Non-Converged Contingency	987.16	1082.77	0.17049	-	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	ASGI_16_04		Non-Converged Contingency	956.09	1051.7	0.15155	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	ASGI_16_04		Non-Converged Contingency	987.16	1082.77	0.15155	-	FINNEY SWITCHING STATION - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	ASGI_16_04		Non-Converged Contingency	1584.0	2098.0	0.13904	-	CHISHOLM7 345.00 - G16-037-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	ASGI_16_04		Non-Converged Contingency	1584.0	2098.0	0.13904	-	G16-037-TAP 345.00 - GRACEMONT 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	ASGI_16_04		Non-Converged Contingency	1022.0	1124.0	0.13032	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	ASGI_16_04		Non-Converged Contingency	1195.0	1195.0	0.13028	-	GRACEMONT - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	ASGI_16_04		Non-Converged Contingency	421.0	439.0	0.12710	-	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	ASGI_16_04		Non-Converged Contingency	1792.0	1792.0	0.10544	-	BORDER 7345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	ASGI_16_04		Non-Converged Contingency	329.05	360.92	0.10158	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	ASGI_16_04		Non-Converged Contingency	1792.0	1972.0	0.08950	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	ASGI_16_04		Non-Converged Contingency	1792.0	1972.0	0.08950	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20WP	ASGI_16_04		Non-Converged Contingency	1792.0	1972.0	0.06962	-	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	ASGI_16_04		Non-Converged Contingency	1792.0	1792.0	0.03138	-	TUCO INTERCHANGE - YOAKUM_345 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	ASGI_16_04		Non-Converged Contingency	329.05	360.92	0.03073	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	2	16WP	ASGI_16_04		Non-Converged Contingency	1022.0	1124.0	0.13942	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20L	ASGI_16_04		Non-Converged Contingency	956.1	1051.7	0.21730	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20L	ASGI_16_04		Non-Converged Contingency	956.1	1051.7	0.21730	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20L	ASGI_16_04		Non-Converged Contingency	956.0	1042.0	0.09993	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20L	ASGI_16_04		Non-Converged Contingency	956.0	1042.0	0.09993	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20L	ASGI_16_04		Non-Converged Contingency	1792.0	1972.0	0.06669	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20L	ASGI_16_04		Non-Converged Contingency	1792.0	1972.0	0.06669	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	2	20WP	ASGI_16_04		Non-Converged Contingency	1022.0	1124.0	0.13047	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20WP	ASGI_16_04		Non-Converged Contingency	1022.0	1124.0	0.13047	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20WP	ASGI_16_04		Non-Converged Contingency	1792.0	1972.0	0.08994	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20WP	ASGI_16_04		Non-Converged Contingency	1792.0	1972.0	0.08994	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	3	17G	ASGI_16_04		Non-Converged Contingency	956.0	1042.0	0.13881	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	3	20L	ASGI_16_04		Non-Converged Contingency	956.0	1042.0	0.10242	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	3	20L	ASGI_16_04		Non-Converged Contingency	956.0	1042.0	0.10242	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	3	20L	ASGI_16_04		Non-Converged Contingency	1792.0	1972.0	0.06927	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	3	20L	ASGI_16_04		Non-Converged Contingency	1792.0	1972.0	0.06927	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	3	20WP	ASGI_16_04		Non-Converged Contingency	1022.0	1124.0	0.13337	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	3	20WP	ASGI_16_04		Non-Converged Contingency	1022.0	1124.0	0.13337	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	3	20WP	ASGI_16_04		Non-Converged Contingency	1022.0	1124.0	0.13337	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	0	20WP	ASGI_16_04	FROM->TO	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1	329.05	360.92	0.03073	101.1848	BASE CASE
FDNS	06ALL	0	16WP	ASGI_16_04	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.20231	118.0707	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	0	16WP	ASGI_16_04	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.20231	113.137	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	0	17SP	ASGI_16_04	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.20207	111.5106	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	0	17SP	ASGI_16_04	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.20207	106.2194	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	0	17G	ASGI_16_04	TO->FROM	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1	318.7	350.57	0.10384	100.3944	BASE CASE
FDNS	06ALL	0	17G	ASGI_16_04	FROM->TO	Harrington Station East Bus - POTTER COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.19918	117.9679	CHERRY1 - HARRINGTON STATION 230KV CKT 1
FDNS	06ALL	0	17G	ASGI_16_04	FROM->TO	Harrington Station East Bus - POTTER COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.19918	117.9679	CHERRY1 - HARRINGTON STATION 230KV CKT 1
FDNS	06ALL	0	17G	ASGI_16_04	FROM->TO	Harrington Station East Bus - POTTER COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.24968	117.1659	CHERRY1 - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	ASGI_16_04	FROM->TO	Harrington Station East Bus - POTTER COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.24968	117.1659	CHERRY1 - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	ASGI_16_04	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.19717	116.7163	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	2	16WP	ASGI_16_04	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.20269	115.1362	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	2	17G	ASGI_16_04	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.19717	111.498	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	2	17SP	ASGI_16_04	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.20214	110.352	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	2	16WP	ASGI_16_04	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.20269	109.7596	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	2	17SP	ASGI_16_04	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.20214	104.9863	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	2	17G	ASGI_16_04	FROM->TO	Harrington Station East Bus - POTTER COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.24963	101.2908	CHERRY1 - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	ASGI_16_04	FROM->TO	Harrington Station East Bus - POTTER COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.24963	101.2908	CHERRY1 - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	ASGI_16_04	FROM->TO	Harrington Station East Bus - POTTER COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.19913	100.8956	CHERRY1 - HARRINGTON STATION 230KV CKT 1
FDNS	06ALL	2	17G	ASGI_16_04	FROM->TO	Harrington Station East Bus - POTTER COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.19913	100.8956	CHERRY1 - HARRINGTON STATION 230KV CKT 1
FDNS	06ALL	3	17G	ASGI_16_04	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.20085	118.6959	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	3	16WP	ASGI_16_04	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.20666	117.0897	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	3	17G	ASGI_16_04	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.20085	113.4916	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	3	17SP	ASGI_16_04	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.20556	111.7525	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	3	16WP	ASGI_16_04	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.20666	111.7148	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	3	17SP	ASGI_16_04	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.20556	106.4339	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	3	17G	ASGI_16_04	FROM->TO	Harrington Station East Bus - POTTER COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.25202	102.3676	CHERRY1 - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	17G	ASGI_16_04	FROM->TO	Harrington Station East Bus - POTTER COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.20137	101.6861	CHERRY1 - HARRINGTON STATION 230KV CKT 1
FDNS	06ALL	4	17G	ASGI_16_04	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.20443	116.0714	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	4	16WP	ASGI_16_04	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.21013	114.334	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	4	17G	ASGI_16_04	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.20443	110.887	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	4	16WP	ASGI_16_04	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.21013	109.0011	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	4	17SP	ASGI_16_04	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.20899	108.3281	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	4	17SP	ASGI_16_04	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.20899	102.9885	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	00NR	0	25SP	G15_041	FROM->TO	CARLISLE INTERCHANGE - LP-DOUD_TP 3115.00 115KV CKT 1	159.0	160.0	0.03263	117.5376	WOLFFORTH INTERCHANGE (WH 7001668) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G15_041	FROM->TO	CARLISLE INTERCHANGE - LP-DOUD_TP 3115.00 115KV CKT 1	159.0	160.0	0.03263	117.5376	WOLFFORTH INTERCHANGE (WH 7001668) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	0	16WP	G15_041	FROM->TO	CARLISLE INTERCHANGE - LP-DOUD_TP 3115.00 115KV CKT 1	165.0	177.0	0.12077	114.1141	LUBBOCK SOUTH INTERCHANGE - WOLFFORTH INTERCHANGE 230KV CKT 1
FDNS	00NR	0	16WP	G15_041	FROM->TO	CARLISLE INTERCHANGE - LP-DOUD_TP 3115.00 115KV CKT 1	165.0	177.0	0.12077	114.1141	LUBBOCK SOUTH INTERCHANGE - WOLFFORTH INTERCHANGE 230KV CKT 1
FDNS	00NR	0	25SP	G15_041	FROM->TO	CARLISLE INTERCHANGE - LP-DOUD_TP 3115.00 115KV CKT 1	159.0	160.0	0.04901	100.6178	TUCO INTERCHANGE - YOAKUM_345 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G15_041	FROM->TO	CARLISLE INTERCHANGE (WH XHS70711) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.03834	106.1369	CARLISLE INTERCHANGE - WOLFFORTH INTERCHANGE 230KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	25SP	G15_041	FROM->TO	CARLISLE INTERCHANGE (WH_XHS70711) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.03834	102.854	CARLISLE INTERCHANGE - WOLFFORTH INTERCHANGE 230KV CKT 1
FDNS	06NR	0	17G	G15_041	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.05045	99.8	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06NR	0	20L	G15_041	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.07514	130.0882	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	06NR	0	20L	G15_041	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.07514	127.3397	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	06NR	0	17G	G15_041	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.09110	126.4231	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	06NR	0	17G	G15_041	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.09110	123.812	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	06NR	0	20L	G15_041	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.20000	131.7626	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	06NR	0	17G	G15_041	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.26370	123.0554	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	00NR	0	25SP	G15_041	FROM->TO	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1	560.0	644.0	0.05085	100.2753	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	00NR	0	25SP	G15_041	FROM->TO	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1	560.0	644.0	0.05085	100.2753	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	00NR	0	25SP	G15_041	FROM->TO	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2	560.0	644.0	0.05195	102.658	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G15_041	FROM->TO	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2	560.0	644.0	0.05195	102.658	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G15_041	FROM->TO	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2	560.0	644.0	0.05195	100.8671	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G15_041	FROM->TO	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2	560.0	644.0	0.05195	100.8671	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	00NR	0	16WP	G15_041	FROM->TO	LP-DOUD_TP 3115.00 - SP-WOLF_TP 3115.00 115KV CKT 1	165.0	180.0	0.12077	106.5466	LUBBOCK SOUTH INTERCHANGE - WOLFFORTH INTERCHANGE 230KV CKT 1
FDNS	00NR	0	16WP	G15_041	FROM->TO	LP-DOUD_TP 3115.00 - SP-WOLF_TP 3115.00 115KV CKT 1	165.0	180.0	0.12077	106.5466	LUBBOCK SOUTH INTERCHANGE - WOLFFORTH INTERCHANGE 230KV CKT 1
FDNS	00NR	0	25SP	G15_041	FROM->TO	LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	224.0	0.03596	104.4463	LUBBOCK POWER & LIGHT-SOUTHEAST - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1
FDNS	00NR	0	25SP	G15_041	FROM->TO	LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	224.0	0.03596	104.4034	P12:LPL:SPS:K64.1.LP-SE.LUBBS
FDNS	00NR	0	25SP	G15_041	FROM->TO	LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	224.0	0.03537	100.8865	LUBBOCK EAST INTERCHANGE - LUBBOCK POWER & LIGHT-WADSWORTH 230KV CKT 1
FDNS	00NR	0	25SP	G15_041	FROM->TO	LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	224.0	0.03537	100.8691	P12:230:LPL:K57.1.LP-WADS.LUBBE
FDNS	00NR	0	25SP	G15_041	FROM->TO	LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	224.0	0.03537	100.8647	LUBBOCK POWER & LIGHT-WADSWORTH (SHIH T101038) 230/69/13.5KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G15_041	FROM->TO	LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	224.0	0.03537	100.8647	LUBBOCK POWER & LIGHT-WADSWORTH (SHIH T101038) 230/69/13.5KV TRANSFORMER CKT 1
FDNS	00NR	0	16WP	G15_041	FROM->TO	SP-WOLF_TP 3115.00 - YUMA INTERCHANGE 115KV CKT 1	165.0	180.0	0.12077	100.2424	LUBBOCK SOUTH INTERCHANGE - WOLFFORTH INTERCHANGE 230KV CKT 1
FDNS	00NR	0	16WP	G15_041	FROM->TO	SP-WOLF_TP 3115.00 - YUMA INTERCHANGE 115KV CKT 1	165.0	180.0	0.12077	100.2424	LUBBOCK SOUTH INTERCHANGE - WOLFFORTH INTERCHANGE 230KV CKT 1
FDNS	00NR	0	25SP	G15_041	TO->FROM	TERRY COUNTY INTERCHANGE - WOLFFORTH INTERCHANGE 115KV CKT 1	119.51	153.97	0.06569	104.2732	TUCO INTERCHANGE - YOAKUM_345 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1	250.0	288.0	0.06814	119.2294	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00NR	0	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1	250.0	288.0	0.06814	119.2294	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00NR	0	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1	250.0	288.0	0.06814	113.1677	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00NR	0	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1	250.0	288.0	0.06814	113.1677	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00NR	0	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2	250.0	288.0	0.06814	119.2294	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2	250.0	288.0	0.06814	119.2294	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2	250.0	288.0	0.06814	113.1677	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2	250.0	288.0	0.06814	113.1677	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	2	25SP	G15_041	FROM->TO	CARLISLE INTERCHANGE - LP-DOUD_TP 3115.00 115KV CKT 1	159.0	160.0	0.03321	117.8623	WOLFFORTH INTERCHANGE (WH 7001668) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	2	25SP	G15_041	FROM->TO	CARLISLE INTERCHANGE - LP-DOUD_TP 3115.00 115KV CKT 1	159.0	160.0	0.03321	117.8623	WOLFFORTH INTERCHANGE (WH 7001668) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	2	16WP	G15_041	FROM->TO	CARLISLE INTERCHANGE - LP-DOUD_TP 3115.00 115KV CKT 1	165.0	177.0	0.12069	114.1017	LUBBOCK SOUTH INTERCHANGE - WOLFFORTH INTERCHANGE 230KV CKT 1
FDNS	00NR	2	16WP	G15_041	FROM->TO	CARLISLE INTERCHANGE - LP-DOUD_TP 3115.00 115KV CKT 1	165.0	177.0	0.12069	114.1017	LUBBOCK SOUTH INTERCHANGE - WOLFFORTH INTERCHANGE 230KV CKT 1
FDNS	00NR	2	25SP	G15_041	FROM->TO	CARLISLE INTERCHANGE - LP-DOUD_TP 3115.00 115KV CKT 1	159.0	160.0	0.04899	99.8	CRAWFISH_DR 345.00 - YOAKUM_345 345.00 345KV CKT 1
FDNS	00NR	2	25SP	G15_041	FROM->TO	CARLISLE INTERCHANGE (WH_XHS70711) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.03874	107.0453	CARLISLE INTERCHANGE - WOLFFORTH INTERCHANGE 230KV CKT 1
FDNS	00NR	2	25SP	G15_041	FROM->TO	CARLISLE INTERCHANGE (WH_XHS70711) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.03874	103.4974	CARLISLE INTERCHANGE - WOLFFORTH INTERCHANGE 230KV CKT 1
FDNS	00NR	2	25SP	G15_041	FROM->TO	CARLISLE INTERCHANGE (WH_XHS70711) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.03874	103.4974	CARLISLE INTERCHANGE - WOLFFORTH INTERCHANGE 230KV CKT 1
FDNS	06NR	2	17G	G15_041	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.05033	99	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	00NR	2	25SP	G15_041	FROM->TO	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1	560.0	644.0	0.05104	100.572	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	00NR	2	25SP	G15_041	FROM->TO	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1	560.0	644.0	0.05104	100.572	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	00NR	2	25SP	G15_041	FROM->TO	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2	560.0	644.0	0.05214	102.9676	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	00NR	2	25SP	G15_041	FROM->TO	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2	560.0	644.0	0.05214	102.9676	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	00NR	2	25SP	G15_041	FROM->TO	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2	560.0	644.0	0.05214	101.1723	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	00NR	2	25SP	G15_041	FROM->TO	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2	560.0	644.0	0.05214	101.1723	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	00NR	2	16WP	G15_041	FROM->TO	LP-DOUD_TP 3115.00 - SP-WOLF_TP 3115.00 115KV CKT 1	165.0	180.0	0.12069	106.5359	LUBBOCK SOUTH INTERCHANGE - WOLFFORTH INTERCHANGE 230KV CKT 1
FDNS	00NR	2	16WP	G15_041	FROM->TO	LP-DOUD_TP 3115.00 - SP-WOLF_TP 3115.00 115KV CKT 1	165.0	180.0	0.12069	106.5359	LUBBOCK SOUTH INTERCHANGE - WOLFFORTH INTERCHANGE 230KV CKT 1
FDNS	00NR	2	25SP	G15_041	FROM->TO	LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	224.0	0.03596	103.9558	LUBBOCK POWER & LIGHT-SOUTHEAST - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1
FDNS	00NR	2	25SP	G15_041	FROM->TO	LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	224.0	0.03596	103.9451	P12:LPL:SPS:K64.1.LP-SE.LUBBS
FDNS	00NR	2	25SP	G15_041	FROM->TO	LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	224.0	0.03539	101.2579	P12:230:LPL:K57.1.LP-WADS.LUBBE
FDNS	00NR	2	25SP	G15_041	FROM->TO	LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	224.0	0.03539	101.2528	LUBBOCK POWER & LIGHT-WADSWORTH (SHIH T101038) 230/69/13.5KV TRANSFORMER CKT 1
FDNS	00NR	2	25SP	G15_041	FROM->TO	LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	224.0	0.03539	101.2528	LUBBOCK POWER & LIGHT-WADSWORTH (SHIH T101038) 230/69/13.5KV TRANSFORMER CKT 1
FDNS	00NR	2	25SP	G15_041	FROM->TO	LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	224.0	0.03539	100.9019	LUBBOCK EAST INTERCHANGE - LUBBOCK POWER & LIGHT-WADSWORTH 230KV CKT 1
FDNS	00NR	2	16WP	G15_041	FROM->TO	SP-WOLF_TP 3115.00 - YUMA INTERCHANGE 115KV CKT 1	165.0	180.0	0.12069	100.2308	LUBBOCK SOUTH INTERCHANGE - WOLFFORTH INTERCHANGE 230KV CKT 1
FDNS	00NR	2	16WP	G15_041	FROM->TO	SP-WOLF_TP 3115.00 - YUMA INTERCHANGE 115KV CKT 1	165.0	180.0	0.12069	100.2308	LUBBOCK SOUTH INTERCHANGE - WOLFFORTH INTERCHANGE 230KV CKT 1
FDNS	00NR	2	25SP	G15_041	TO->FROM	TERRY COUNTY INTERCHANGE - WOLFFORTH INTERCHANGE 115KV CKT 1	119.51	153.97	0.06567	103.7676	CRAWFISH_DR 345.00 - YOAKUM_345 345.00 345KV CKT 1
FDNS	00NR	2	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1	250.0	288.0	0.06862	119.0813	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00NR	2	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1	250.0	288.0	0.06862	119.0813	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00NR	2	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1	250.0	288.0	0.06862	113.3452	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00NR	2	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1	250.0	288.0	0.06862	113.3452	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00NR	2	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2	250.0	288.0	0.06862	119.0813	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	2	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2	250.0	288.0	0.06862	119.0813	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	2	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2	250.0	288.0	0.06862	113.3452	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	2	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2	250.0	288.0	0.06862	113.3452	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	3	25SP	G15_041	FROM->TO	CARLISLE INTERCHANGE (WH_XHS70711) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.03176	102.3176	CARLISLE INTERCHANGE - WOLFFORTH INTERCHANGE 230KV CKT 1
FDNS	06NR	3	17G	G15_041	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.03724	100.42	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	00NR	3	25SP	G15_041	FROM->TO	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1	560.0	644.0	0.04429	99.4	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	00NR	3	25SP	G15_041	FROM->TO	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1	560.0	644.0	0.04429	99.4	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	00NR	3	25SP	G15_041	FROM->TO	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2	560.0	644.0	0.04524	101.7722	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	00NR	3	25SP	G15_041	FROM->TO	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2	560.0	644.0	0.04524	101.7722	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	00NR	3	25SP	G15_041	FROM->TO	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2	560.0	644.0	0.04524	100	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	00NR	3	25SP	G15_041	FROM->TO	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2	560.0	644.0	0.04524	100	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	00NR	3	25SP	G15_041	FROM->TO	LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	224.0	0.03593	103.6995	LUBBOCK POWER & LIGHT-SOUTHEAST - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1
FDNS	00NR	3	25SP	G15_041	FROM->TO	LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	224.0	0.03593	103.6835	P12:LPL:SPS:K64.1.LP-SE.LUBBS
FDNS	00NR	3	25SP	G15_041	FROM->TO	LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	224.0	0.03515	101.1002	LUBBOCK EAST INTERCHANGE - LUBBOCK POWER & LIGHT-WADSWORTH 230KV CKT 1
FDNS	00NR	3	25SP	G15_041	FROM->TO	LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	224.0	0.03515	101.0845	P12:230:LPL:K57.1.LP-WADS.LUBBE
FDNS	00NR	3	25SP	G15_041	FROM->TO	LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	224.0	0.03515	101.0844	LUBBOCK POWER & LIGHT-WADSWORTH (SHIH T101038) 230/69/13.5KV TRANSFORMER CKT 1
FDNS	00NR	3	25SP	G15_041	FROM->TO	LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	224.0	0.03515	101.0844	LUBBOCK POWER & LIGHT-WADSWORTH (SHIH T101038) 230/69/13.5KV TRANSFORMER CKT 1
FDNS	00NR	3	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1	250.0	288.0	0.05548	113.6681	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	3	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1	250.0	288.0	0.05548	113.6681	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00NR	3	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1	250.0	288.0	0.05548	108.1759	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00NR	3	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1	250.0	288.0	0.05548	108.1759	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00NR	3	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2	250.0	288.0	0.05548	113.6681	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	3	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2	250.0	288.0	0.05548	113.6681	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	3	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2	250.0	288.0	0.05548	108.1759	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	3	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2	250.0	288.0	0.05548	108.1759	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	4	25SP	G15_041	FROM->TO	CARLISLE INTERCHANGE (WH_XHS70711) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.03185	102.1182	CARLISLE INTERCHANGE - WOLFFORTH INTERCHANGE 230KV CKT 1
FDNS	00NR	4	25SP	G15_041	FROM->TO	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1	560.0	644.0	0.04271	100.2432	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	00NR	4	25SP	G15_041	FROM->TO	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1	560.0	644.0	0.04271	100.2432	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	00NR	4	25SP	G15_041	FROM->TO	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2	560.0	644.0	0.04363	102.6279	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	00NR	4	25SP	G15_041	FROM->TO	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2	560.0	644.0	0.04363	102.6279	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	00NR	4	25SP	G15_041	FROM->TO	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2	560.0	644.0	0.04363	100.729	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	00NR	4	25SP	G15_041	FROM->TO	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2	560.0	644.0	0.04363	100.729	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	00NR	4	25SP	G15_041	FROM->TO	LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	224.0	0.03593	103.6807	LUBBOCK POWER & LIGHT-SOUTHEAST - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1
FDNS	00NR	4	25SP	G15_041	FROM->TO	LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	224.0	0.03593	103.6668	P12:LPL:SPS:K64.1.LP-SE.LUBBS
FDNS	00NR	4	25SP	G15_041	FROM->TO	LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	224.0	0.03517	101.0693	LUBBOCK EAST INTERCHANGE - LUBBOCK POWER & LIGHT-WADSWORTH 230KV CKT 1
FDNS	00NR	4	25SP	G15_041	FROM->TO	LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	224.0	0.03517	101.0535	P12:230:LPL:K57.1.LP-WADS.LUBBE
FDNS	00NR	4	25SP	G15_041	FROM->TO	LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	224.0	0.03517	101.0534	LUBBOCK POWER & LIGHT-WADSWORTH (SHIH T101038) 230/69/13.5KV TRANSFORMER CKT 1
FDNS	00NR	4	25SP	G15_041	FROM->TO	LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	224.0	0.03517	101.0534	LUBBOCK POWER & LIGHT-WADSWORTH (SHIH T101038) 230/69/13.5KV TRANSFORMER CKT 1
FDNS	00NR	4	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1	250.0	288.0	0.05448	115.149	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00NR	4	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1	250.0	288.0	0.05448	115.149	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00NR	4	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1	250.0	288.0	0.05448	109.5983	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00NR	4	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1	250.0	288.0	0.05448	109.5983	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00NR	4	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2	250.0	288.0	0.05448	115.149	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	4	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2	250.0	288.0	0.05448	115.149	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	4	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2	250.0	288.0	0.05448	109.5983	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	4	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2	250.0	288.0	0.05448	109.5983	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	5	25SP	G15_041	FROM->TO	CARLISLE INTERCHANGE (WH_XHS70711) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.03181	102.133	CARLISLE INTERCHANGE - WOLFFORTH INTERCHANGE 230KV CKT 1
FDNS	00NR	5	25SP	G15_041	FROM->TO	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1	560.0	644.0	0.04270	100.2385	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	00NR	5	25SP	G15_041	FROM->TO	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1	560.0	644.0	0.04270	100.2385	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	00NR	5	25SP	G15_041	FROM->TO	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2	560.0	644.0	0.04361	102.6441	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	00NR	5	25SP	G15_041	FROM->TO	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2	560.0	644.0	0.04361	102.6441	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	00NR	5	25SP	G15_041	FROM->TO	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2	560.0	644.0	0.04361	100.7479	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	00NR	5	25SP	G15_041	FROM->TO	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2	560.0	644.0	0.04361	100.7479	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	00NR	5	25SP	G15_041	FROM->TO	LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	224.0	0.03593	103.6562	LUBBOCK POWER & LIGHT-SOUTHEAST - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1
FDNS	00NR	5	25SP	G15_041	FROM->TO	LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	224.0	0.03593	103.6417	P12:LPL:SPS:K64.1.LP-SE.LUBBS
FDNS	00NR	5	25SP	G15_041	FROM->TO	LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	224.0	0.03516	101.0632	LUBBOCK EAST INTERCHANGE - LUBBOCK POWER & LIGHT-WADSWORTH 230KV CKT 1
FDNS	00NR	5	25SP	G15_041	FROM->TO	LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	224.0	0.03516	101.0474	LUBBOCK POWER & LIGHT-WADSWORTH (SHIH T101038) 230/69/13.5KV TRANSFORMER CKT 1
FDNS	00NR	5	25SP	G15_041	FROM->TO	LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	224.0	0.03516	101.0474	LUBBOCK POWER & LIGHT-WADSWORTH (SHIH T101038) 230/69/13.5KV TRANSFORMER CKT 1
FDNS	00NR	5	25SP	G15_041	FROM->TO	LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	224.0	0.03516	101.0474	LUBBOCK POWER & LIGHT-WADSWORTH (SHIH T101038) 230/69/13.5KV TRANSFORMER CKT 1
FDNS	00NR	5	25SP	G15_041	FROM->TO	LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	224.0	0.03516	101.0474	P12:230:LPL:K57.1.LP-WADS.LUBBE
FDNS	00NR	5	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1	250.0	288.0	0.05444	115.1753	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00NR	5	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1	250.0	288.0	0.05444	115.1753	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00NR	5	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1	250.0	288.0	0.05444	109.6297	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00NR	5	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1	250.0	288.0	0.05444	109.6297	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00NR	5	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2	250.0	288.0	0.05444	115.1753	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	5	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2	250.0	288.0	0.05444	115.1753	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	5	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2	250.0	288.0	0.05444	109.6297	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	5	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2	250.0	288.0	0.05444	109.6297	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	6	25SP	G15_041	FROM->TO	CARLISLE INTERCHANGE (WH_XHS70711) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.03128	101.6868	CARLISLE INTERCHANGE - WOLFFORTH INTERCHANGE 230KV CKT 1
FDNS	00NR	6	25SP	G15_041	FROM->TO	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1	560.0	644.0	0.04221	100.1123	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	00NR	6	25SP	G15_041	FROM->TO	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1	560.0	644.0	0.04221	100.1123	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	00NR	6	25SP	G15_041	FROM->TO	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2	560.0	644.0	0.04312	102.5064	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	00NR	6	25SP	G15_041	FROM->TO	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2	560.0	644.0	0.04312	102.5064	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	00NR	6	25SP	G15_041	FROM->TO	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2	560.0	644.0	0.04312	100.6209	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	00NR	6	25SP	G15_041	FROM->TO	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2	560.0	644.0	0.04312	100.6209	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	00NR	6	25SP	G15_041	FROM->TO	LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	224.0	0.03593	103.6701	LUBBOCK POWER & LIGHT-SOUTHEAST - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1
FDNS	00NR	6	25SP	G15_041	FROM->TO	LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	224.0	0.03593	103.6439	P12:LPL:SPS:K64.1.LP-SE.LUBBS
FDNS	00NR	6	25SP	G15_041	FROM->TO	LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	224.0	0.03515	101.0489	LUBBOCK EAST INTERCHANGE - LUBBOCK POWER & LIGHT-WADSWORTH 230KV CKT 1
FDNS	00NR	6	25SP	G15_041	FROM->TO	LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	224.0	0.03515	101.0332	P12:230:LPL:K57.1.LP-WADS.LUBBE
FDNS	00NR	6	25SP	G15_041	FROM->TO	LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	224.0	0.03515	101.0331	LUBBOCK POWER & LIGHT-WADSWORTH (SHIH T101038) 230/69/13.5KV TRANSFORMER CKT 1
FDNS	00NR	6	25SP	G15_041	FROM->TO	LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1	224.0	224.0	0.03515	101.0331	LUBBOCK POWER & LIGHT-WADSWORTH (SHIH T101038) 230/69/13.5KV TRANSFORMER CKT 1
FDNS	00NR	6	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1	250.0	288.0	0.05335	114.5934	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00NR	6	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1	250.0	288.0	0.05335	114.5934	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00NR	6	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1	250.0	288.0	0.05335	109.0729	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00NR	6	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1	250.0	288.0	0.05335	109.0729	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00NR	6	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2	250.0	288.0	0.05335	114.5934	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	6	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2	250.0	288.0	0.05335	114.5934	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	6	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2	250.0	288.0	0.05335	109.0729	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	6	25SP	G15_041	FROM->TO	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2	250.0	288.0	0.05335	109.0729	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	7	25SP	G15_041	FROM->TO	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1	560.0	644.0	0.04210	100	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	00NR	7	25SP	G15_041	FROM->TO	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1	560.0	644.0	0.04210	100	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	00NR	7	25SP	G15_041	FROM->TO	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2	560.0	644.0	0.04300	102.4125	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	00NR	7	25SP	G15_041	FROM->TO	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2	560.0	644.0	0.04300	102.4125	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	00NR	7	25SP	G15_041	FROM->TO	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2	560.0	644.0	0.04300	100.5345	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	00NR	7	25SP	G15_041	FROM->TO	Hitchland Interchange (SIEM 8743067) 345/230/13.2KV TRANSFORMER CKT 2	560.0	644.0	0.04300	100.5345	Hitchland Interchange (H TB80155502) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	02ALL	0	25SP	G15_082	FROM->TO	SPSNORTH_STX	1160.0	1160.0	0.11790	102.5864	BASE CASE
FDNS	02ALL	2	25SP	G15_082	FROM->TO	SPSNORTH_STX	1160.0	1160.0	0.11790	102.586	BASE CASE
FDNSLock-Blown up	09ALL	0	16WP	G15_089		Non-Converged Contingency	720.0	720.0	0.06700	-	GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z
FDNSLock-Blown up	09ALL	0	16WP	G15_089		Non-Converged Contingency	720.0	720.0	0.06700	-	GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	0	17G	G15_089		Non-Converged Contingency	720.0	720.0	0.07166	-	GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNSLock-Blown up	09ALL	0	17G	G15_089		Non-Converged Contingency	720.0	720.0	0.07166	-	GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	0	17SP	G15_089		Non-Converged Contingency	720.0	720.0	0.07208	-	GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z
FDNSLock-Blown up	09ALL	0	17SP	G15_089		Non-Converged Contingency	720.0	720.0	0.07208	-	GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	CIMARRON - DRAPER LAKE 345KV CKT 1	717.0	717.0	0.06927	104.877	BASE CASE
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44817	165.2136	BASE CASE
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44777	162.9945	BASE CASE
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44674	162.2441	BASE CASE
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44672	158.2356	BASE CASE
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44695	156.0282	BASE CASE
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44845	148.897	BASE CASE
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.48504	139.4533	WOODWARD EHV - WWPAR4 138.00 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.48504	139.4531	WOODWARD - WWPAR4 138.00 138KV CKT 1
FDNSLock	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43625	138.2437	FAIRVIEW - OKEENE 69KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44906	137.9914	BASE CASE
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.40994	137.7792	RENFROW7 345.00 (BANK 1) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.48455	137.4733	WOODWARD EHV - WWPAR4 138.00 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.48455	137.473	WOODWARD - WWPAR4 138.00 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.48284	137.4186	WOODWARD EHV - WWPAR4 138.00 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.48284	137.4183	WOODWARD - WWPAR4 138.00 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44517	135.6002	HUNTERS7 345.00 - RENFROW7 345.00 345KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.40812	135.3002	RENFROW7 345.00 (BANK 1) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45676	134.8041	MOORELAND - PIC4 138.00 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45676	134.7681	P12:138:WFEC:MSL12
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44823	134.7488	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45676	134.7059	CEDARDALE - PIC4 138.00 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45676	134.4981	CEDARDALE - OKEENE 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43521	134.3908	FAIRVIEW - OKEENE 69KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44517	134.1493	HUNTERS7 345.00 - WOODRING 345KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43905	134.033	BUFBEAR2 - BUFFALO 69KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.48262	133.686	WOODWARD EHV - WWPAR4 138.00 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.48262	133.6857	WOODWARD - WWPAR4 138.00 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43334	133.6495	CLEO CORNER (CLEOCOR1) 138/69/13.8KV TRANSFORMER CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45851	133.5631	P12:138:WFEC:MSL14
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45851	133.5239	BEARCAT 138.00 - MOORELAND 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44827	133.3416	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45632	133.3049	MOORELAND - PIC4 138.00 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45632	133.2687	P12:138:WFEC:MSL12
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45632	133.2063	CEDARDALE - PIC4 138.00 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45851	133.0995	BEARCAT 138.00 - NINE MILE 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45632	132.9996	CEDARDALE - OKEENE 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43625	132.9587	EAGLE CHIEF - RINGWOOD JCT 69KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43625	132.9433	FAIRVIEW - RINGWOOD JCT 69KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45555	132.935	MOORELAND - PIC4 138.00 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44652	132.9246	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45555	132.9056	P12:138:WFEC:MSL12
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45555	132.8362	CEDARDALE - PIC4 138.00 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43586	132.7169	FAIRVIEW - OKEENE 69KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45555	132.6547	CEDARDALE - OKEENE 138KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.48277	132.6271	WOODWARD EHV - WWPAR4 138.00 138KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.48277	132.6268	WOODWARD - WWPAR4 138.00 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43905	132.4967	BUFFALO - WEST 69KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45851	132.3851	MOREWOOD SW - NINE MILE 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43864	132.311	BUFBEAR2 - BUFFALO 69KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45199	132.2838	CLEO CORNER - CLEOPLT4 138.00 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44467	132.2754	HUNTERS7 345.00 - RENFROW7 345.00 345KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44652	132.112	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45199	132.1044	CLEOPLT4 138.00 - MEN TAP 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.47308	132.0258	FPL SWITCH - WOODWARD 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45199	131.9511	IMO TAP - MEN TAP 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45716	131.6787	P12:138:WFEC:MSL14
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45716	131.6293	BEARCAT 138.00 - MOORELAND 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45812	131.5594	P12:138:WFEC:MSL14
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45812	131.52	BEARCAT 138.00 - MOORELAND 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.40967	131.4775	RENFROW7 345.00 (BANK 1) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43294	131.2158	CLEO CORNER (CLEOCOR1) 138/69/13.8KV TRANSFORMER CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45716	131.2014	BEARCAT 138.00 - NINE MILE 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43801	131.1577	BUFBEAR2 - BUFFALO 69KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45810	131.1109	GLASS MOUNTAIN - MOORELAND 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43905	131.1105	FREEDOM - WEST 69KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45812	131.0941	BEARCAT 138.00 - NINE MILE 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44298	131.0482	HUNTERS7 345.00 - RENFROW7 345.00 345KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43864	131.045	BUFFALO - WEST 69KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44467	130.8297	HUNTERS7 345.00 - WOODRING 345KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44864	130.772	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44915	130.6482	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44915	130.6482	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44915	130.6482	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44915	130.6482	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45810	130.6435	CLEO CORNER - GLASS MOUNTAIN 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45716	130.4811	MOREWOOD SW - NINE MILE 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45812	130.3781	MOREWOOD SW - NINE MILE 138KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43222	130.371	CLEO CORNER (CLEOCOR1) 138/69/13.8KV TRANSFORMER CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45159	130.3491	CLEO CORNER - CLEOPLT4 138.00 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45083	130.2506	CLEO CORNER - CLEOPLT4 138.00 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45159	130.1778	CLEOPLT4 138.00 - MEN TAP 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43905	130.1739	FREEDOM - WINCH_TAP 69.000 69KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45083	130.1159	CLEOPLT4 138.00 - MEN TAP 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45159	130.0764	IMO TAP - MEN TAP 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44615	130.0296	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43864	130.0122	FREEDOM - WEST 69KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45105	129.9707	DEWEY - SOUTHARD 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45083	129.9537	IMO TAP - MEN TAP 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45554	129.9227	MOORELAND - PIC4 138.00 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45554	129.8867	P12:138:WFEC:MSL12
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43801	129.8771	BUFFALO - WEST 69KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45554	129.8236	CEDARDALE - PIC4 138.00 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.47107	129.765	FPL SWITCH - WOODWARD 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45554	129.6271	CEDARDALE - OKEENE 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44298	129.5227	HUNTERS7 345.00 - WOODRING 345KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.47262	129.5016	FPL SWITCH - WOODWARD 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45105	129.463	ROMAN NOSE - SOUTHARD 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43905	129.4395	FT SUPPLY - STOCKHOLM2 69.000 69KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45697	129.4198	GLASS MOUNTAIN - MOORELAND 138KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.48528	129.3953	WOODWARD EHV - WWPAR4 138.00 138KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.48528	129.3951	WOODWARD - WWPAR4 138.00 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45764	129.3738	GLASS MOUNTAIN - MOORELAND 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44492	129.3646	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43905	129.3094	BUFBEAR2 - STOCKHOLM2 69.000 69KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44718	129.2477	CLEO JCT - RINGWOOD 69KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44718	129.2438	CLEO CORNER - CLEO JCT 69KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44615	129.2281	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45329	129.2145	ELK CITY - RED HILLS WIND 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45329	129.2145	ELK CITY - RED HILLS WIND 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45348	129.1955	DOVER SW - OKEENE 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44798	129.1813	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44798	129.1813	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44798	129.1813	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44798	129.1813	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45764	129.0839	CLEO CORNER - GLASS MOUNTAIN 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44817	129.0626	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44873	129.0155	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44873	129.0155	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44873	129.0155	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44873	129.0155	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45697	128.9574	CLEO CORNER - GLASS MOUNTAIN 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43801	128.8985	FREEDOM - WEST 69KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43586	128.8445	FAIRVIEW - RINGWOOD JCT 69KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43374	128.8438	CLEO CORNER - CLEOTP 2 69.000 69KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43586	128.84	EAGLE CHIEF - RINGWOOD JCT 69KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44862	128.8179	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44862	128.8179	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 2
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45920	128.7289	MOORELAND - TALOGA 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45063	128.6995	DEWEY - SOUTHARD 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44492	128.5768	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43374	128.5645	ALINETP2 69.000 - CLEOTP 2 69.000 69KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44817	128.551	GEN514805 1-SOONER UNIT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45329	128.5265	ELLIS 4 138.00 - MOREWOOD SW 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44811	128.4954	CIMARRON - MINCO 345KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45708	128.4615	P12:138:WFEC:MSL14
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43374	128.4585	ALINETP2 69.000 - ALVA 69KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44842	128.4359	G1524G1525 345.00 - THISTLE7 345.00 345KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44842	128.4359	G1524G1525 345.00 - THISTLE7 345.00 345KV CKT 2
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45708	128.4112	BEARCAT 138.00 - MOORELAND 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45063	128.3724	ROMAN NOSE - SOUTHARD 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45092	128.3388	WOODWARD DISTRICT EHV (WWDEHV) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45092	128.3388	WOODWARD DISTRICT EHV (WWDEHV-T2) 345/138/13.8KV TRANSFORMER CKT 2
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43905	128.3362	ALVA - WINCH_TAP 69.000 69KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44777	128.3113	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44985	128.2694	DEWEY - SOUTHARD 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43801	128.2357	FREEDOM - WINCH_TAP 69.000 69KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44849	128.2113	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45708	127.984	BEARCAT 138.00 - NINE MILE 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43521	127.952	FAIRVIEW - RINGWOOD JCT 69KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43521	127.9492	EAGLE CHIEF - RINGWOOD JCT 69KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43800	127.9376	BUFBEAR2 - BUFFALO 69KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45306	127.9324	DOVER SW - OKEENE 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44821	127.9102	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44821	127.9102	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 2
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43864	127.7985	FT SUPPLY - STOCKHOLM2 69.000 69KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43864	127.7764	FREEDOM - WINCH_TAP 69.000 69KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44985	127.7454	ROMAN NOSE - SOUTHARD 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43586	127.6463	CARMEN - EAGLE CHIEF 69KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43864	127.622	BUFBEAR2 - STOCKHOLM2 69.000 69KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45584	127.572	MOORELAND - PIC4 138.00 138KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45584	127.5382	P12:138:WFEC:MSL12
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45227	127.5348	DOVER SW - OKEENE 138KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45584	127.4727	CEDARDALE - PIC4 138.00 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44808	127.4538	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45289	127.3305	ELK CITY - RED HILLS WIND 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45289	127.3305	ELK CITY - RED HILLS WIND 138KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45584	127.289	CEDARDALE - OKEENE 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45708	127.2655	MOREWOOD SW - NINE MILE 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44847	127.2366	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44847	127.2366	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44847	127.2284	P12:345:SPS:J07.1.FINN.HITCH
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45190	127.2122	ELK CITY - RED HILLS WIND 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45190	127.2122	ELK CITY - RED HILLS WIND 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45083	127.2051	CLEO CORNER - CLEOPLT4 138.00 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44678	127.1578	CLEO JCT - RINGWOOD 69KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44678	127.1565	CLEO CORNER - CLEO JCT 69KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44769	127.133	CIMARRON - MINCO 345KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44676	127.1239	CIMARRON - MINCO 345KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45876	127.1222	MOORELAND - TALOGA 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44801	127.0867	G1524G1525 345.00 - THISTLE7 345.00 345KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44801	127.0867	G1524G1525 345.00 - THISTLE7 345.00 345KV CKT 2
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45083	127.072	CLEOPLT4 138.00 - MEN TAP 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43335	127.0552	CLEO CORNER - CLEOTP 2 69.000 69KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44808	126.9895	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44283	126.987	HUNTERS7 345.00 - RENFROW7 345.00 345KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45083	126.9651	IMO TAP - MEN TAP 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43801	126.9226	ALVA - WINCH_TAP 69.000 69KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43335	126.881	ALINETP2 69.000 - CLEOTP 2 69.000 69KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44278	126.8668	HUNTERS7 345.00 - RENFROW7 345.00 345KV CKT 1
FDNSLock	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43520	126.8665	FAIRVIEW - OKEENE 69KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43800	126.8474	BUFFALO - WEST 69KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43335	126.8166	ALINETP2 69.000 - ALVA 69KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43219	126.7576	CLEO CORNER (CLEOCOR1) 138/69/13.8KV TRANSFORMER CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45772	126.731	MOORELAND - TALOGA 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44777	126.7207	GEN514805 1-SOONER UNIT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44674	126.7106	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43801	126.6979	FT SUPPLY - STOCKHOLM2 69.000 69KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.40825	126.6963	RENFROW7 345.00 (BANK 1) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45289	126.6328	ELLIS 4 138.00 - MOREWOOD SW 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43801	126.5893	BUFBEAR2 - STOCKHOLM2 69.000 69KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45052	126.5837	WOODWARD DISTRICT EHV (WWDEHV) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45052	126.5837	WOODWARD DISTRICT EHV (WWDEHV-T2) 345/138/13.8KV TRANSFORMER CKT 2
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44569	126.5262	CLEO JCT - RINGWOOD 69KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44569	126.5242	CLEO CORNER - CLEO JCT 69KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45190	126.5164	ELLIS 4 138.00 - MOREWOOD SW 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44674	126.5013	GEN514805 1-SOONER UNIT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44708	126.4931	G1524G1525 345.00 - THISTLE7 345.00 345KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44708	126.4931	G1524G1525 345.00 - THISTLE7 345.00 345KV CKT 2
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44761	126.4798	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44761	126.4798	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44761	126.4697	P12:345:SPS:J07.1.FINN.HITCH
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44798	126.4208	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44798	126.4208	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44798	126.4208	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44798	126.4208	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44709	126.3447	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43284	126.3092	CLEO CORNER - CLEOTP 2 69.000 69KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43800	126.1216	FREEDOM - WEST 69KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43284	126.0413	ALINETP2 69.000 - CLEOTP 2 69.000 69KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44937	126.0339	WOODWARD DISTRICT EHV (WWDEHV) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44937	126.0339	WOODWARD DISTRICT EHV (WWDEHV-T2) 345/138/13.8KV TRANSFORMER CKT 2
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43864	126.027	ALVA - WINCH_TAP 69.000 69KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45190	126.0182	CUSTER4 138.00 - ELLIS 4 138.00 138KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45734	126.0064	P12:138:WFEC:MSL14
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44727	125.9755	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44727	125.9755	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45734	125.9576	BEARCAT 138.00 - MOORELAND 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43284	125.9357	ALINETP2 69.000 - ALVA 69KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45190	125.914	CUSTER4 138.00 - RED HILLS WIND 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45698	125.9014	GLASS MOUNTAIN - MOORELAND 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44709	125.8896	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.29154	125.7906	RENFROW4 138.00 - RENFROW4 138.00 138KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43824	125.7519	BUFBEAR2 - BUFFALO 69KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43542	125.733	FAIRVIEW - OKEENE 69KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.47092	125.7004	FPL SWITCH - WOODWARD 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45698	125.6234	CLEO CORNER - GLASS MOUNTAIN 138KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45734	125.5311	BEARCAT 138.00 - NINE MILE 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44983	125.4838	DEWEY - SOUTHARD 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44283	125.48	HUNTERS7 345.00 - WOODRING 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.41021	125.4362	RENFROW7 345.00 (BANK 1) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45108	125.4081	CLEO CORNER - CLEOPLT4 138.00 138KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44278	125.3401	HUNTERS7 345.00 - WOODRING 345KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45108	125.2699	CLEOPLT4 138.00 - MEN TAP 138KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45108	125.1676	IMO TAP - MEN TAP 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44983	125.141	ROMAN NOSE - SOUTHARD 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44496	125.0694	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43824	124.9735	BUFFALO - WEST 69KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44815	124.8139	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44815	124.8139	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44815	124.8139	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44815	124.8139	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45734	124.8123	MOREWOOD SW - NINE MILE 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43625	124.7318	CARMEN - CHEROKEE SW 69KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45227	124.6025	DOVER SW - OKEENE 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44672	124.5673	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43800	124.5433	FREEDOM - WINCH_TAP 69.000 69KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44558	124.4648	COYOTE 4 138.00 - G15-015T 138.00 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44558	124.4627	CHIKASKIA - COYOTE 4 138.00 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44817	124.4423	GEN515393 1-OGEWND2G
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44558	124.3903	MDFRDTP4 138.00 - RENFROW4 138.00 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44817	124.3605	GEN520996 1-MORLND1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43824	124.3534	FREEDOM - WEST 69KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44755	124.3481	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44755	124.3481	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44817	124.3153	GEN525561 1-TOLK GEN #1 24 KV
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44496	124.2975	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44676	124.1431	CIMARRON - MINCO 345KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.47109	124.0953	FPL SWITCH - WOODWARD 138KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45209	124.0943	ELK CITY - RED HILLS WIND 138KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45209	124.0943	ELK CITY - RED HILLS WIND 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44817	124.0902	GEN525562 1-TOLK GEN #2 24 KV
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.42472	124.0628	HELENA TAP - SALINE 69KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44830	124.0485	FT SUPPLY - IODINE 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43520	124.0446	FAIRVIEW - RINGWOOD JCT 69KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43520	124.0344	EAGLE CHIEF - RINGWOOD JCT 69KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45185	123.9948	ELK CITY - RED HILLS WIND 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45185	123.9948	ELK CITY - RED HILLS WIND 138KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44511	123.9219	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44709	123.9216	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44755	123.8827	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44556	123.8316	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44706	123.7524	G1524G1525 345.00 - THISTLE7 345.00 345KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44706	123.7524	G1524G1525 345.00 - THISTLE7 345.00 345KV CKT 2
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45731	123.7507	GLASS MOUNTAIN - MOORELAND 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45766	123.6046	MOORELAND - TALOGA 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43800	123.5883	FT SUPPLY - STOCKHOLM2 69.000 69KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45010	123.5289	DEWEY - SOUTHARD 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44709	123.4407	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43800	123.4291	BUFBEAR2 - STOCKHOLM2 69.000 69KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45731	123.4037	CLEO CORNER - GLASS MOUNTAIN 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.42472	123.3602	CZYCRVT2 69.000 - SALINE 69KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43800	123.309	ALVA - WINCH_TAP 69.000 69KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45185	123.2959	ELLIS 4 138.00 - MOREWOOD SW 138KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45876	123.279	P12:138:WFEC:MSL14
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43824	123.2656	FREEDOM - WINCH_TAP 69.000 69KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45876	123.2417	BEARCAT 138.00 - MOORELAND 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44672	123.2385	GEN514805 1-SOONER UNIT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44567	123.213	CLEO JCT - RINGWOOD 69KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44567	123.2128	CLEO CORNER - CLEO JCT 69KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45010	123.1651	ROMAN NOSE - SOUTHARD 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43281	123.1493	CLEO CORNER - CLEOTP 2 69.000 69KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44511	123.1488	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43281	122.9839	ALINETP2 69.000 - CLEOTP 2 69.000 69KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43281	122.9149	ALINETP2 69.000 - ALVA 69KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44934	122.8926	WOODWARD DISTRICT EHV (WWDEHV) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44934	122.8926	WOODWARD DISTRICT EHV (WWDEHV-T2) 345/138/13.8KV TRANSFORMER CKT 2
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44817	122.8721	GEN515389 1-TLGWND-WTG1 0.7000
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44777	122.8511	GEN587023 1-G16-003-GEN10.6500
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45876	122.8189	BEARCAT 138.00 - NINE MILE 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45185	122.7973	CUSTER4 138.00 - ELLIS 4 138.00 138KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43542	122.7968	FAIRVIEW - RINGWOOD JCT 69KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43542	122.79	EAGLE CHIEF - RINGWOOD JCT 69KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44777	122.768	GEN525561 1-TOLK GEN #1 24 KV
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44777	122.7203	GEN515393 1-OGEWND2G
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45254	122.7026	DOVER SW - OKEENE 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44790	122.6253	IODINE - MOORELAND 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44777	122.5792	GEN525562 1-TOLK GEN #2 24 KV
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.29154	122.4589	RENFROW4 138.00 - WAKITAS4 138.00 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.26045	122.3529	WAKITA4 138.00 - WAKITAS4 138.00 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44628	122.3457	CLEVELAND - G15066_T 345.00 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44769	122.3204	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44769	122.3204	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43824	122.2864	ALVA - WINCH_TAP 69.000 69KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.42434	122.2748	HELENA TAP - SALINE 69KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.42472	122.2387	CZYCRVT2 69.000 - KNOBHILL 69KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44729	122.213	G1524G1525 345.00 - THISTLE7 345.00 345KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44729	122.213	G1524G1525 345.00 - THISTLE7 345.00 345KV CKT 2
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44674	122.1782	GEN560217 1-G07_062_6 0.6900
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44674	122.1693	GEN515611 1-NBUFFRG1 0.6900
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45876	122.106	MOREWOOD SW - NINE MILE 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44817	122.1035	GEN515365 1-CENT 21 0.7000
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44520	122.0701	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44451	122.0673	P12:138:WERE:CRSW-OGE_138::
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44790	122.0511	FT SUPPLY - IODINE 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44674	121.9724	GEN520996 1-MORLND1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44674	121.9548	GEN515393 1-OGEWND2G
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44674	121.9395	GEN587023 1-G16-003-GEN10.6500
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44817	121.8873	GEN520922 1-SLEEPING BEAR
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44702	121.8791	CIMARRON - MINCO 345KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44733	121.8779	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44769	121.8562	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44398	121.8446	MDFRDTP4 138.00 - RENFROW4 138.00 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.42434	121.8366	CZYCRVT2 69.000 - SALINE 69KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44674	121.7253	GEN525561 1-TOLK GEN #1 24 KV
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45791	121.6825	MOORELAND - TALOGA 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44398	121.6683	COYOTE 4 138.00 - G15-015T 138.00 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44398	121.6666	CHIKASKIA - COYOTE 4 138.00 138KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44589	121.6509	CLEO JCT - RINGWOOD 69KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44589	121.6499	CLEO CORNER - CLEO JCT 69KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44691	121.6218	FT SUPPLY - IODINE 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.42404	121.5843	HELENA TAP - SALINE 69KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44674	121.5708	GEN525562 1-TOLK GEN #2 24 KV
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44546	121.437	HUNTERS7 345.00 - RENFROW7 345.00 345KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43303	121.4327	CLEO CORNER - CLEOTP 2 69.000 69KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44733	121.4189	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43824	121.4185	FT SUPPLY - STOCKHOLM2 69.000 69KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43824	121.3057	BUFBEAR2 - STOCKHOLM2 69.000 69KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43303	121.275	ALINETP2 69.000 - CLEOTP 2 69.000 69KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45708	121.2465	MOORELAND - PIC4 138.00 138KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43303	121.2119	ALINETP2 69.000 - ALVA 69KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45708	121.2104	P12:138:WFEC:MSL12
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45209	121.1719	ELLIS 4 138.00 - MOREWOOD SW 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44823	121.1701	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44777	121.1542	GEN515389 1-TLGWND-WTG1 0.7000
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45708	121.1479	CEDARDALE - PIC4 138.00 138KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.47334	121.1393	FPL SWITCH - WOODWARD 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44817	121.1181	GEN520997 1-MORLND2
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45708	120.9484	CEDARDALE - OKEENE 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.42404	120.9031	CZYCRVT2 69.000 - SALINE 69KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44817	120.7966	GEN520998 1-MORLND3
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43363	120.748	CLEO CORNER (CLEOCOR1) 138/69/13.8KV TRANSFORMER CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.42434	120.7208	CZYCRVT2 69.000 - KNOBHILL 69KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43935	120.6991	BUFBEAR2 - BUFFALO 69KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44674	120.518	GEN515389 1-TLGWND-WTG1 0.7000
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44777	120.4009	GEN515365 1-CENT 21 0.7000
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44817	120.2457	GEN515787 1-OKLA WIND ENERGY CENTER
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44777	120.1802	GEN520997 1-MORLND2
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44777	120.1717	GEN520922 1-SLEEPING BEAR
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44546	120.0103	HUNTERS7 345.00 - WOODRING 345KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44777	119.9053	GEN520998 1-MORLND3
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.42355	119.8567	ALVA - ALVA 69KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43625	119.8407	ALVA - CHEROKEE SW 69KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.42404	119.807	CZYCRVT2 69.000 - KNOBHILL 69KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44674	119.7082	GEN515365 1-CENT 21 0.7000
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44674	119.5594	GEN520922 1-SLEEPING BEAR
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43935	119.2779	BUFFALO - WEST 69KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44247	119.0987	RENFROW7 345.00 - VIOLA 7 345.00 345KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44393	119.0872	COYOTE 4 138.00 - G15-015T 138.00 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44393	119.0861	CHIKASKIA - COYOTE 4 138.00 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44672	119.0838	GEN560217 1-G07_062_6 0.6900
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44672	119.0748	GEN515611 1-NBUFFRG1 0.6900
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45229	119.0582	CLEO CORNER - CLEOPLT4 138.00 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.42294	119.0471	ALVA - ALVA 69KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44450	119.0223	P12:138:WERE:CRSW-OGE_138::
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45229	118.8942	CLEOPLT4 138.00 - MEN TAP 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44672	118.867	GEN515393 1-OGEWND2G
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44672	118.8385	GEN587023 1-G16-003-GEN10.6500
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44689	118.7924	IODINE - MOORELAND 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44672	118.7771	GEN525561 1-TOLK GEN #1 24 KV
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43653	118.7639	EAGLE CHIEF - RINGWOOD JCT 69KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43653	118.7612	FAIRVIEW - RINGWOOD JCT 69KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45229	118.7502	IMO TAP - MEN TAP 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44109	118.7371	RENFROW7 345.00 - VIOLA 7 345.00 345KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.28851	118.695	RENFROW4 138.00 - RENFROW4 138.00 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44672	118.6721	GEN525562 1-TOLK GEN #2 24 KV
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44777	118.605	GEN515787 1-OKLA WIND ENERGY CENTER
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.42401	118.604	HELENA TAP - SALINE 69KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44674	118.5383	GEN520997 1-MORLND2
FDNSLock	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43586	118.3102	ALVA - CHEROKEE SW 69KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.29167	118.2843	RENFROW4 138.00 - RENFROW4 138.00 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44689	118.2534	FT SUPPLY - IODINE 138KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44682	118.2401	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.48631	118.225	WOODWARD EHV - WWPAR4 138.00 138KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.48631	118.2248	WOODWARD - WWPAR4 138.00 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44674	118.1976	GEN520998 1-MORLND3
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.42401	118.1792	CZYCRVT2 69.000 - SALINE 69KV CKT 1
FDNSLock	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43521	118.0881	ALVA - CHEROKEE SW 69KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43935	118.0398	FREEDOM - WEST 69KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44220	117.9923	RENFROW7 345.00 - VIOLA 7 345.00 345KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44674	117.9191	GEN515787 1-OKLA WIND ENERGY CENTER
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45355	117.8558	ELK CITY - RED HILLS WIND 138KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45355	117.8558	ELK CITY - RED HILLS WIND 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.42315	117.7661	ALVA - ALVA 69KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.26030	117.7221	WAKITA4 138.00 - WAKITAS4 138.00 138KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44702	117.6017	GRACEMONT - MINCO 345KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44472	117.5643	P12:138:OKGE:3TERM7
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44682	117.4463	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44672	117.4419	GEN515389 1-TLGWND-WTG1 0.7000
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44413	117.4316	COYOTE 4 138.00 - G15-015T 138.00 138KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44413	117.4303	CHIKASKIA - COYOTE 4 138.00 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44817	117.3159	GEN587143 1-G16-020-GEN10.6900
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45135	117.247	DEWEY - SOUTHARD 138KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43935	117.2056	FREEDOM - WINCH_TAP 69.000 69KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45355	117.1874	ELLIS 4 138.00 - MOREWOOD SW 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.42401	117.1004	CZYCRVT2 69.000 - KNOBHILL 69KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.25662	117.0831	WAKITA4 138.00 - WAKITAS4 138.00 138KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.42419	117.08	HELENA TAP - SALINE 69KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44712	117.0228	IODINE - MOORELAND 138KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44472	116.9997	P12:138:WERE:CRSW-OGE_138::
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.40019	116.9752	ALVA - KNOBHILL 69KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44864	116.9652	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.29138	116.9553	RENFROW4 138.00 - RENFROW4 138.00 138KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45844	116.8275	GLASS MOUNTAIN - MOORELAND 138KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44845	116.7294	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45135	116.7223	ROMAN NOSE - SOUTHARD 138KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45355	116.7055	CUSTER4 138.00 - ELLIS 4 138.00 138KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.42419	116.6732	CZYCRVT2 69.000 - SALINE 69KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44672	116.6484	GEN515365 1-CENT 21 0.7000
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45355	116.6052	CUSTER4 138.00 - RED HILLS WIND 138KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44947	116.5643	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44947	116.5643	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44947	116.5643	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44947	116.5643	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44712	116.5244	FT SUPPLY - IODINE 138KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45949	116.5143	MOORELAND - TALOGA 138KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44746	116.489	CLEO JCT - RINGWOOD 69KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44672	116.486	GEN520922 1-SLEEPING BEAR
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44746	116.4854	CLEO CORNER - CLEO JCT 69KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44672	116.4794	GEN520997 1-MORLND2
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43402	116.4255	CLEO CORNER - CLEOTP 2 69.000 69KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45844	116.3375	CLEO CORNER - GLASS MOUNTAIN 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44672	116.2009	GEN520998 1-MORLND3
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43935	116.1782	FT SUPPLY - STOCKHOLM2 69.000 69KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44845	116.1458	GEN514805 1-SOONER UNIT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43402	116.1315	ALINETP2 69.000 - CLEOTP 2 69.000 69KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45120	116.0812	WOODWARD DISTRICT EHV (WWDEHV-T2) 345/138/13.8KV TRANSFORMER CKT 2
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45120	116.0811	WOODWARD DISTRICT EHV (WWDEHV) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43935	116.0577	BUFBEAR2 - STOCKHOLM2 69.000 69KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.28851	116.0552	RENFROW4 138.00 - WAKITAS4 138.00 138KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45378	116.0412	DOVER SW - OKEENE 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.42293	116.0294	ALVA - ALVA 69KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43402	116.0195	ALINETP2 69.000 - ALVA 69KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44109	115.9696	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.40012	115.9387	ALVA - KNOBHILL 69KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.26045	115.7766	SANDY_CN_138138.00 - WAKITA4 138.00 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.29138	115.6162	RENFROW4 138.00 - WAKITAS4 138.00 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44777	115.5949	GEN587143 1-G16-020-GEN10.6900
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.42419	115.5866	CZYCRVT2 69.000 - KNOBHILL 69KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43935	115.5491	ALVA - WINCH_TAP 69.000 69KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44123	115.4448	RENFROW7 345.00 - VIOLA 7 345.00 345KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.42317	115.1269	ALVA - ALVA 69KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43520	115.1054	ALVA - CHEROKEE SW 69KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44674	114.9689	GEN587143 1-G16-020-GEN10.6900
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44672	114.9128	GEN515787 1-OKLA WIND ENERGY CENTER
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.39978	114.8787	ALVA - KNOBHILL 69KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.40011	113.0126	ALVA - KNOBHILL 69KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44123	112.5144	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44176	112.2636	RENFROW7 345.00 - VIOLA 7 345.00 345KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.42499	112.1383	HELENA TAP - SALINE 69KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45779	112.1078	MOORELAND - PIC4 138.00 138KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45779	112.0843	P12:138:WFEC:MSL12
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44911	112.0263	CHISHOLM7 345.00 () 345/230/13.2KV TRANSFORMER CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44845	112.0146	GEN515393 1-OGEWND2G
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45779	112.0089	CEDARDALE - PIC4 138.00 138KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44584	112.0058	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.25665	111.9827	WAKITA4 138.00 - WAKITAS4 138.00 138KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.40032	111.9779	ALVA - KNOBHILL 69KV CKT 1
FDNSLock	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43653	111.9454	CARMEN - CHEROKEE SW 69KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44672	111.8994	GEN587143 1-G16-020-GEN10.6900
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45779	111.8977	CEDARDALE - OKEENE 138KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44845	111.8201	GEN520996 1-MORLND1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44892	111.7637	G16-037-TAP 345.00 - GRACEMONT 345KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44859	111.4708	FT SUPPLY - IODINE 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.26030	111.4151	SANDY_CN_138138.00 - WAKITA4 138.00 138KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.42499	111.4068	CZYCRVT2 69.000 - SALINE 69KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44892	111.3954	CHISHOLM7 345.00 - G16-037-TAP 345.00 345KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44843	111.3025	GRACEMONT - MINCO 345KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.28877	111.26	RENFROW4 138.00 - RENFROW4 138.00 138KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45956	111.0946	P12:138:WFEC:MSL14
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45956	111.0569	BEARCAT 138.00 - MOORELAND 138KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43999	110.8015	BUFBEAR2 - BUFFALO 69KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44548	110.7572	HUNTERS7 345.00 - RENFROW7 345.00 345KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43417	110.7433	CLEO CORNER (CLEOCOR1) 138/69/13.8KV TRANSFORMER CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.25662	110.7042	SANDY_CN_138138.00 - WAKITA4 138.00 138KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45956	110.6486	BEARCAT 138.00 - NINE MILE 138KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.25684	110.6269	WAKITA4 138.00 - WAKITAS4 138.00 138KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45296	110.4853	CLEO CORNER - CLEOPLT4 138.00 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.28855	110.4511	RENFROW4 138.00 - RENFROW4 138.00 138KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44845	110.4479	GEN515389 1-TLGWND-WTG1 0.7000
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43999	110.3463	BUFFALO - WEST 69KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45296	110.3372	CLEOPLT4 138.00 - MEN TAP 138KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.42499	110.306	CZYCRVT2 69.000 - KNOBHILL 69KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45296	110.289	IMO TAP - MEN TAP 138KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45426	110.0086	ELK CITY - RED HILLS WIND 138KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45426	110.0086	ELK CITY - RED HILLS WIND 138KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45956	109.9415	MOREWOOD SW - NINE MILE 138KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44757	109.9294	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43999	109.9074	FREEDOM - WEST 69KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44845	109.6339	GEN515365 1-CENT 21 0.7000
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.26057	109.5407	SANDY_CN_138138.00 - WAKITA4 138.00 138KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44845	109.4649	GEN520922 1-SLEEPING BEAR
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44548	109.3632	HUNTERS7 345.00 - WOODRING 345KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44176	109.3606	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.28855	109.3233	RENFROW4 138.00 - WAKITAS4 138.00 138KV CKT 1
FDNSLock	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43714	109.2098	FAIRVIEW - OKEENE 69KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44757	109.1489	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43999	109.1371	FREEDOM - WINCH_TAP 69.000 69KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44989	109.115	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44989	109.115	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44989	109.115	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44989	109.115	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45195	108.985	DEWEY - SOUTHARD 138KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.47423	108.9829	FPL SWITCH - WOODWARD 138KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.28877	108.8726	RENFROW4 138.00 - WAKITAS4 138.00 138KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45195	108.7771	ROMAN NOSE - SOUTHARD 138KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44845	108.4795	GEN520997 1-MORLND2
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43999	108.4438	ALVA - WINCH_TAP 69.000 69KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44952	108.4268	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44952	108.4268	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 2
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45447	108.3069	DOVER SW - OKEENE 138KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44845	108.1466	GEN520998 1-MORLND3
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44275	108.111	RENFROW7 345.00 - VIOLA 7 345.00 345KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44845	107.9152	GEN515787 1-OKLA WIND ENERGY CENTER
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44929	107.8945	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45929	107.86	GLASS MOUNTAIN - MOORELAND 138KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44950	107.747	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44950	107.747	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44950	107.7362	P12:345:SPS:J07.1.FINN.HITCH
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43714	107.6616	FAIRVIEW - RINGWOOD JCT 69KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43714	107.6567	EAGLE CHIEF - RINGWOOD JCT 69KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45929	107.6121	CLEO CORNER - GLASS MOUNTAIN 138KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44927	107.5759	G1524G1525 345.00 - THISTLE7 345.00 345KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44927	107.5759	G1524G1525 345.00 - THISTLE7 345.00 345KV CKT 2

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44906	107.5636	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44806	107.5318	CLEO JCT - RINGWOOD 69KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44806	107.5312	CLEO CORNER - CLEO JCT 69KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45184	107.5087	WOODWARD DISTRICT EHV (WWDEHV) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.45184	107.5087	WOODWARD DISTRICT EHV (WWDEHV-T2) 345/138/13.8KV TRANSFORMER CKT 2
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44929	107.4279	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.42385	107.4016	ALVA - ALVA 69KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43458	107.3727	CLEO CORNER - CLEOTP 2 69.000 69KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43458	107.3012	ALINETP2 69.000 - CLEOTP 2 69.000 69KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43458	107.2719	ALINETP2 69.000 - ALVA 69KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44906	107.2575	GEN514805 1-SOONER UNIT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43653	107.2311	ALVA - CHEROKEE SW 69KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.25665	105.958	SANDY_CN_138138.00 - WAKITA4 138.00 138KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44845	104.8884	GEN587143 1-G16-020-GEN10.6900
FDNS	01ALL	0	25SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.40048	104.6185	ALVA - KNOBHILL 69KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.25684	104.4665	SANDY_CN_138138.00 - WAKITA4 138.00 138KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44697	103.7939	P12:138:WERE:CRSW-OGE_138::
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44885	103.7462	917X
FDNS	01ALL	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.35393	103.7357	KNOBHILL (KNOBHIL4) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44906	103.6496	GEN587023 1-G16-003-GEN10.6500
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44885	103.6472	G15066_T 345.00 - SOONER 345KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44906	103.618	GRACEMONT - MINCO 345KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.42547	103.5972	HELENA TAP - SALINE 69KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44906	103.5583	GEN515393 1-OGEWND2G
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44885	103.5379	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44906	103.4778	GEN523971 1-HARRINGTON GEN #1 24 KV
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.42547	103.4156	CZYCRVT2 69.000 - SALINE 69KV CKT 1
FDNSLock	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.42450	103.36	ALVA - ALVA 69KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44677	102.7585	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.47423	102.7103	FPL SWITCH - MOORELAND 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.35421	102.5484	KNOBHILL - NOEL_SW 138.00 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.35421	102.5297	KNOBHILL (KNOBHIL4) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.42547	102.3275	CZYCRVT2 69.000 - KNOBHILL 69KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44923	102.2766	IODINE - MOORELAND 138KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44906	102.18	GEN525561 1-TOLK GEN #1 24 KV
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44923	101.9805	FT SUPPLY - IODINE 138KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44906	101.9654	GEN515389 1-TLGWND-WTG1 0.7000
FDNS	01ALL	0	20WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.35355	101.8656	KNOBHILL (KNOBHIL4) 138/69/13.2KV TRANSFORMER CKT 1
FDNSLock	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.43714	101.3074	ALVA - CHEROKEE SW 69KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44906	101.2584	GEN515365 1-CENT 21 0.7000
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44906	101.1103	GEN520922 1-SLEEPING BEAR
FDNS	00	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.26039	100.5202	WAKITA4 138.00 - WAKITAS4 138.00 138KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.40107	100.3719	ALVA - KNOBHILL 69KV CKT 1
FDNS	00	0	20SP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.29147	100.3515	RENFROW4 138.00 - RENFROW4 138.00 138KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.26103	100.3227	WAKITA4 138.00 - WAKITAS4 138.00 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.35418	100.0516	KNOBHILL - NOEL_SW 138.00 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.35418	100	KNOBHILL (KNOBHIL4) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44406	99.9	RENFROW7 345.00 - VIOLA 7 345.00 345KV CKT 1
FDNS	01ALL	0	17G	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.35430	99.6	KNOBHILL - NOEL_SW 138.00 138KV CKT 1
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.44906	99.6	GEN515787 1-OKLA WIND ENERGY CENTER
FDNS	01ALL	0	20L	G15_095	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.29220	99.3	RENFROW4 138.00 - RENFROW4 138.00 138KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	FPL SWITCH - WOODWARD 138KV CKT 1	133.0	153.0	0.34325	112.0593	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	FPL SWITCH - WOODWARD 138KV CKT 1	133.0	153.0	0.34325	109.4212	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	FPL SWITCH - WOODWARD 138KV CKT 1	133.0	153.0	0.24667	106.4034	BEARCAT 138.00 - MOORELAND 138KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	FPL SWITCH - WOODWARD 138KV CKT 1	133.0	153.0	0.24667	106.3082	P12:138:WFEC:MSL14
FDNS	01ALL	0	25SP	G15_095	FROM->TO	FPL SWITCH - WOODWARD 138KV CKT 1	133.0	153.0	0.24667	104.8407	BEARCAT 138.00 - NINE MILE 138KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	FPL SWITCH - WOODWARD 138KV CKT 1	133.0	153.0	0.24667	102.2342	MOREWOOD SW - NINE MILE 138KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	FPL SWITCH - WOODWARD 138KV CKT 1	133.0	153.0	0.24079	101.657	CLEO CORNER - CLEOPLT4 138.00 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	FROM->TO	FPL SWITCH - WOODWARD 138KV CKT 1	133.0	153.0	0.34341	101.5239	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	FPL SWITCH - WOODWARD 138KV CKT 1	133.0	153.0	0.24079	100.9429	CLEOPLT4 138.00 - MEN TAP 138KV CKT 1
FDNS	01ALL	0	25SP	G15_095	FROM->TO	FPL SWITCH - WOODWARD 138KV CKT 1	133.0	153.0	0.24079	100.3317	IMO TAP - MEN TAP 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	FROM->TO	FPL SWITCH - WOODWARD 138KV CKT 1	133.0	153.0	0.33910	100.2715	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.44777	111.1773	BASE CASE
FDNS	01ALL	0	20SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.44817	110.8406	BASE CASE
FDNS	01ALL	0	17SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.44674	109.5833	BASE CASE
FDNS	01ALL	0	16WP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.44672	108.1557	BASE CASE
FDNS	01ALL	0	17G	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.44695	106.0802	BASE CASE
FDNS	01ALL	0	20WP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.48455	105.2112	WOODWARD EHV - WWPAR4 138.00 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.48455	105.211	WOODWARD - WWPAR4 138.00 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.48504	105.1267	WOODWARD EHV - WWPAR4 138.00 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.48504	105.1265	WOODWARD - WWPAR4 138.00 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.48284	104.2485	WOODWARD EHV - WWPAR4 138.00 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.48284	104.2482	WOODWARD - WWPAR4 138.00 138KV CKT 1
FDNSLock	01ALL	0	20SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.43625	103.7529	FAIRVIEW - OKEENE 69KV CKT 1
FDNS	01ALL	0	20SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.40994	103.626	RENFROW7 345.00 (BANK 1) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	01ALL	0	16WP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.48262	102.5097	WOODWARD EHV - WWPAR4 138.00 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.48262	102.5095	WOODWARD - WWPAR4 138.00 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.40812	102.4056	RENFROW7 345.00 (BANK 1) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	01ALL	0	16WP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.44827	102.2392	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	01ALL	0	17SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.44823	102.1366	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	01ALL	0	20SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.44517	102.0571	HUNTERS7 345.00 - RENFROW7 345.00 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	01ALL	0	20WP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.45632	101.9409	MOORELAND - PIC4 138.00 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.45632	101.9119	P12:138:WFEC:MSL12
FDNS	01ALL	0	20WP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.45632	101.8625	CEDARDALE - PIC4 138.00 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.45632	101.6981	CEDARDALE - OKEENE 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.43521	101.5954	FAIRVIEW - OKEENE 69KV CKT 1
FDNS	01ALL	0	20SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.45676	101.4502	MOORELAND - PIC4 138.00 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.45676	101.4202	P12:138:WFEC:MSL12
FDNS	01ALL	0	20WP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.43586	101.3727	FAIRVIEW - OKEENE 69KV CKT 1
FDNS	01ALL	0	20SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.45676	101.3723	CEDARDALE - PIC4 138.00 138KV CKT 1
FDNS	01ALL	0	17G	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.48277	101.2296	WOODWARD EHV - WWPAR4 138.00 138KV CKT 1
FDNS	01ALL	0	17G	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.48277	101.2294	WOODWARD - WWPAR4 138.00 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.45676	101.2062	CEDARDALE - OKEENE 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.43864	101.1114	BUFBEAR2 - BUFFALO 69KV CKT 1
FDNS	01ALL	0	20WP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.44467	101.0685	HUNTERS7 345.00 - RENFROW7 345.00 345KV CKT 1
FDNS	01ALL	0	20SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.44517	100.9184	HUNTERS7 345.00 - WOODRING 345KV CKT 1
FDNS	01ALL	0	20SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.43905	100.8304	BUFBEAR2 - BUFFALO 69KV CKT 1
FDNS	01ALL	0	17SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.45555	100.7015	MOORELAND - PIC4 138.00 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.45555	100.6774	P12:138:WFEC:MSL12
FDNS	01ALL	0	17SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.45555	100.623	CEDARDALE - PIC4 138.00 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.43334	100.523	CLEO CORNER (CLEOCOR1) 138/69/13.8KV TRANSFORMER CKT 1
FDNS	01ALL	0	20WP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.45812	100.5219	P12:138:WFEC:MSL14
FDNS	01ALL	0	20WP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.45812	100.4905	BEARCAT 138.00 - MOORELAND 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.45555	100.4778	CEDARDALE - OKEENE 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.45851	100.4696	P12:138:WFEC:MSL14
FDNS	01ALL	0	20SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.45851	100.4384	BEARCAT 138.00 - MOORELAND 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.40967	100.356	RENFROW7 345.00 (BANK 1) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	01ALL	0	20WP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.43294	100.2536	CLEO CORNER (CLEOCOR1) 138/69/13.8KV TRANSFORMER CKT 1
FDNS	01ALL	0	20WP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.45812	100.1516	BEARCAT 138.00 - NINE MILE 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.43864	100.1234	BUFFALO - WEST 69KV CKT 1
FDNS	01ALL	0	20SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.45851	100.101	BEARCAT 138.00 - NINE MILE 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.44652	100	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	01ALL	0	20WP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.44467	99.9	HUNTERS7 345.00 - WOODRING 345KV CKT 1
FDNS	01ALL	0	17G	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.44864	99.8	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	01ALL	0	20SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.43625	99.8	EAGLE CHIEF - RINGWOOD JCT 69KV CKT 1
FDNS	01ALL	0	20SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.43625	99.8	FAIRVIEW - RINGWOOD JCT 69KV CKT 1
FDNS	01ALL	0	17SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.45716	99.7	BEARCAT 138.00 - MOORELAND 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.45716	99.7	P12:138:WFEC:MSL14
FDNS	01ALL	0	20SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.43905	99.6	BUFFALO - WEST 69KV CKT 1
FDNS	01ALL	0	20WP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.45812	99.6	MOREWOOD SW - NINE MILE 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.45554	99.5	CEDARDALE - PIC4 138.00 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.45554	99.5	MOORELAND - PIC4 138.00 138KV CKT 1
FDNS	01ALL	0	16WP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.45554	99.5	P12:138:WFEC:MSL12
FDNS	01ALL	0	20SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.45851	99.5	MOREWOOD SW - NINE MILE 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.45159	99.5	CLEO CORNER - CLEOPLT4 138.00 138KV CKT 1
FDNS	01ALL	0	25SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.44845	99.5	BASE CASE
FDNS	01ALL	0	16WP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.45554	99.3	CEDARDALE - OKEENE 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.45716	99.3	BEARCAT 138.00 - NINE MILE 138KV CKT 1
FDNS	01ALL	0	17SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.43801	99.3	BUFBEAR2 - BUFFALO 69KV CKT 1
FDNS	01ALL	0	20SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.45199	99.3	CLEO CORNER - CLEOPLT4 138.00 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.44652	99.3	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	01ALL	0	20WP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.45159	99.3	CLEOPLT4 138.00 - MEN TAP 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.45159	99.3	IMO TAP - MEN TAP 138KV CKT 1
FDNS	01ALL	0	20WP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.44615	99.3	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	01ALL	0	20WP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.43864	99.3	FREEDOM - WEST 69KV CKT 1
FDNS	01ALL	0	17SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.44298	99.2	HUNTERS7 345.00 - RENFROW7 345.00 345KV CKT 1
FDNS	01ALL	0	20SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.47308	99.2	FPL SWITCH - WOODWARD 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.45199	99.2	CLEOPLT4 138.00 - MEN TAP 138KV CKT 1
FDNS	01ALL	0	20SP	G15_095	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.45199	99.1	IMO TAP - MEN TAP 138KV CKT 1
FDNS	01ALL	0	16WP	G16_003	FROM->TO	CIMARRON - DRAPER LAKE 345KV CKT 1	717.0	717.0	0.07541	104.877	BASE CASE
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04607	116.6	CNTSHNT3 345.00 - PRAIRIE3 345.00 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04595	111.5218	CNTSHNT3 345.00 - PRAIRIE3 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.03921	109.4228	HANKINSON - WAHPETON 230KV CKT 1
FDNS	16NR	0	17G	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04372	109.039	CNTSHNT3 345.00 - PRAIRIE3 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04441	107.5588	FARGO - SHEYNNE 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04441	107.5588	FARGO - SHEYNNE 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04042	106.6177	H081_SUB 345.00 - LYON COUNTY 345KV CKT 1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04322	106.5302	FORMAN - OAKES 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04427	106.4389	G09_001IST 345.00 - WATERTOWN 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04335	106.141	FARGO - JAMES TOWN 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	106.0971	GEN600002 3-SHERBURNE CNTY G3
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	106.0008	GEN600001 2-SHERBURNE CNTY G2
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04327	105.9945	FARGO - JAMES TOWN 230KV CKT 2
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04897	105.7729	GROTON-LNX3 345.00 - LELAND1-LNX3345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04988	105.7662	FTTHOM1-LNX3345.00 - G16-017-TAP 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04042	105.7112	H081_SUB 345.00 - J460 POI 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04988	105.6744	FT THOMPSON - FTTHOM1-LNX3345.00 345KV CKT Z
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04897	105.664	LELANDOLDS-GROTON-TLINE-REACTORS-345kV-CKT1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04897	105.664	P12:345:UMZB:# 109 #: LOS GRT IN ND. LOS GRT
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04897	105.6589	GROTON - GROTON-LNX3 345.00 345KV CKT Z
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04897	105.6574	LELAND OLDS - LELAND1-LNX3345.00 345KV CKT Z
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04988	105.6349	GEN-2016-017TAP-FTTHOMPSONREACTOR-FTTHOMPSON-CKT1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04374	105.5427	GLENBORO SOUTH - J290_SUB 230.00 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04670	105.5361	ANTELOP-LNX3345.00 - BRDLAND-LNX3345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04042	105.3698	BROOKING COUNTY - J460 POI 345.00 345KV CKT 1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04277	105.3125	ELLENDALE - OAKES 230KV CKT 1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04277	105.3125	ELLENDALE - OAKES 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04670	105.2774	ANTELOPEVALLEY-BOARDLAND-TLINE-REACTOR-CKT1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04670	105.2774	P12:345:UMZB:# 102 #: AVS BD IN ND. AVS BRD LR
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04670	105.2769	P12:345:UMZB:# 103 #: BD IN SD. LOSS OF LINE
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04670	105.2556	BRDLAND-LNX3345.00 - HURON 345KV CKT Z
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04670	105.2552	BROADLAND - HURON 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04670	105.2551	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04670	105.2551	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04670	105.1996	ANTELOP-LNX3345.00 - ANTELOPE VALLEY 345KV CKT Z
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	105.1919	GEN600000 1-SHERBURNECNTY G1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	105.0436	GEN600005 1-MONTICELLO
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04988	105.0241	P12:345:UMZB:# 108 #: LOS FT IN ND. LOS FT
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04988	104.9998	G16-017-TAP 345.00 - LELAND2-LNX3345.00 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.03914	104.9851	HANKINSON - WAHPETON 230KV CKT 1
FDNS	16ALL	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.09131	104.97	BASE CASE
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04988	104.9675	2810X2
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04090	104.9325	FORMAN - OAKES 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04270	104.9049	PRAIRIE - WINGER 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04168	104.8947	CHISAGO COUNTY - FORBES 500KV CKT 1
FDNSLock	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04958	104.8635	GROTON-LNX3 345.00 - LELAND1-LNX3345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04988	104.8386	LELAND OLDS - LELAND2-LNX3345.00 345KV CKT Z
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04374	104.794	J290_SUB 230.00 - RUGBY 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04255	104.6754	BISMARK - WEBER 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04255	104.6716	BISMARK - JAMES TOWN 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04128	104.6507	FORMAN - HANKINSON 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04281	104.5981	GARRISON - JAMES TOWN 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04255	104.5916	JAMES TOWN - WEBER 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	104.5789	MAPLE RIVER - PILSBRY4 230.00 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	104.4978	SHERBURNE CO 345/24.0KV TRANSFORMER CKT 1
FDNSLock	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04958	104.4828	LELANDOLDS-GROTON-TLINE-REACTORS-345kV-CKT1
FDNSLock	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04958	104.4578	GROTON - GROTON-LNX3 345.00 345KV CKT Z
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04302	104.4574	FORMAN - HANKINSON 230KV CKT 1
FDNSLock	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04958	104.4409	LELAND OLDS - LELAND1-LNX3345.00 345KV CKT Z
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04081	104.2199	ELLENDLMVP4 230.00 - OAKES 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04081	104.2199	ELLENDLMVP4 230.00 - OAKES 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04220	104.1286	MANDAN 4 230.00 - MPC02100TAP4230.00 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04220	104.1286	MANDAN 4 230.00 - MPC02100TAP4230.00 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04427	103.9523	G09_001IST 345.00 - GROTON 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04168	103.8946	BALTA - RAMSEY 230KV CKT 1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04038	103.7801	HANKINSON - WAHPETON 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04436	103.7247	FARGO - SHEYNNE 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04436	103.7247	FARGO - SHEYNNE 230KV CKT 1
FDNSLock	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04527	103.5838	G09_001IST 345.00 - GROTON 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	103.5164	GEN600006 1-AS KING
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04136	103.475	FTTHOM2-LNX3345.00 - GRPRAR2-LNX3345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04220	103.4505	CENTER - MPC02100TAP4230.00 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04136	103.3869	GRPRAR2-LNX3345.00 - YANKTON 345KV CKT Z
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	103.3864	LUVERNE4 230.00 - PILSBRY4 230.00 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	103.3789	LUVERNE4 230.00 230/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04136	103.3565	FTTHOMPSON-GRANDPRAIRIE-TLINE-REACTOR-CKT1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04136	103.3495	FT THOMPSON - FTTHOM2-LNX3345.00 345KV CKT Z
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04136	103.3441	GRANDPRAIRIE-FTTHOMPSON-TLINE-REACTORS-CKT1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04191	103.2793	BSSOUTH3 345.00 - J436&437_POI345.00 345KV CKT 1
FDNSLock	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04727	103.2622	ANTELOP-LNX3345.00 - BRDLAND-LNX3345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	103.2431	GEN600003 1-PRAIRIE ISLAND G1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	103.2394	GEN600004 2-PRAIRIE ISLAND G2
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04469	103.2131	FARGO - SHEYNNE 230KV CKT 1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04469	103.2131	FARGO - SHEYNNE 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04060	103.1733	P12:230:UMZB:# 116 #: ST IN SD. WSG-ST-VH
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04181	103.1569	COAL CREEK - UNDERWOOD 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	103.1415	GEN336821 1-GRAND GULF UNIT
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04587	103.1259	HESKETT - WISHEK 230KV CKT 1
FDNSLock	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04396	103.1209	BISON - HETINGER 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04146	103.0321	PRAIRIE - RAMSEY 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04181	102.9271	HARVEY - UNDERWOOD 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04587	102.8957	MERRCRT4 230.00 - WISHEK 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04065	102.8793	LAKEFIELD 3 - NOBLES 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04063	102.8623	HANLON - STORLA 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	102.8595	GEN344225 1-1CAL G1 25.000
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04060	102.8333	STORLA - WESSINGTON 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04503	102.8302	GLENHAM - WHITLOK 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04181	102.8145	BALTA - HARVEY 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04074	102.8138	BLAIR - GRANITE FALLS 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04074	102.8138	BLAIR - GRANITE FALLS 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04111	102.8016	GRAND FORKS (GK KV1A) 230/115/12.47KV TRANSFORMER CKT 1
FDNS	16NR	0	17G	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04092	102.7987	FORMAN - OAKES 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04163	102.7984	BALTA - MCHENRY 230KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.03996	102.7934	BIG STONE - BROWNS VALLEY 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04179	102.7733	COAL CREEK - MCHENRY 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04503	102.7701	P12:230:UMZB:# 114 #: SB IN SD. SB-WK-GH
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04503	102.7701	P12:230:UMZB:# 117 #: WK IN SD. SB-WK-GH
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	102.7648	GEN336153 1-WATERFORD UNIT#3
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04503	102.7335	SULLEY BUTTE - SULLYBT-LNX3230.00 230KV CKT Z
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04062	102.7316	KELLY - MEADOWGROVE4230.00 230KV CKT 1
FDNSLock	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04727	102.7188	ANTELOPEVALLEY-BOARDLAND-TLINE-REACTOR-CKT1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04503	102.7116	SULLYBUTTE-WHITLOCK-TLINE-REACTOR-CKT1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04503	102.7099	SULLYBT-LNX3230.00 - WHITLOK 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04515	102.7036	GLENHAM - L3 HAWDON 230KV CKT 1
FDNSLock	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04396	102.6642	BISON - MAURINE 230KV CKT 1
FDNSLock	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04276	102.6075	WATERTN-LNX3345.00 - WATERTOWN 345KV CKT Z
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.03883	102.6072	GRANTE FALLS - MANDAN 4 230.00 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	102.5996	GEN636641 1-LOUISA UNIT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04418	102.5903	G09_001IST 345.00 - WATERTOWN 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04031	102.5869	HELENA - SCOTTCO3 345.00 345KV CKT 1
FDNSLock	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04276	102.5759	WATERTOWN-WHITE-TLINE-REACTOR-CKT1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	102.5692	GEN335831 1-RIVERBEND UNIT#1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.03996	102.5681	BROWNS VALLEY - HANKINSON 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04067	102.5644	BIG STONE (230/115) 230/115/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04503	102.5621	OAHE - SULLEY BUTTE 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04121	102.5565	PRAIRIE3 345.00 (P2) 345/230/13.8KV TRANSFORMER CKT 2
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04195	102.5479	WATERTN-LNX3345.00 - WHITE 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	102.5427	GEN681542 6-JP MADGETT
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04727	102.5404	P12:345:UMZB:# 103 #: BD IN SD. LOSS OF LINE
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04727	102.516	BRDLAND-LNX3345.00 - HURON 345KV CKT Z
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04727	102.5151	BROADLAND - HURON 230KV CKT 1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04727	102.5149	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04727	102.5149	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04058	102.4932	FT THOMPSON - LETCHER 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04058	102.4932	FT THOMPSON - LETCHER 230KV CKT 1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04375	102.4654	FARGO - JAMES TOWN 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	102.4645	GEN337911 1-ARKANSAS NUCLEAR ONE UNIT #2
FDNSLock	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04175	102.4617	NUNDRWD - WAYSIDE 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04035	102.4587	H081_SUB 345.00 - J460 POI 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	102.4573	CLAY BOSWELL 230/20.9KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04197	102.4473	BALTA - RUGBY 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04070	102.4204	APPLEDORN 4 230.00 - WATERTOWN 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04070	102.4204	APPLEDORN 4 230.00 - WATERTOWN 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04070	102.4204	APPLEDORN 4 230.00 - WATERTOWN 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04195	102.4182	WATERTN-LNX3345.00 - WATERTOWN 345KV CKT Z
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04008	102.4169	KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04195	102.4125	P12:345:UMZW:# 1747 #: WT2 IN SD. WT2-WHT LINE FAULT
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04195	102.4125	WATERTOWN-WHITE-TLINE-REACTOR-CKT1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04727	102.4106	ANTELOP-LNX3345.00 - ANTELOPE VALLEY 345KV CKT Z
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	102.4096	GEN629074 1-ARNOLD LOWSIDE OF GSU XFMR
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04113	102.3888	ELLENDLMVP4 230.00 - J316_SUB 230.00 230KV CKT 1
FDNS	16NR	0	17G	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04612	102.376	GROTON-LNX3 345.00 - LELAND1-LNX3345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04008	102.3757	SIDNEY-KEYSTONE-TLINE-REACTORS-CKT1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04008	102.349	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04070	102.3473	APPLEDORN 4 230.00 - GRANITE FALLS 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04070	102.3473	APPLEDORN 4 230.00 - GRANITE FALLS 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04052	102.3359	MINGO - RED WILLOW 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04052	102.3359	MINGO - RED WILLOW 345KV CKT 1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04367	102.3174	FARGO - JAMES TOWN 230KV CKT 2
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	102.3025	GEN338146 1-INDEPENDENCE UNIT #2
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	102.2977	GEN337910 1-ARKANSAS NUCLEAR ONE UNIT #1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	102.2903	GEN338143 1-INDEPENDENCE UNIT #1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	102.2718	GEN657964 1-ASH2GEN9 0.5750
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	102.232	GEN337652 1-WHITE BLUFF UNIT #1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	102.2285	GEN629075 1-OTTUMWA GENERATOR FOR OTTUMWA UNIT NO 1
FDNSLock	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04108	102.1863	GEN600002 3-SHERBURNE CNTY G3
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	102.1833	BARNES 4 230.00 - PILSBRY4 230.00 230KV CKT 1
FDNS	16NR	0	17G	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04612	102.1832	LELANDOLDS-GROTON-TLINE-REACTORS-345kV-CKT1
FDNS	16NR	0	17G	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04612	102.1832	P12:345:UMZB:# 109 #: LOS GRT IN ND. LOS GRT
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04091	102.1821	FT RANDAL - FT THOMPSON 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04091	102.1821	FT RANDAL - FT THOMPSON 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	102.1775	GEN337653 1-WHITE BLUFF UNIT #2
FDNS	16NR	0	17G	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04612	102.175	GROTON - GROTON-LNX3 345.00 345KV CKT Z
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	102.1706	GEN681522 3-GENOA 3
FDNS	16NR	0	17G	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04612	102.1693	LELAND OLDS - LELAND1-LNX3345.00 345KV CKT Z
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	102.1675	JAMES DTN - JAMES TAP 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04106	102.166	FALCONER - GRAND FORKS 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04106	102.166	FALCONER - GRAND FORKS 115KV CKT 1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.05046	102.1591	FT THOMPSON - FTTHOM1-LNX3345.00 345KV CKT Z
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04090	102.1547	FT THOMPSON - LAKE PLATT 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04090	102.1547	FT THOMPSON - LAKE PLATT 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	102.154	GEN336252 1-NINEMILE POINT UNIT#5
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	102.1482	GEN615021 1-GRE-ER 14G 16.000
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	102.1397	GEN600067 9-HIGH BRIDGE
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	102.1137	GEN336251 1-NINEMILE POINT UNIT#4

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04066	102.1135	BIG STONE - HIGHWAY 12 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	102.1127	GEN300003 1-THOMAS HILL UNIT 3
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.05046	102.112	GEN-2016-017TAP-FTTHOMPSONREACTOR-FTTHOMPSON-CKT1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	102.0947	GEN336831 1-BAXTER WILSON SES
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04063	102.0854	LETCHER - SIOUX FALLS 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	102.081	GEN337041 1-GERALD ANDRUS
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	102.0772	GEN345671 2-1RUSH G2 18.000
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04079	102.077	MORANVILLE - ROSEAU 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	102.0743	GEN345670 1-1RUSH G1 18.000
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04065	102.0623	GEN600002 3-SHERBURNE CNTY G3
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	102.0608	GEN344897 4-1LAB G4 20.000
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	102.0607	GEN344896 3-1LAB G3 20.000
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04090	102.0603	FT RANDAL - LAKE PLATT 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	102.06	GEN344895 2-1LAB G2 20.000
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	102.0599	GEN344894 1-1LAB G1 20.000
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04065	102.0543	GEN600001 2-SHERBURNE CNTY G2
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	102.0429	GEN590011 2-ERCOT EQUIVALENCE
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04066	102.0287	HIGHWAY 12 - ORTONVILLE 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04084	102.0278	HOLT.CO3 345.00 - THEDFRD3 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	102.024	GEN300006 1-NEW MADRID UNIT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	102.0226	GEN300007 1-NEW MADRID UNIT 2
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	102.0185	GEN590010 1-ERCOT EQUIVALENCE
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04191	102.0129	ELLENDLMVP3 345.00 - J436&437_POI345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04191	102.0129	ELLENDLMVP3 345.00 - J436&437_POI345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04060	102.0018	GRACEVT7 - ORTONVILLE 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04053	101.9995	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04328	101.9994	FARGO - JAMES TOWN 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.03883	101.9983	BISMARK - GRANTE FALLS 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	101.9839	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	101.9827	GEN501813 1-RODEMACHER UNIT 3
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04035	101.9789	H081_SUB 345.00 - LYON COUNTY 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	101.9784	GEN615052 1-CAMBRIDGE GENERATING STATION
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04059	101.977	GRAND ISLAND - MCCOOL 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	101.9755	GEN338388 1-1PLUM PT U1 23.000
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04191	101.9742	ELLENDLMVP3 345.00 (1) 345/230/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	101.9718	GEN501801 1-DOLET HILLS UNIT1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04062	101.9229	FT RANDAL - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04062	101.9192	GERALD GENTLEMAN STATION - RED WILLOW 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	101.9031	GEN336191 1-LITTLE GYPSY UNIT#3
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	101.9003	GEN335206 1-NELSON UNIT 6
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04042	101.8929	SIDNEY - STEGALL 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	101.874	GEN334440 1-SABINE UNIT 4
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04320	101.8584	FARGO - JAMES TOWN 230KV CKT 2
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04134	101.8521	DAGLUM 4230.00 - RHAME 4 230.00 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04078	101.8215	GRAND FORKS - PRAIRIE 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04078	101.8215	GRAND FORKS - PRAIRIE 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04888	101.8128	GROTON-LNX3 345.00 - LELAND1-LNX3345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.03864	101.8124	FRONTER4 230.00 - WAHPETON 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04102	101.8103	EGF IND - GRAND FORKS 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04060	101.7879	GRACEVT7 - MORRIS 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04060	101.7879	GRACEVT7 - MORRIS 115KV CKT 1
FDNS	16NR	0	17G	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04044	101.7371	ELLENDALE - OAKES 230KV CKT 1
FDNSLock	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04108	101.7283	GEN600001 2-SHERBURNE CNTY G2
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04888	101.717	LELANDOLDS-GROTON-TLINE-REACTORS-345kV-CKT1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04888	101.717	P12:345:UMZB:# 109 #: LOS GRT IN ND. LOS GRT
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04888	101.712	GROTON - GROTON-LNX3 345.00 345KV CKT Z
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04980	101.7115	FTTHOM1-LNX3345.00 - G16-017-TAP 345.00 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04888	101.7074	LELAND OLDS - LELAND1-LNX3345.00 345KV CKT Z
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04980	101.6344	FT THOMPSON - FTTHOM1-LNX3345.00 345KV CKT Z
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04980	101.6023	GEN-2016-017TAP-FTTHOMPSONREACTOR-FTTHOMPSON-CKT1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04073	101.5866	JAMESTOWN (345/115JAMS2) 345/115/41.6KV TRANSFORMER CKT 2
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.05046	101.538	P12:345:UMZB:# 108 #: LOS FT IN ND. LOS FT
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04662	101.5358	ANTELOP-LNX3345.00 - BRDLAND-LNX3345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04073	101.5163	JAMESTOWN (345/115) 345/115/41.6KV TRANSFORMER CKT 1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04333	101.4733	PRAIRIE - WINGER 230KV CKT 1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.05046	101.4628	G16-017-TAP 345.00 - LELAND2-LNX3345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	101.4537	SHEYENNE SVC - SHEYNNE 115KV CKT Z
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.05046	101.4182	2810X2
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	101.3984	GEN620315 1-BIG STONE GEN
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04035	101.3254	BROOKING COUNTY - J460 POI 345.00 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04288	101.3062	PRAIRIE - WINGER 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04662	101.2823	ANTELOPEVALLEY-BOARDLAND-TLINE-REACTOR-CKT1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04662	101.2823	P12:345:UMZB:# 102 #: AVS BD IN ND. AVS BRD LR
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04662	101.281	P12:345:UMZB:# 103 #: BD IN SD. LOSS OF LINE
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04662	101.26	BRDLAND-LNX3345.00 - HURON 345KV CKT Z
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04662	101.2596	BROADLAND - HURON 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04662	101.2594	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04662	101.2594	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.05046	101.2532	LELAND OLDS - LELAND2-LNX3345.00 345KV CKT Z
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04073	101.2202	JAMESTOWN - LADISH 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	101.2066	BASE CASE

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04162	101.1982	CHISAGO COUNTY - FORBES 500KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04662	101.1962	ANTELOP-LNX3345.00 - ANTELOPE VALLEY 345KV CKT Z
FDNSLock	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04108	101.191	GEN600000 1-SHERBURNECNTY G1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04068	101.182	BIG STONE - BLAIR 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04068	101.182	BIG STONE - BLAIR 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04070	101.1648	FERGSFL4 230.00 - GRE-SILVRLK4230.00 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04070	101.1509	GRE-SILVRLK4230.00 - HENNING 230KV CKT 1
FDNSLock	16NR	0	17G	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04690	101.1471	FT THOMPSON - FTTHOM1-LNX3345.00 345KV CKT Z
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04073	101.1267	JAMES PK - JAMES TAP 115KV CKT 1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04420	101.0873	GLENBORO SOUTH - J290_SUB 230.00 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04065	101.0444	GEN600000 1-SHERBURNECNTY G1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04276	101.0353	WATERTN-LNX3345.00 - WHITE 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04980	101.0184	P12:345:UMZB:# 108 #: LOS FT IN ND. LOS FT
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04980	100.9805	G16-017-TAP 345.00 - LELAND2-LNX3345.00 345KV CKT 1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04309	100.9679	GARRISON - JAMES TOWN 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04980	100.9521	2810X2
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04292	100.9438	BISMARK - JAMES TOWN 230KV CKT 1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04292	100.9411	BISMARK - WEBER 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04052	100.9223	JAMES TOWN - PICKERT 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04052	100.9133	GRAND FORKS - PICKERT 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04065	100.9045	GEN600005 1-MONTICELLO
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.03939	100.8937	P12:230:UMZW:# 156 #: MDOE IN MN. LINE FAULT CAUSES LOSS OF MH 230KV BUS
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.03939	100.8937	P12:230:UMZW:# 158 #: MH IN ND.
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04292	100.8594	JAMES TOWN - WEBER 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.03939	100.8535	MOOREHEAD - MORRIS 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.03868	100.8288	MONTICELLO - WAITE PARK 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04980	100.8278	LELAND OLDS - LELAND2-LNX3345.00 345KV CKT Z
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04006	100.7354	FARGO - MOOREHEAD 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04365	100.7204	GLENBORO SOUTH - J290_SUB 230.00 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	100.7128	GEN672306 6-BOUNDARY DAM GENERATOR 6
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04082	100.7064	FORMAN - OAKES 230KV CKT 1
FDNSLock	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04108	100.7	GEN600005 1-MONTICELLO
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	100.6893	MPC02100TAP4230.00 - MPC2100WIND4230.00 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	100.6881	MPC2100WIND4230.00 230/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04060	100.6865	GRE-WINGRIV4230.00 - INMANN 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04053	100.6534	MAPLE RIVER TAP NORTH - SHEYNNE 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	100.6267	BISONMP4 230.00 230/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	717.0	717.0	0.04488	100.6234	CNTSHNT3 345.00 - PRAIRIE3 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04058	100.6173	DOUGLAS CO - GRE-HUDSON 7115.00 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04058	100.5918	ALEXANDRIA - GRE-HUDSON 7115.00 115KV CKT 1
FDNS	16NR	0	17G	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04384	100.5486	ANTELOP-LNX3345.00 - BRDLAND-LNX3345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	100.5107	GEN620115 1-HRDLKGEN 0.6000
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04246	100.5081	BISMARK - WEBER 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04120	100.5062	FORMAN - HANKINSON 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	100.5004	ANSON - SPLIT ROCK 115KV CKT 2
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	100.5002	ANSON 115/17.5KV TRANSFORMER CKT 4
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04247	100.4994	BISMARK - JAMES TOWN 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04273	100.4907	GARRISON - JAMES TOWN 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04053	100.4666	CSLTNET7 115.00 - MAPLE RIVER TAP NORTH 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04056	100.4547	HAZLETON - MITCHLCO3 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	100.4537	BISONMP4 230.00 230/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	100.4537	BISONMP4 230.00 230/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	100.4445	BISONMP4 230.00 230/34.5KV TRANSFORMER CKT 4
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	100.4445	BISONMP4 230.00 230/34.5KV TRANSFORMER CKT 5
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	100.4428	P13:230:UMZW:# 2218 #: FP IN MT. LOSS OF TRANSFORMER (AT2).
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	100.4426	ANSON (ANS 1) 115/13.8/13.8KV TRANSFORMER CKT 2
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	100.4425	ANSON - SPLIT ROCK 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	100.44	BISONMP4 230.00 230/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	100.4321	AS KING 345/20.0KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	100.428	GEN659162 4-RED WLCK
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	100.428	GEN659163 5-BLACK WDCK
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	100.4269	GEN659192 6-LYNN
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04246	100.4221	JAMES TOWN - WEBER 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	100.4094	GEN652353 2-GR PRAIRIEG 0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	100.3896	GEN659294 1-WILTONCOL9
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	100.3895	GEN659273 2-GROTON SYNC COND
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04420	100.3881	J290_SUB 230.00 - RUGBY 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04065	100.3751	SHERBURNE CO 345/24.0KV TRANSFORMER CKT 1
FDNS	16NR	0	17G	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04384	100.3724	BRDLAND-LNX3345.00 - HURON 345KV CKT Z
FDNS	16NR	0	17G	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04384	100.372	BROADLAND - HURON 230KV CKT 1
FDNS	16NR	0	17G	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04384	100.3718	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1
FDNS	16NR	0	17G	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04384	100.3718	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04061	100.3501	ARROWHEAD - ARROWHEAD 230 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04062	100.3166	AS KING - EAU CLAIRE 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	100.273	RGBYWND4 230.00 - RUGBY 230KV CKT 1
FDNS	16NR	0	17G	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04384	100.2609	ANTELOP-LNX3345.00 - ANTELOPE VALLEY 345KV CKT Z
FDNS	16NR	0	17G	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04384	100.2573	ANTELOPEVALLEY-BOARDLAND-TLINE-REACTOR-CKT1
FDNS	16NR	0	17G	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04384	100.2573	P12:345:UMZB:# 102 #: AVS BD IN ND. AVS BRD LR
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	100.257	RGBYWND4 230.00 230/34.5KV TRANSFORMER CKT 1
FDNS	16NR	0	17G	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04384	100.2566	P12:345:UMZB:# 103 #: BD IN SD. LOSS OF LINE
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04044	100.2517	ELM CREEK - PARKERS LAKE 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04094	100.244	P12:230:UMZB:# 116 #: ST IN SD. WSG-ST-VH
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04108	100.2108	SHERBURNE CO 345/24.0KV TRANSFORMER CKT 1
FDNS	16NR	0	17G	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04068	100.1969	FORMAN - HANKINSON 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	100.1915	GEN562872 1-G15046_3 0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	100.18	PRAIRIE ISLAND 345/20.0KV TRANSFORMER CKT 2
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	100.1782	PRAIRIE ISLAND 345/20.0KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04061	100.1777	ALEXMRES3 345.00 () 345/115/34.5KV TRANSFORMER CKT 9
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	100.1717	J460 345.00 - J460 POI 345.00 345KV CKT 1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04203	100.1441	BALTA - RAMSEY 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04067	100.0734	P12:115:UMZW:# 162 #: NEL IN ND. FAULT ON ML-NEL-MX-GA 115 KV
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	100.0641	GEN659118 1-LARAMIE RIVER UNIT1
FDNS	16NR	0	17G	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04690	100.0552	P12:345:UMZB:# 108 #: LOS FT IN ND. LOS FT
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04058	100.0535	MAPLE R3 345.00 (345/230) 345/230/13.8KV TRANSFORMER CKT 1
FDNS	16NR	0	17G	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04690	100	2810X2
FDNS	16NR	0	17G	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04690	100	G16-017-TAP 345.00 - LELAND2-LNX3345.00 345KV CKT 1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04047	100	H081_SUB 345.00 - LYON COUNTY 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04418	100	G09_001IST 345.00 - GROTON 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04365	100	J290_SUB 230.00 - RUGBY 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04073	100	ELLENDLMVP4 230.00 - OAKES 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04073	100	ELLENDLMVP4 230.00 - OAKES 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	100	GEN659411 1-CAMPBLCNTY W0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	100	GEN910006 1-G12_012IS_3 0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04058	100	MAPLE R3 345.00 (345/230) 345/230/13.8KV TRANSFORMER CKT 2
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04053	100	BUFFALO - CSLTNET7 115.00 115KV CKT 1
FDNS	16NR	0	17G	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04690	99.9	LELAND OLDS - LELAND2-LNX3345.00 345KV CKT Z
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04047	99.9	H081_SUB 345.00 - J460 POI 345.00 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04065	99.9	MAPLE RIVER - PILSBRY4 230.00 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04073	99.9	P12:230:UMZB:# 112 #: NU IN SD. NU-RCDC & DRY CREEK XFMR
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	99.9	GEN652457 1-GARRISON
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	99.9	GEN652458 2-GARRISON
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	99.9	GEN652459 3-GARRISON
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	99.9	RCDC EAST 4230.00 - RED CEDAR DC 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04010	99.9	AUDUBON - HUBBARD 230KV CKT 1
FDNS	00NR	0	16WP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	717.0	717.0	0.04721	99.8	CNTSHNT3 345.00 - PRAIRIE3 345.00 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04159	99.8	BALTA - RAMSEY 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	99.8	GEN659018 1-G14_003IS_3 0.6900
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04093	99.7	STORLA - WESSINGTON 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	99.7	GEN652460 4-GARRISON
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	99.7	GEN652461 5-GARRISON
FDNS	16NR	0	17G	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04152	99.6	GLENBORO SOUTH - J290_SUB 230.00 230KV CKT 1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04108	99.6	GEN600006 1-AS KING
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	99.6	GEN659366 3-WILTON 3 W0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04053	99.6	BUFFALO (BUFFALO3) 345/115/41.6KV TRANSFORMER CKT 1
FDNSLock	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04465	99.6	BISON - HETINGER 230KV CKT 1
FDNS	16NR	0	17G	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04265	99.5	G09_001IST 345.00 - WATERTOWN 345KV CKT 1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04182	99.5	PRAIRIE - RAMSEY 230KV CKT 1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04097	99.5	HANLON - STORLA 230KV CKT 1
FDNSLock	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04465	99.5	BISON - MAURINE 230KV CKT 1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04091	99.4	FT THOMPSON - LETCHER 230KV CKT 1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04091	99.4	FT THOMPSON - LETCHER 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04129	99.4	FTTHOM2-LNX3345.00 - GRPRAR2-LNX3345.00 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04065	99.4	GEN600006 1-AS KING
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	99.4	GEN620172 1-JAMES TOWN PEAKER
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	99.4	GEN659194 1-NDPRAIRWND1W0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04041	99.4	ELM CREEK - MONTICELLO 345KV CKT 1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04568	99.3	GLENHAM - WHITLOK 230KV CKT 1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04493	99.3	HESKETT - WISHEK 230KV CKT 1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04228	99.3	NUNDRWD - WAYSIDE 230KV CKT 1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04108	99.3	GEN600003 1-PRAIRIE ISLAND G1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04108	99.3	GEN600004 2-PRAIRIE ISLAND G2
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04129	99.3	GRPRAR2-LNX3345.00 - YANKTON 345KV CKT Z
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04159	99.3	MAPLE RIVER - SHEYNNE 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	99.3	GEN 10648 1-G830_GEN 0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	99.3	SQUARE BUTTE 230/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04568	99.2	P12:230:UMZB:# 114 #: SB IN SD. SB-WK-GH
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04568	99.2	P12:230:UMZB:# 117 #: WK IN SD. SB-WK-GH
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04568	99.2	SULLEY BUTTE - SULLYBT-LNX3230.00 230KV CKT Z
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04198	99.2	MANDAN 4 230.00 - MPC02100TAP4230.00 230KV CKT 1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04198	99.2	MANDAN 4 230.00 - MPC02100TAP4230.00 230KV CKT 1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04108	99.2	GEN336821 1-GRAND GULF UNIT
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04108	99.2	LUVERNE4 230.00 230/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04098	99.2	KELLY - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04182	99.2	BSSOUTH3 345.00 - J436&437_POI345.00 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04129	99.2	FT THOMPSON - FTTHOM2-LNX3345.00 345KV CKT Z
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04129	99.2	FTTHOMPSON-GRANDPRAIRIE-TLINE-REACTOR-CKT1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04129	99.2	GRANDPRAIRIE-FTTHOMPSON-TLINE-REACTORS-CKT1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04102	99.2	MAPLE RIVER - WINGER 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04072	99.2	GEN659403 1-NDSUNFLWR W0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.03904	99.2	CENTER (C1) 345/230/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.03904	99.2	CENTER (C2) 345/230/13.8KV TRANSFORMER CKT 2
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04568	99.1	SULLYBT-LNX3230.00 - WHITLOK 230KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04568	99.1	SULLYBUTTE-WHITLOCK-TLINE-REACTOR-CKT1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04493	99.1	MERRCRT4 230.00 - WISHEK 230KV CKT 1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04217	99.1	COAL CREEK - UNDERWOOD 230KV CKT 1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04108	99.1	LUVERNE4 230.00 - PILSBRY4 230.00 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04173	99.1	COAL CREEK - UNDERWOOD 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04138	99.1	PRAIRIE - RAMSEY 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04065	99.1	GEN336821 1-GRAND GULF UNIT
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04065	99.1	GEN600003 1-PRAIRIE ISLAND G1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04065	99.1	GEN600004 2-PRAIRIE ISLAND G2
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04065	99.1	LUVERNE4 230.00 - PILSBRY4 230.00 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04065	99.1	LUVERNE4 230.00 230/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04052	99.1	P12:230:UMZB:# 116 #: ST IN SD. WSG-ST-VH
FDNSLock	00NR	0	20SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04391	99.1	BISON - HETINGER 230KV CKT 1
FDNS	16NR	0	17G	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04265	99	G09_001IST 345.00 - GROTON 345KV CKT 1
FDNS	16NR	0	17G	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.03822	99	HANKINSON - WAHPETON 230KV CKT 1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04581	99	GLENHAM - L3 HAWDON 230KV CKT 1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04568	99	OAHE - SULLEY BUTTE 230KV CKT 1
FDNS	00NR	0	17SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.04108	99	GEN344225 1-1CAL G1 25.000
FDNS	00NR	0	25SP	G16_004	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.03981	99	AUDUBON - SHEYNNE 230KV CKT 1
FDNS	16ALL	0	17SP	G16_004	FROM->TO	ELLENDALE - OAKES 230KV CKT 1	319.0	351.0	0.03336	100.3304	BASE CASE
FDNS	00NR	0	20SP	G16_004	FROM->TO	FARGO - SHEYNNE 230KV CKT 1	342.0	342.0	0.03453	139.1369	BUFFALO - JAMESTOWN 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	FROM->TO	FARGO - SHEYNNE 230KV CKT 1	342.0	342.0	0.03443	138.9921	BUFFALO - JAMESTOWN 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	FROM->TO	FARGO - SHEYNNE 230KV CKT 1	342.0	342.0	0.03457	115.32	CENTER - JAMESTOWN 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	FROM->TO	FARGO - SHEYNNE 230KV CKT 1	342.0	342.0	0.03467	114.4978	CENTER - JAMESTOWN 345KV CKT 1
FDNS	00NR	0	17SP	G16_004	FROM->TO	FARGO - SHEYNNE 230KV CKT 1	342.0	342.0	0.03416	110.6356	CENTER - JAMESTOWN 345KV CKT 1
FDNS	16NR	0	20L	G16_004	TO->FROM	GLENHAM - L3 HAWDON 230KV CKT 1	210.0	210.0	0.05178	106.141	FT THOMPSON - FTTHOM1-LNX3345.00 345KV CKT Z
FDNS	16NR	0	20L	G16_004	TO->FROM	GLENHAM - L3 HAWDON 230KV CKT 1	210.0	210.0	0.05178	106.0709	GEN-2016-017TAP-FTTHOMPSONREACTOR-FTTHOMPSON-CKT1
FDNS	16NR	0	20L	G16_004	TO->FROM	GLENHAM - L3 HAWDON 230KV CKT 1	210.0	210.0	0.05178	105.9697	FTTHOM1-LNX3345.00 - G16-017-TAP 345.00 345KV CKT 1
FDNS	16NR	0	20L	G16_004	TO->FROM	GLENHAM - L3 HAWDON 230KV CKT 1	210.0	210.0	0.05178	102.929	G16-017-TAP 345.00 - LELAND2-LNX3345.00 345KV CKT 1
FDNS	16NR	0	20L	G16_004	TO->FROM	GLENHAM - L3 HAWDON 230KV CKT 1	210.0	210.0	0.05178	102.9274	LELAND OLDS - LELAND2-LNX3345.00 345KV CKT Z
FDNS	16NR	0	20L	G16_004	TO->FROM	GLENHAM - L3 HAWDON 230KV CKT 1	210.0	210.0	0.05178	102.8865	2810X2
FDNS	16NR	0	20L	G16_004	TO->FROM	GLENHAM - L3 HAWDON 230KV CKT 1	210.0	210.0	0.05178	102.0219	P12:345:UMZB:# 108 #: LOS FT IN ND. LOS FT
FDNSLock	16NR	0	17G	G16_004	FROM->TO	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	400.0	0.07907	114.5418	FT THOMPSON - FTTHOM1-LNX3345.00 345KV CKT Z
FDNS	16NR	0	17G	G16_004	FROM->TO	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	400.0	0.07907	112.1782	LELAND OLDS - LELAND2-LNX3345.00 345KV CKT Z
FDNS	16NR	0	17G	G16_004	FROM->TO	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	400.0	0.07907	112.0583	P12:345:UMZB:# 108 #: LOS FT IN ND. LOS FT
FDNS	16NR	0	17G	G16_004	FROM->TO	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	400.0	0.07236	111.9843	LELAND OLDS - LELAND1-LNX3345.00 345KV CKT Z
FDNS	16NR	0	17G	G16_004	FROM->TO	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	400.0	0.07236	111.9402	LELANDOLDS-GROTON-TLINE-REACTORS-345kV-CKT1
FDNS	16NR	0	17G	G16_004	FROM->TO	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	400.0	0.07236	111.9402	P12:345:UMZB:# 109 #: LOS GRT IN ND. LOS GRT
FDNS	16NR	0	17G	G16_004	FROM->TO	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	400.0	0.07236	111.936	GROTON - GROTON-LNX3 345.00 345KV CKT Z
FDNS	16NR	0	17G	G16_004	FROM->TO	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	400.0	0.07907	111.7147	G16-017-TAP 345.00 - LELAND2-LNX3345.00 345KV CKT 1
FDNS	16NR	0	17G	G16_004	FROM->TO	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	400.0	0.07907	111.6818	2810X2
FDNS	16NR	0	17G	G16_004	FROM->TO	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	400.0	0.07236	111.582	GROTON-LNX3 345.00 - LELAND1-LNX3345.00 345KV CKT 1
FDNSLock	16NR	0	17G	G16_004	FROM->TO	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	400.0	0.07907	110.1631	FT THOMPSON - FTTHOM1-LNX3345.00 345KV CKT Z
FDNS	16NR	0	17G	G16_004	FROM->TO	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	400.0	0.07907	108.1215	LELAND OLDS - LELAND2-LNX3345.00 345KV CKT Z
FDNS	16NR	0	17G	G16_004	FROM->TO	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	400.0	0.07907	108.0172	P12:345:UMZB:# 108 #: LOS FT IN ND. LOS FT
FDNS	16NR	0	17G	G16_004	FROM->TO	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	400.0	0.07236	107.9769	LELAND OLDS - LELAND1-LNX3345.00 345KV CKT Z
FDNS	16NR	0	17G	G16_004	FROM->TO	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	400.0	0.07236	107.9398	GROTON - GROTON-LNX3 345.00 345KV CKT Z
FDNS	16NR	0	17G	G16_004	FROM->TO	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	400.0	0.07236	107.9386	LELANDOLDS-GROTON-TLINE-REACTORS-345kV-CKT1
FDNS	16NR	0	17G	G16_004	FROM->TO	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	400.0	0.07236	107.9386	P12:345:UMZB:# 109 #: LOS GRT IN ND. LOS GRT
FDNS	16NR	0	17G	G16_004	FROM->TO	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	400.0	0.07907	107.689	2810X2
FDNS	16NR	0	17G	G16_004	FROM->TO	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	400.0	0.07907	107.6862	G16-017-TAP 345.00 - LELAND2-LNX3345.00 345KV CKT 1
FDNS	16NR	0	17G	G16_004	FROM->TO	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	400.0	0.07236	107.5842	GROTON-LNX3 345.00 - LELAND1-LNX3345.00 345KV CKT 1
FDNS	16NR	0	20L	G16_004	FROM->TO	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	400.0	0.06521	102.4439	FT THOMPSON - FTTHOM1-LNX3345.00 345KV CKT Z
FDNS	16NR	0	20L	G16_004	FROM->TO	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	400.0	0.06521	102.4106	GEN-2016-017TAP-FTTHOMPSONREACTOR-FTTHOMPSON-CKT1
FDNS	16NR	0	20L	G16_004	FROM->TO	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	400.0	0.06521	101.9449	FTTHOM1-LNX3345.00 - G16-017-TAP 345.00 345KV CKT 1
FDNS	16NR	0	17G	G16_004	FROM->TO	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	400.0	0.06399	100.8561	G09_001IST 345.00 - WATERTOWN 345KV CKT 1
FDNS	16NR	0	17G	G16_004	FROM->TO	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	400.0	0.06399	100.5931	G09_001IST 345.00 - GROTON 345KV CKT 1
FDNS	16NR	0	20L	G16_004	FROM->TO	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	400.0	0.06521	100.394	LELAND OLDS - LELAND2-LNX3345.00 345KV CKT Z
FDNS	16NR	0	20L	G16_004	FROM->TO	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	400.0	0.06521	100.2599	P12:345:UMZB:# 108 #: LOS FT IN ND. LOS FT
FDNS	16NR	0	20L	G16_004	FROM->TO	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	400.0	0.06521	99.9	2810X2
FDNS	16NR	0	20L	G16_004	FROM->TO	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	400.0	0.06521	99.9	G16-017-TAP 345.00 - LELAND2-LNX3345.00 345KV CKT 1
FDNS	16NR	0	17G	G16_004	FROM->TO	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	400.0	0.06080	99.6	CENTER - JAMESTOWN 345KV CKT 1
FDNS	16NR	0	17G	G16_004	FROM->TO	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	400.0	0.05999	99.6	BISON 3 345.00 - BUFFALO 345KV CKT 1
FDNS	16NR	0	20L	G16_004	FROM->TO	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	400.0	0.06521	99.6	FT THOMPSON - FTTHOM1-LNX3345.00 345KV CKT Z
FDNS	16NR	0	20L	G16_004	FROM->TO	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	400.0	0.06521	99.6	GEN-2016-017TAP-FTTHOMPSONREACTOR-FTTHOMPSON-CKT1
FDNSLock	16NR	0	17G	G16_004	FROM->TO	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	400.0	0.06427	99.5	BISON - HETINGER 230KV CKT 1
FDNS	16NR	0	20L	G16_004	FROM->TO	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	400.0	0.06521	99.2	FTTHOM1-LNX3345.00 - G16-017-TAP 345.00 345KV CKT 1
FDNS	16NR	0	17G	G16_004	FROM->TO	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	400.0	0.06427	99.1	BISON - MAURINE 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03232	194.6316	H081_SUB 345.00 - LYON COUNTY 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03232	193.6268	H081_SUB 345.00 - J460 POI 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03235	190.2183	H081_SUB 345.00 - LYON COUNTY 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03235	187.4774	H081_SUB 345.00 - J460 POI 345.00 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03232	182.6557	BROOKING COUNTY - J460 POI 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03235	177.647	BROOKING COUNTY - J460 POI 345.00 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03216	169.4785	H081_SUB 345.00 - LYON COUNTY 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03216	167.5734	H081_SUB 345.00 - J460 POI 345.00 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03216	157.851	BROOKING COUNTY - J460 POI 345.00 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03618	152.8343	HANLON - STORLA 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03626	152.7771	P12:230:UMZB:# 116 #: ST IN SD. WSG-ST-VH
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	152.039	SQUARE BUTTE - YNG2 4 230.00 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	152.0384	YNG2 4 230.00 230/20.0KV TRANSFORMER CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	151.5296	GEN635214 4-NEAL UNIT 4
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03548	151.1419	HANKINSON - WAHPETON 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03674	150.9341	GRE-CEDARMT3345.00 - HELENA 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03674	150.9341	GRE-CEDARMT3345.00 - HELENA 345KV CKT 2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03735	150.8999	BUFFALO RIDGE - YANKEE 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03670	150.5165	GRE-CEDARMT3345.00 - LYON COUNTY 345KV CKT 2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	150.4906	COYOTE 345/24.0KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03670	150.4806	GRE-CEDARMT3345.00 - LYON COUNTY 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	150.322	GEN635024 4-WALTER SCOTT UNIT 4
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03622	149.9805	STORLA - WESSINGTON 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03600	149.9323	FT THOMPSON - LETCHER 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03600	149.9323	FT THOMPSON - LETCHER 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	149.755	GEN635213 3-NEAL UNIT 3
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	149.4946	GEN635023 3-WALTER SCOTT UNIT 3
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	149.4396	ANSON - SPLIT ROCK 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	149.4356	ANSON (ANS 1) 115/13.8/13.8KV TRANSFORMER CKT 2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.05043	149.401	FTTHOM1-LNX3345.00 - G16-017-TAP 345.00 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03914	149.2658	AURORA - BROOKINGS 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03914	149.2658	AURORA - BROOKINGS 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03795	149.2109	CHISAGO COUNTY - FORBES 500KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.05043	149.1786	GEN-2016-017TAP-FTTHOMPSONREACTOR-FTTHOMPSON-CKT1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.05043	149.1665	FT THOMPSON - FTTHOM1-LNX3345.00 345KV CKT Z
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03622	148.886	LETCHER - SIOUX FALLS 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03765	148.8409	CHANARANBIE - FENTON 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03914	148.6897	AURORA - FLANDRU 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03914	148.6897	AURORA - FLANDRU 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	148.6657	ANSON - SPLIT ROCK 115KV CKT 2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	148.6533	ANSON 115/17.5KV TRANSFORMER CKT 4
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03795	148.6489	HAZLETON - MITCHLCO3 345.00 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03835	148.6224	FTTHOM2-LNX3345.00 - GRPRAR2-LNX3345.00 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04467	148.5045	LAKEFIELD 3 - LKFLDXL3 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	148.4849	CENTER 230/22.0KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03738	148.4842	AS KING - EAU CLAIRE 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03697	148.4603	BLAIR - GRANITE FALLS 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03697	148.4603	BLAIR - GRANITE FALLS 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03757	148.4493	ARROWHEAD - ARROWHEAD 230 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.05043	148.4403	P12:345:UMZB:# 108 #: LOS FT IN ND. LOS FT
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03835	148.4377	GRPRAR2-LNX3345.00 - YANKTON 345KV CKT Z
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.05043	148.4111	2810X2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.05043	148.4061	G16-017-TAP 345.00 - LELAND2-LNX3345.00 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03835	148.4006	FT THOMPSON - FTTHOM2-LNX3345.00 345KV CKT Z
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03835	148.3957	GRANDPRAIRIE-FTTHOMPSON-TLINE-REACTORS-CKT1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03835	148.3778	FTTHOMPSON-GRANDPRAIRIE-TLINE-REACTOR-CKT1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03792	148.359	BUFFALO RIDGE - PIPESTONE 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	148.2231	GEN336821 1-GRAND GULF UNIT
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.05043	148.1534	LELAND OLDS - LELAND2-LNX3345.00 345KV CKT Z
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03730	148.1337	BIG STONE - BLAIR 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03730	148.1337	BIG STONE - BLAIR 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	148.0963	GEN344225 1-1CAL G1 25.000
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	147.9496	PROSE CAP7 115.00 - PROSE WIND7 115.00 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	147.9336	PROSE CAP7 115.00 - SPLIT ROCK 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	147.8611	J262_J263 115.00 - JAMESTOWN 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03627	147.8317	HANLON - STORLA 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03631	147.8097	HANLON - SIOUX FALLS 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03635	147.783	P12:230:UMZB:# 116 #: ST IN SD. WSG-ST-VH
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	147.7467	GEN600045 4-ANSON
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	147.7237	SQUARE BUTTE - YNG2 4 230.00 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	147.7233	YNG2 4 230.00 230/20.0KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03662	147.6657	WHITE (WHT KU1A) 345/115/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03867	147.6583	WATERTOWN (WT2 KU1A) 345/230/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03867	147.6583	WATERTOWN (WT2 KU1A) 345/230/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03662	147.4934	BROOKINGS - WHITE 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03662	147.4934	BROOKINGS - WHITE 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	147.4732	GEN336153 1-WATERFORD UNIT#3
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03801	147.4259	ADAMS - PLEASANT VALLEY 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03795	147.3961	ADAMS - MITCHLCO3 345.00 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	147.3925	GEN337911 1-ARKANSAS NUCLEAR ONE UNIT #2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03702	147.2161	P12:230:UMZW:# 1786 #: GF IN MN. GF-MNVLTAP LINE FAULT
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03701	147.2081	MN VALLEY TAP - PANTHER 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03769	147.195	FT RANDAL - FT THOMPSON 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03769	147.195	FT RANDAL - FT THOMPSON 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03501	147.1678	BIG STONE - BROWNS VALLEY 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03731	147.1358	ARPIN B4 345.00 - EAU CLAIRE 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03767	147.107	FT THOMPSON - LAKE PLATT 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03767	147.107	FT THOMPSON - LAKE PLATT 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03815	147.0663	PIPESTONE - SPLIT ROCK 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	147.0336	GEN335831 1-RIVERBEND UNIT#1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03674	146.9364	BIG STONE (230/115) 230/115/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03569	146.9076	FT RANDAL - UTICA JCT 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03767	146.8713	FT RANDAL - LAKE PLATT 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	146.8337	GEN337910 1-ARKANSAS NUCLEAR ONE UNIT #1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	146.8148	GEN629075 1-OTTUMWA GENERATOR FOR OTTUMWA UNIT NO 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03501	146.7466	BROWNS VALLEY - HANKINSON 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03746	146.6973	NORTH ROCHESTER - PRAIRIE ISLAND 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03712	146.6812	NORTH LA CROSSE - NORTH ROCHESTER 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03817	146.6543	ALEXMRES3 345.00 - BISON 3 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03554	146.6478	HANKINSON - WAHPETON 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03694	146.5811	MCLEOD - PANTHER 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	146.5232	MAPLE RIVER - PILSBRY4 230.00 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03606	146.5115	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03802	146.4198	BYRON - NORTH ROCHESTER 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03723	146.3389	FERGSFL4 230.00 - WAHPETON 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	146.3035	GEN337653 1-WHITE BLUFF UNIT #2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03786	146.2943	HURON WEST PARK - MITCHELL NW 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03786	146.2943	HURON WEST PARK - MITCHELL NW 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	146.2899	GEN635214 4-NEAL UNIT 4
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03716	146.2812	FERGSFL4 230.00 - GRE-SILVRLK4230.00 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	146.275	GEN337652 1-WHITE BLUFF UNIT #1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	146.2724	GEN338146 1-INDEPENDENCE UNIT #2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	146.2688	GEN338143 1-INDEPENDENCE UNIT #1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	146.1864	COYOTE 345/24.0KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03717	146.1587	NMA B3 345 345.00 - NORTH LA CROSSE 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03716	146.14	GRE-SILVRLK4230.00 - HENNING 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03686	146.1265	APPLEDORN 4 230.00 - WATERTOWN 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03686	146.1265	APPLEDORN 4 230.00 - WATERTOWN 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03869	146.0758	ALEXMRES3 345.00 - WAITE PARK 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	146.0709	GEN501801 1-DOLET HILLS UNIT1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03679	146.0683	KELLY - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03670	146.0325	PAYNSVILLE - WILLMAR 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03681	146.0295	GRE-CEDARMT3345.00 - HELENA 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03681	146.0295	GRE-CEDARMT3345.00 - HELENA 345KV CKT 2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03686	146.0143	APPLEDORN 4 230.00 - GRANITE FALLS 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03686	146.0143	APPLEDORN 4 230.00 - GRANITE FALLS 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.982	GEN336252 1-NINEMILE POINT UNIT#5
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03670	145.973	PAYNSVILLE () 230/115/13.8KV TRANSFORMER CKT 9
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03716	145.959	HENNING - INMANN 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03672	145.9511	GRANITE FALLS - WILLMAR 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03672	145.9511	GRANITE FALLS - WILLMAR 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.9231	GEN600021 3-ANGUS ANSON2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.9187	PROSE WIND7 115.00 115/34.5KV TRANSFORMER CKT 1
FDNSLock	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04074	145.906	BISON - HETINGER 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.8898	GEN336251 1-NINEMILE POINT UNIT#4
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03730	145.8848	HAMPTON CORNER - NORTH ROCHESTER 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.8839	PROSE WIND7 115.00 115/34.5KV TRANSFORMER CKT 2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.8808	GEN600020 2-ANGUS ANSON1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.8726	GEN336831 1-BAXTER WILSON SES
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.825	GEN337041 1-GERALD ANDRUS
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.8061	GEN344897 4-1LAB G4 20.000
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03711	145.8054	FENTON - NOBLES 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.8041	GEN344894 1-1LAB G1 20.000
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.8041	GEN344895 2-1LAB G2 20.000
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.8038	GEN344896 3-1LAB G3 20.000
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.7908	GEN501813 1-RODEMACHER UNIT 3
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03855	145.775	NUNDRWD - WAYSIDE 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03674	145.75	BIG STONE - HIGHWAY 12 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.721	GEN345671 2-1RUSH G2 18.000
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.7155	GEN345670 1-1RUSH G1 18.000
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03676	145.7056	GRE-CEDARMT3345.00 - LYON COUNTY 345KV CKT 2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.6937	GEN645012 2-NEBRASKA CITY 2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03786	145.6749	MITCHELL - MITCHELL NW 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03786	145.6749	MITCHELL - MITCHELL NW 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03676	145.6652	GRE-CEDARMT3345.00 - LYON COUNTY 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.6526	GEN636641 1-LOUISA UNIT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03584	145.6483	KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.6211	LUVERNE4 230.00 - PILSBRY4 230.00 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.6189	LUVERNE4 230.00 230/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.5997	GEN335206 1-NELSON UNIT 6
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03709	145.5922	FENTON - NOBLES 115KV CKT 2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03676	145.591	BUFFALO RIDGE - LAKE YANKTON 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.5885	GEN645011 1-NEBRASKA CITY 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.5863	J262_J263 115.00 115/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.5863	J262_J263 115.00 115/34.5KV TRANSFORMER CKT 2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03584	145.583	SIDNEY-KEYSTONE-TLINE-REACTORS-CKT1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03584	145.5723	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03674	145.5558	HIGHWAY 12 - ORTONVILLE 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04256	145.5524	GLENHAM - WHITLOK 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.5412	GEN334440 1-SABINE UNIT 4
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.5222	GEN640009 1-COOPER NUCLEAR STATION
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04256	145.5068	P12:230:UMZB:# 114 #: SB IN SD. SB-WK-GH
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04256	145.5068	P12:230:UMZB:# 117 #: WK IN SD. SB-WK-GH
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03713	145.4888	HOLT.CO3 345.00 - THEDFRD3 345.00 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.4778	HOOT LAKE 115/13.8KV TRANSFORMER CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03914	145.4689	FLANDRU - SIOUX FALLS 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04074	145.4618	BISON - MAURINE 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04256	145.451	SULLEY BUTTE - SULLYBT-LNX3230.00 230KV CKT Z
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04256	145.4497	SULLYBUTTE-WHITLOCK-TLINE-REACTOR-CKT1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04256	145.4496	SULLYBT-LNX3230.00 - WHITLOK 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.4459	GEN501812 1-RODEMACHER UNIT 2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.4425	GEN336191 1-LITTLE GYPSY UNIT#3
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03742	145.4318	BUFFALO RIDGE - YANKEE 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.42	GEN338388 1-1PLUM PT U1 23.000
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04272	145.4086	GLENHAM - L3 HAWDON 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.4011	NOBLES 115/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03662	145.3937	GRAND ISLAND - MCCOOL 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.3882	GEN600149 W-J183 PROSEW10.6900
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.3855	PRAIRIE ISLAND 345/20.0KV TRANSFORMER CKT 2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.3851	PRAIRIE ISLAND 345/20.0KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03622	145.3729	FT THOMPSON - WESSINGTON 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03622	145.3729	FT THOMPSON - WESSINGTON 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.3651	GEN600150 W-J183 PROSEW20.6900
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.3282	MEC345 - WILMARTH 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.3275	MEC345 345/19.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03663	145.3169	GRACEVT7 - ORTONVILLE 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.312	GEN335614 1-WILLOW GLENN UNIT#4
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03719	145.306	GRE-WINGRIV4230.00 - INMANN 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.3054	GEN336801 1-BAXTER WILSON UNIT #1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.3014	GEN335204 1-NELSON UNIT 4
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.3001	GEN336464 1-MICHOUD UNIT #3
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04256	145.2849	OAHE - SULLEY BUTTE 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.2836	GEN334441 1-SABINE UNIT 5
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.2228	MEC115 115/15.0KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.222	GEN629074 1-ARNOLD LOWSIDE OF GSU XFMR
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.2091	MEC115 - WILMARTH 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03666	145.1802	GRANT - MITCHELL 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03666	145.1802	GRANT - MITCHELL 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03714	145.1619	AUDUBON - SHEYNNE 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03690	145.1378	P12:115:NPPD:1091:VALENTN7:MISSION7:BTB
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.1329	GEN334433 1-SABINE UNIT 3
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.1263	RGBYWND4 230.00 - RUGBY 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.124	RGBYWND4 230.00 230/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03712	145.1183	ARPIN B3 345.00 - ROCKY RN B8 345.00 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03690	145.0834	MISSION - ST FRANCIS 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03690	145.0824	HARMONY - ST FRANCIS 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.0823	GEN336222 1-LITTLE GYPSY UNIT#2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03687	145.075	BISON 3 345.00 - BUFFALO 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03695	145.0735	ELLENDLMVP4 230.00 - OAKES 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03695	145.0735	ELLENDLMVP4 230.00 - OAKES 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	145.0621	GEN635024 4-WALTER SCOTT UNIT 4
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04372	145.0583	HELENA - SHEAS LK3 345.00 345KV CKT 1
FDNSLock	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03690	145.0329	HARMONY - VALENTINE 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03710	145.0279	ELM CREEK - MONTICELLO 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.0238	GEN635693 3-GREATER DES MOINES ENERGY CENTER ST
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.0157	HOOT LAKE 115/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.0093	GEN542962 2-IATAN UNIT #2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03664	145.0092	MCCOOL - MOORE 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	145.0078	FARIBALT GEN115.00 - FEP TAP 115KV CKT Z
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.9875	GEN336152 1-WATERFORD UNIT#2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.9874	GEN336151 1-WATERFORD UNIT#1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.9871	GRE-LKFDGEN3345.00 (345/13.8) 345/13.8/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.9837	GRE-LKFDGEN3345.00 - LKFLDXL3 345KV CKT Z
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03663	144.9731	GRACEVT7 - MORRIS 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03663	144.9731	GRACEVT7 - MORRIS 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03630	144.9718	STORLA - WESSINGTON 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03641	144.9632	SIDNEY - STEGALL 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03868	144.9537	P12:230:UMZW:# 733 #: FT IN SD. FT-BG2 LINE FAULT
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03697	144.951	AIRTECH - FEP TAP 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.9333	PLEASANT VALLEY 161/16.0KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.9319	PLEASANT VALLEY 161/16.0KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.9303	GEN303007 1-1BC2 U2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03697	144.9275	FORMAN - OAKES 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.9261	GEN303006 1-1BC2 U1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03697	144.9255	AIRTECH - WEST FARIBAULT 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.9186	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03754	144.8945	GLENBORO SOUTH - J290_SUB 230.00 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03679	144.884	FT RANDAL - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.8746	GENOA 161 161/24.0KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03720	144.8743	AUDUBON - HUBBARD 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03821	144.8672	HURON - WOONSOCKET 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.8659	GEN635691 1-GREATER DES MOINES ENERGY CENTERGT1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.8659	GEN635692 2-GREATER DES MOINES ENERGY CENTERGT2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.8571	GEN336170 1-GULF OXY U4
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03703	144.8545	FENTON 115/69KV TRANSFORMER CKT 5
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.8503	GEN303008 1-1BC2 U3

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.8414	GEN562003 1-G11_027_3 0.6900
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.8388	GEN542957 1-IATAN UNIT #1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03701	144.8334	FORT RIDGELY - FRANKLIN 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03608	144.8185	FT THOMPSON - LETCHER 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03608	144.8185	FT THOMPSON - LETCHER 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03718	144.7982	FARGO - SHEYNNE 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03718	144.7982	FARGO - SHEYNNE 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03673	144.7915	G15088_T 345.00 - MOORE 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.7878	AS KING 345/20.0KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03707	144.7852	MENNO JCT - TRIPP JCT 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03690	144.7791	AINSWORTH - VALENTINE 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.7688	GEN563222 1-G15088_3 0.6900
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03680	144.7498	GRE-CHUBLAK3345.00 - HELENA 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03712	144.7489	P12:115:UMZZ:# 232 #: AB IN SD. ABERDEEN A TAP BETWEEN ELLENDALE AND ABERDEEN-SIEBRECHT.
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.7376	GEN501811 1-RODEMACHER UNIT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	144.7294	CHISAGO COUNTY - LINDSTROM FUTURE 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03821	144.6885	P12:115:UMZW:# 152 #: HU-WO-ST IN SD. WOONSOCKET IS A TAP
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03707	144.6862	MENNO JCT - UTICA 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03666	144.6835	CHERRY CREEK - GRANT 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.6824	GEN532652 1-JEFFREY ENERGY CENTER UNIT 2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.6822	GEN532653 1-JEFFREY ENERGY CENTER UNIT 3
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.6766	FENTON 115/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.6762	GEN532651 1-JEFFREY ENERGY CENTER UNIT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03678	144.6704	AXTELL - SWEETWATER 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03754	144.6675	J290_SUB 230.00 - RUGBY 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.666	GEN334071 1-LEWIS CREEK 2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.6623	GEN334070 1-LEWIS CREEK 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03670	144.6604	RASMUSN - UTICA JCT 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03707	144.6577	GERALD GENTLEMAN STATION - THEDFRD3 345.00 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.6559	GEN542951 5-HAWTHORN UNIT #5
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	144.6528	LINDSTROM FUTURE - SHAEFER 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.648	GEN645025 5-NORTH OMAHA 5
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.6449	NOBLES 115/34.5KV TRANSFORMER CKT 2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.6384	GEN629069 1-EMERY STEAM TURBINE 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03619	144.6353	GERALD GENTLEMAN STATION - KEYSTONE 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03720	144.6348	KARLSTAD - WINGER 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	144.6347	LAWERENCE CREEK - SHAEFER 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03707	144.6336	P12:115:UMZZ:# 237 #: MEN IN SD. MENNO JUNCTION IS A TAP (UJ-MEN-TP).
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	144.6275	LYON COUNTY 115/69KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.6239	GEN337766 1-TRACTEBEL UNIT S1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03687	144.6228	PAYNESVILLE - WAKEFIELD 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.6224	GEN345765 H-1SIOUX 2 18.000
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03696	144.6155	WINNER - WITTEN 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03688	144.6143	MCLEOD (230/115) 230/115/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.5897	GEN501910 1-ACADIA UNIT ST1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.5895	GEN542955 1-LACYGNE UNIT #1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.5876	GEN336221 1-LITTLE GYPSY UNIT#1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03772	144.5672	DAGLUM 4230.00 - RHAME 4 230.00 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03670	144.5661	RASMUSN - SIOUX CITY 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03821	144.5645	STORLA - WOONSOCKET 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03784	144.5567	HIGHLND 3 345.00 - RAUN 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	144.5553	GEN635213 3-NEAL UNIT 3
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.5525	GEN629071 1-BURLINGTON GENERATOR FOR UNIT NO 1 E
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	144.5492	POPLAR LAKE 161 - ST CROIX FALLS 161KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.5492	GEN337757 1-DUKE HOTSPRINGS STG1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.5465	GEN345756 H-1SIOUX 1 18.000
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03657	144.5364	G1623&1629-T345.00 - SIDNEY2-LNX3345.00 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03702	144.5363	FORMAN - HANKINSON 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.5255	GEN334431 1-SABINE UNIT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.5255	GEN334432 1-SABINE UNIT 2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03690	144.5196	INTRNATIONL FALLS7 - LITTLE FORK 118KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.5166	GEN336446 1-MICHOUD UNIT #2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	144.5165	LAWERENCE CREEK - ST CROIX FALLS 161KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	144.5148	LAWERENCE CREEK (82578T7IC002) 161/115/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03696	144.5131	BLUE LAKE - MCLEOD 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.5126	GEN659116 1-SPIRIT MOUND UNIT1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.5117	GEN337764 1-TRACTEBEL UNIT C1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.5117	GEN337765 1-TRACTEBEL UNIT C2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.5117	GEN532663 1-LAWRENCE ENERGY CENTER UNIT 5
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.5016	GEN345832 1-1TS G1 13.800
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.5011	GEN345841 2-1TS G2 13.800
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.4955	GEN542956 2-LACYGNE UNIT #2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03708	144.4946	ELM CREEK - PARKERS LAKE 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.4932	FARIBALT GEN115.00 115/18.0KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03849	144.4908	MAURINE - NUNDRWD-LNX3230.00 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03849	144.4908	NUNDERWOOD-MAURIN-TLINE-REACTOR-CKT1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04467	144.4906	FIELD SOUTH - WILMARTH 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03676	144.4881	GERALD GENTLEMAN STATION - SWEETWATER 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03701	144.4857	KOSSUTH 3 345.00 - WEBSTER 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.4804	GEN336242 1-1NMIL ST1 18.000
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.4795	BARNES 4 230.00 - PILSBRY4 230.00 230KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03657	144.4786	SIDNEY - SIDNEY2-LNX3345.00 345KV CKT Z
FDNSLock	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03849	144.4768	NUNDRWD - NUNDRWD-LNX3230.00 230KV CKT Z
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03696	144.4746	GREGORY - WINNER 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.4736	LANGDON - LANGWIN7 115.00 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.4707	GEN501823 1-TECHE UNIT 3
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03720	144.4676	MT VERN - STORLA 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.05050	144.4642	FTTHOM1-LNX3345.00 - G16-017-TAP 345.00 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.4538	GEN629046 3-FOX LAKE 5 GENERATOR NO 3
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.4487	ADAMS NORTH - HIPRAR_WF5 161.00 161KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03705	144.4483	ARNOLD - HAZLETON 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.4469	LANGWIN7 115.00 115/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.4434	GEN629992 1-G164_WF9 34.500
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03696	144.4433	P12:115:UMZW:# 172 #: WI IN SD.
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03696	144.4405	BLUE LAKE () 230/115/13.8KV TRANSFORMER CKT 7
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03695	144.4396	NOBLES () 345/115/34.5KV TRANSFORMER CKT 9
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04467	144.4393	FIELD NORTH - FIELD SOUTH 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.4385	GEN336944 1-REX BROWN
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03700	144.4371	MINNESOTA VALLEY - REDWOOD FALLS 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03695	144.4363	NOBLES () 345/115/34.5KV TRANSFORMER CKT 10
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03701	144.4279	BLACKBERRY - HILLTOP 98 LINE TP 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03701	144.4258	P12:115:UMZW:# 173 #: WI-WE-MS IN SD. WITTEN IS A TAP
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.4215	GEN501970 1-EVANGELINE UNIT 7
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03733	144.4204	KOSSUTH 3 345.00 - LEDYARD3 345.00 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03701	144.4203	JAMES TOWN - PICKERT 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.4202	GEN334030 1-FRONTIER UNIT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.4197	GEN334031 1-FRONTIER UNIT 2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.4195	GEN335612 1-WILLOW GLENN UNIT#2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03687	144.4191	FT RANDAL - SPENCER 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03687	144.4151	P12:115:NPPD:WAPA6:FTRANDL7:ONEILL 7:BTB
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03687	144.4151	P12:115:UMZB:# 115 #: SE IN NE. FR-SE-ON
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03694	144.4144	ARKANSAS NUCLEAR ONE - FT SMITH 500KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03694	144.4144	ARKANSAS NUCLEAR ONE - FT SMITH 500KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03702	144.4077	LOWERBRULE 4230.00 - RELIANCE 4 230.00 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04467	144.4063	FIELD NORTH - LKFLDXL3 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.4062	LKFLDXL3 - TRIMONT WD 3345.00 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.4057	GEN345156 H-1MER 4 18.000
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.4047	GEN659117 2-SPIRIT MOUND UNIT2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.4046	GEN337430 1-PERYVILLE UNIT #3
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.4044	GEN337428 1-PERYVILLE UNIT #1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	144.4002	FT RANDAL - WHITE SWAN 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03792	144.3942	P12:115:UMZW:# 151 #: HU-RF-GR IN SD. ERC REDFIELD IS A TAP
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.3871	GEN336240 1-1NMIL CT1 18.000
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.3871	GEN336241 1-1NMIL CT2 18.000
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.3866	GEN629067 1-EMERY GAS TURBINE 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.3826	GEN629068 1-EMERY GAS TURBINE 2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.3784	GEN501911 1-ACADIA UNIT CT1A
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.3784	GEN501912 1-ACADIA UNIT CT1B
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.3783	GEN338443 1-PANDA S1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	144.3703	TYNDALL - WHITE SWAN 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.369	GEN635803 3-PLEASANT HILL GEN 3
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03689	144.3677	ELBOWLK7 115.00 - GRANTCO7 115.00 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.3673	GEN501971 1-EVANGELINE UNIT 7-1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.3673	GEN501972 1-EVANGELINE UNIT 7-2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.3645	GEN335571 1-CARVILLE UNIT #1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.3643	GEN335570 1-CARVILLE CTG
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.3623	GEN336167 1-GULF OXY U1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.3623	GEN336168 1-GULF OXY U2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.3623	GEN336169 1-GULF OXY U3
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03870	144.3607	BOWMAN - RHAME 4 230.00 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03696	144.3596	P12:115:NPPD:WAPA2:HEMINGF7:SNAKECK7:BTB
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03696	144.3588	ARROWHEAD - FORBES 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.3555	GEN635708 1-SYCAMRG1 13.800
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.3555	GEN635709 2-SYCAMRG2 13.800
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03736	144.3513	ABERDEEN SIEBRECHT - REDFIELD 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03736	144.3513	ABERDEEN SIEBRECHT - REDFIELD 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03679	144.3506	CLEARWATER - ONEILL 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.3491	GEN645042 2-CASS COUNTY 2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03697	144.3474	PLEZIOZO1ARC
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.3474	GEN645041 1-CASS COUNTY 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03700	144.3462	FRANKLIN - REDWOOD FALLS 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.3421	GEN640020 2-SHELDON STATION UNIT 2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.3412	GEN337008 1-DUKE MCADAMS S1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.3389	GEN334392 1-EXXON MOBIL IPP 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.3366	GEN337432 1-PERYVILLE UNIT #5
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03792	144.3354	GROTON - REDFIELD 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.3264	WHEATON () 161/13.8/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.3235	GEN335644 1-EXXON UNIT5
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.3225	WHEATON () 161/13.8/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.3192	GEN600112 W-G287 NOB2G W0.5750
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03694	144.3189	CEDRSAUK B4 345.00 - EDG BUS2 345.00 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.3171	GEN334393 1-EXXON MOBIL IPP 2

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.3171	GEN334394 1-EXXON MOBIL IPP 3
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03693	144.3169	AS KING - WILLOW RIVER 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.3089	GEN336854 1-DUKE LAKEOVER S1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	144.2778	GEN660016 1-B_H WIND 0.7000
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	144.2756	GEN635023 3-WALTER SCOTT UNIT 3
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.05050	144.1645	FT THOMPSON - FTTHOM1-LNX3345.00 345KV CKT Z
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.05050	144.157	GEN-2016-017TAP-FTTHOMPSONREACTOR-FTTHOMPSON-CKT1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03802	144.0976	CHISAGO COUNTY - FORBES 500KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	143.9545	ANSON (ANS 1) 115/13.8/13.8KV TRANSFORMER CKT 2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	143.954	ANSON - SPLIT ROCK 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.8679	BASE CASE
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03959	143.7629	AURORA - BROOKINGS 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03959	143.7629	AURORA - BROOKINGS 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03630	143.7485	LETCHER - SIOUX FALLS 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03704	143.7161	BLAIR - GRANITE FALLS 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03704	143.7161	BLAIR - GRANITE FALLS 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03772	143.6994	CHANARANBIE - FENTON 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03842	143.6843	FTTHOM2-LNX3345.00 - GRPRAR2-LNX3345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03794	143.6317	HAZLETON - MITCHLCO3 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	143.6143	ANSON 115/17.5KV TRANSFORMER CKT 4
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	143.6141	ANSON - SPLIT ROCK 115KV CKT 2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	143.5895	CENTER 230/22.0KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03842	143.4808	GRPRAR2-LNX3345.00 - YANKTON 345KV CKT Z
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03690	143.4676	CENTER - COYOTE 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03868	143.4455	FT THOMPSON - LOWERBRULE 4230.00 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03868	143.4455	FT THOMPSON - LOWERBRULE 4230.00 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.4181	P13:230-345:NPPD:NUCOR-1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.4162	GEN681540 5-ALMA UNIT 5
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.4139	P13:115-230:NPPD:NUCOR-3
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03737	143.4136	BIG STONE - BLAIR 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03737	143.4136	BIG STONE - BLAIR 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03693	143.4095	CARROLL COUNTY - VICTORY 161KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03842	143.4086	FTTHOMPSON-GRANDPRAIRIE-TLINE-REACTOR-CKT1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.4078	GEN600047 1-MECCT1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.4071	GEN629072 4-LANSING GENERATOR FOR UNITS NO4 EIA CODE 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03842	143.4039	FT THOMPSON - FTTHOM2-LNX3345.00 345KV CKT Z
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.403	NEW MADRID 345/22.0KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	143.403	PROSE CAP7 115.00 - PROSE WIND7 115.00 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.4022	GEN600081 W-BUFFALO RIDGE WIND GEN 4
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.3992	GEN672378 1-ERMINE GENERATOR 4
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03699	143.3989	COLUMEAST - NW68TH & HOLDREGE 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03699	143.3989	COLUMEAST - NW68TH & HOLDREGE 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03842	143.3956	GRANDPRAIRIE-FTTHOMPSON-TLINE-REACTORS-CKT1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.382	DELL 500 - ESSEX UNIT 2 500KV CKT Z1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.3763	LAKOTA 115/69KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.3634	GEN587053 1-G16-007-GEN10.6500
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.05050	143.3597	P12:345:UMZB:# 108 #: LOS FT IN ND. LOS FT
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	143.3596	PROSE CAP7 115.00 - SPLIT ROCK 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.3537	THIEF RIVER FALLS (TRF) 115/69/13.2KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.05050	143.3523	G16-017-TAP 345.00 - LELAND2-LNX3345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.05050	143.346	2810X2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.3437	GEN652906 1-G09_006IS_3 0.6900
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03684	143.3399	DIXONCO 230.00 - HOSKINS 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.3395	GEN660003 3-HURON WEST PARK
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.3365	GEN563302 1-G15096_3 0.6900
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03696	143.3313	BROOKING COUNTY - YANKEE 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03696	143.3313	BROOKING COUNTY - YANKEE 115KV CKT 2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.3306	GEN652410 3-FT PECK
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.3303	GRE-STNYCRK7115.00 (115-69) 115/69/12.8KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.3269	GEN620115 1-HRDLKGEN 0.6000
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03680	143.3196	BISON 3 345.00 - MAPLE R3 345.00 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03782	143.3177	GAVINS POINT - SPIRIT MOUND 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.3118	GEN619954 1-HUTCHINSON
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.3102	GEN620857 1-LKPRSTN9 41.600
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.3078	GEN652004 1-G13_001IS_3 0.6900
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.3044	GEN600130 W-G586 - CWN 10.6000
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.3031	GEN600131 W-G586 - CWN 20.6000
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.3004	GEN615031 1-PLEASANT VALLEY
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.2952	GEN615032 2-PLEASANT VALLEY
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.2946	GEN672370 1-COTEAU CREEK GENERATOR 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.2946	GEN672371 2-COTEAU CREEK GENERATOR 2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.2945	GEN672372 3-COTEAU CREEK GENERATOR 3
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.2909	GEN652907 1-G09_007IS_3 0.6900
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.2822	GEN652414 4-FT PECK
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.2822	GEN652415 5-FT PECK
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.2799	FRONTER4 230.00 (FRONTIER) 230/69/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03692	143.2764	COLUMEAST - SHELL CREEK 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.2758	PICKERT (230/69) 230/69/41.6KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03697	143.2752	PLYMOUTH - SIOUX CITY 161KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03697	143.2752	PLYMOUTH - SIOUX CITY 161KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.2723	GEN659148 1-LONESMCRK 1G13.800

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.2723	GEN659156 2-LONESMCRK 2G13.800
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.2723	GEN659157 3-LONESMCRK 3G13.800
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03699	143.2696	FREEBORN5 161.00 - HAYWD#15 161.00 161KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03667	143.2692	HOSKINS - SHELL CREEK 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03695	143.2657	G14-021T 345.00 - SUB 3458 NEB CTY 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.2654	GEN657705 X-DRAYTON
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.2579	GEN659147 1-PIONEER 1G13.800
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.2579	GEN659158 2-PIONEER G213.800
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.2579	GEN659159 3-PIONEER G313.800
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03696	143.253	BLACKHAWK 3 345.00 - HAZLETON 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.249	GEN672369 3-MERIDIAN GENERATOR 3 ST
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.2432	MITCHLCO3 345.00 345/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03667	143.2429	SIOUX CITY - TWIN CHURCH 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03959	143.2394	AURORA - FLANDRU 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03959	143.2394	AURORA - FLANDRU 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03693	143.2309	COOPER - FAIRPORT 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03693	143.2309	COOPER - FAIRPORT 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03746	143.2244	AS KING - EAU CLAIRE 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03766	143.2228	ARROWHEAD - ARROWHEAD 230 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03719	143.2223	HILLS - MONTEZUMA 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03662	143.2206	ELLENDLMVP4 230.00 - J316_SUB 230.00 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03636	143.2048	HOSKINS - RAUN 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03636	143.2048	HOSKINS - RAUN 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03748	143.2044	DRAYTON - LETELLIER 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.1834	GEN672340 1-QUEEN ELIZABETH GENERATOR 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.183	DONALDSON - DONALDSON PIPE 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03694	143.1793	DENISON (DN KV1A) 230/161/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03694	143.1782	DENISON - EXIRA 161KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.1782	GEN600125 2-FEP ST G 13.800
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03692	143.1645	COOPER - SUB 3458 NEB CTY 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03692	143.1645	COOPER - SUB 3458 NEB CTY 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03693	143.1598	COLBY3 345.00 - KILLDEER3 345.00 345KV CKT 1
FDNSLock	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03693	143.1583	COPSTJCPFRSJ
FDNSLock	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03693	143.1583	STMDSJFAFACO
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.1547	GEN672384 1-CENTENNIAL WINDFARM
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.1507	GEN620285 1-SOLWAY
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03693	143.1421	P13:230:UMZW:# 2218 #: FP IN MT. LOSS OF TRANSFORMER (AT2).
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.1101	WILTON (WILTON) 115/69/41.6KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.1086	MORANVILLE (MORANVILLE #) 115/69/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.1057	GEN652556 2-OAHE
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.1057	GEN652557 4-OAHE
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.1057	GEN652558 6-OAHE
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	143.1011	GEN336821 1-GRAND GULF UNIT
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.0929	MORANVILLE (MORANVILLE #) 230/115/13.8KV TRANSFORMER CKT 2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.0898	GEN600013 3-BLACK DOG GEN 3
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03876	143.0833	WATERTOWN (WT2 KU1A) 345/230/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03876	143.0833	WATERTOWN (WT2 KU1A) 345/230/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.0814	GEN672347 1-CORY COGEN GENERATOR 1 GT1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.0814	GEN672348 2-CORY COGEN GENERATOR 2 GT2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.0772	GEN659118 1-LARAMIE RIVER UNIT1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.05050	143.065	LELAND OLDS - LELAND2-LNX3345.00 345KV CKT Z
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03608	143.0649	P13:345:UMZW:# 260 #: SC2 IN IA. LOSS OF TRANSFORMER (KU1A
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.056	G830_SUB 115.00 - GRE-MCHENRY7115.00 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.0555	G830_SUB 115.00 115/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.0542	GEN600056 W-BUFFALO RIDGE WIND GEN
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.0501	YANKEE 115/34.5KV TRANSFORMER CKT 2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.0455	GEN652559 1-OAHE
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.0269	GEN672358 1-CHAPLN1W 0.6900
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.0244	GEN672368 2-MERIDIAN GENERATOR 2 GT2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	143.0243	GEN672367 1-MERIDIAN GENERATOR 1 GT1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.9893	GEN659162 4-RED WLCK
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.9893	GEN659163 5-BLACK WDCK
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.9888	GEN659192 6-LYNN
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03799	142.9881	BUFFALO RIDGE - PIPESTONE 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.9803	GEN672349 3-CORY COGEN GENERATOR 3 ST
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.9722	GEN672350 1-NIPAWIN GENERATOR 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.9722	GEN672351 2-NIPAWIN GENERATOR 2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.9722	GEN672352 3-NIPAWIN GENERATOR 3
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.9681	CLEARBROOK - CLEARBROOK PIPE 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.9657	GEN600018 S-LS POWER STEAM
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.9558	H081_SUB 345.00 345/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03541	142.9551	SPLIT ROCK (SPLT 11) 345/115/13.8KV TRANSFORMER CKT 11
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.9539	BISONMP4 230.00 - SQUARE BUTTE 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.9379	GEN603185 1-FIBROMINN GENERATION
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03694	142.9335	ANITA TAP POINT TO CRESTON AND DENISON - EXIRA 161KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.9329	GEN659273 2-GROTON SYNC COND
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.9329	GEN659294 1-WILTONCOL9
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.9274	GEN652353 2-GR PRAIRIEG 0.6900
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.9249	BEMIDJI (BEMIDJI #2) 115/69/41.6KV TRANSFORMER CKT 2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	142.9193	GEN344225 1-1CAL G1 25.000
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.9191	LADISH 115/13.2KV TRANSFORMER CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03535	142.919	SPLIT ROCK (SPLT 10) 345/115/13.8KV TRANSFORMER CKT 10
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.911	GEN657964 1-ASH2GEN9 0.5750
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03693	142.8837	COOPER - ST JOE 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.8741	GEN681522 3-GENOA 3
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.8711	GEN659290 1-EDGECOL
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.8624	GEN672339 16-QE 16G 13.800
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.8577	GEN620323 2-HOOT LAKE 2 GEN
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03327	142.8553	MERRCRT4 230.00 - WISHEK 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	142.8497	J262_J263 115.00 - JAMESTOWN 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.8459	GEN 11143 1-J436GEN1 0.6900
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.8459	GEN 11153 1-J437GEN1 0.6900
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.8449	GEN672393 2-NBECST2G 13.800
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.8324	LANSING WEST 161/22.0KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.8318	GEN600050 1-FEP
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	142.8224	KOSSUTH 3 345.00 - OBRIEN 3 345.00 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.8046	GEN672342 3-QUEEN ELIZABETH GENERATOR 3
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.8004	J526 345.00 345/34.5KV TRANSFORMER CKT 2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.7972	GEN 60421 1-J488 G 0.6500
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.7963	GEN 61421 1-J489 G 0.6500
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.7836	J526 345.00 345/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.7689	GEN600012 2-BLACK DOG GEN 2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03677	142.7633	GRIMES - LEHIGH 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03681	142.7602	WHITE (WHT KU1A) 345/115/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.7375	GEN562872 1-G15046_3 0.6900
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03327	142.7323	HESKETT - WISHEK 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03689	142.7174	P12:115:UMZW:# 162 #: NEL IN ND. FAULT ON ML-NEL-MX-GA 115 KV
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.7149	J493 345.00 - J510 POI 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	142.6936	GEN600045 4-ANSON
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.6834	J493 345.00 345/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03719	142.6686	ELK - MAGNOLIA 5 161KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03693	142.6104	BLACKHAWK 3 345.00 - KILLDEER3 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03639	142.5988	HANLON - SIOUX FALLS 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.5943	GEN 10212 1-H081_GEN 0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03681	142.5733	BROOKINGS - WHITE 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03681	142.5733	BROOKINGS - WHITE 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.562	GEN910006 1-G12_012IS_3 0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03507	142.5139	BIG STONE - BROWNS VALLEY 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.5131	RCDC EAST 4230.00 - RED CEDAR DC 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03726	142.5107	BONDURANT - MONTEZUMA 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03695	142.5079	G14-021T 345.00 - MULLNCR7 345.00 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03695	142.5076	G15-005T 345.00 - MULLNCR7 345.00 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.5066	P12:230:UMZB:# 112 #: NU IN SD. NU-RCDC & DRY CREEK XFMR
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.4939	GEN600063 1-COLVILLE GEN 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.4939	GEN600064 2-COLVILLE GEN 2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.4859	GEN660001 2-ABERDEEN SIEBRECHT
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.4669	GEN620324 3-HOOT LAKE 3 GEN
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03697	142.4445	DENISON - SIOUX CITY 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.4424	GEN659411 1-CAMPBLCNTY W0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03794	142.4314	ADAMS - MITCHLCO3 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	142.4242	MAPLE RIVER - PILSBRY4 230.00 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03695	142.4024	G15-005T 345.00 - SIBLEY 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.3949	GEN 10648 1-G830_GEN 0.6900
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03393	142.3877	ELLENDLMVP3 345.00 - J436&437_POI345.00 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03393	142.3877	ELLENDLMVP3 345.00 - J436&437_POI345.00 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.3772	GEN600014 4-BLACK DOG GEN 4
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03802	142.3616	ADAMS - PLEASANT VALLEY 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.3596	GEN600065 7-HIGH BRIDGE
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.3596	GEN600066 8-HIGH BRIDGE
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.3443	GEN652460 4-GARRISON
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.3443	GEN652461 5-GARRISON
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.3304	GEN600071 10-RIVER SIDE
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.33	GEN600070 9-RIVER SIDE
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.3175	GEN600011 5-BLACK DOG GEN 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.3152	GEN652457 1-GARRISON
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.3151	GEN652458 2-GARRISON
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.3151	GEN652459 3-GARRISON
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.3138	GEN 11104 1-J262_GEN 0.6000
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.3138	GEN 11108 1-J263_GEN 0.6000
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.3064	GEN600007 7-RIVERSIDE GEN 7
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	142.3012	GEN336153 1-WATERFORD UNIT#3
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.3006	GEN600043 7-BLUE LAKE5
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.3006	GEN600044 8-BLUE LAKE6
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.2995	GEN652345 W-G07_023IS_2 0.6900
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.2925	GEN600017 C-LS POWER CT
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.2907	GEN659018 1-G14_003IS_3 0.6900
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03393	142.2852	ELLENDLMVP3 345.00 (1) 345/230/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03681	142.2758	BIG STONE (230/115) 230/115/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03823	142.2548	PIPESTONE - SPLIT ROCK 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.2443	GEN615052 1-CAMBRIDGE GENERATING STATION
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03709	142.2402	P12:230:UMZW:# 1786 #: GF IN MN. GF-MNVLTAP LINE FAULT
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03708	142.2326	MN VALLEY TAP - PANTHER 230KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.2193	GEN615015 1-GRE-SPRITWDG13.200
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	142.2017	GEN337911 1-ARKANSAS NUCLEAR ONE UNIT #2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03713	142.1305	COLBY3 345.00 - LEDYARD3 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03740	142.1191	ARPIN B4 345.00 - EAU CLAIRE 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03776	142.1129	FT RANDAL - FT THOMPSON 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03776	142.1129	FT RANDAL - FT THOMPSON 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.0685	GEN672303 3-BOUNDARY DAM GENERATOR 3
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.0685	GEN672304 4-BOUNDARY DAM GENERATOR 4
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.0685	GEN672305 5-BOUNDARY DAM GENERATOR 5
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.0663	GEN659031 1-G12_014IS_4 0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03774	142.0577	FT THOMPSON - LAKE PLATT 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03774	142.0577	FT THOMPSON - LAKE PLATT 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.0496	GEN615021 1-GRE-ER 14G 16.000
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.0341	GEN659194 1-NDPRAIRWND1W0.6900
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	142.018	GEN659366 3-WILTON 3 W0.6900
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03813	142.0142	CARPENTER - WATERTOWN 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03813	142.0142	CARPENTER - WATERTOWN 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03722	142.0116	SPLIT ROCK () 161/115/36.2KV TRANSFORMER CKT 6
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03722	142.0107	DAN JUHL - SPLIT ROCK 161KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03723	141.9963	LEHIGH - RAUN 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	141.9886	J526 345.00 - J526 POI 345.00 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	141.9846	GEN600077 W-YANKEE 2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	141.9846	GEN600099 W-YANKEE 4
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03507	141.9825	BROWNS VALLEY - HANKINSON 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	141.9785	GEN672392 1-NBECGT1G 18.000
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03813	141.9708	HURON - WATERTOWN 230KV CKT 2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03813	141.9708	HURON - WATERTOWN 230KV CKT 2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	141.9613	GEN600078 W-YANKEE 3
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	141.9513	GEN600069 W-YANKEE 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	141.9161	GEN659403 1-NDSUNFLWR W0.6900
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03722	141.9057	DAN JUHL - MAGNOLIA 5 161KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	141.8835	GEN335831 1-RIVERBEND UNIT#1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03577	141.8483	FT RANDAL - UTICA JCT 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03824	141.8262	ALEXMRES3 345.00 - BISON 3 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03774	141.7689	FT RANDAL - LAKE PLATT 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	141.7416	GEN600067 9-HIGH BRIDGE
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03813	141.7061	CARPENTER - HURON 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	141.6913	GEN337910 1-ARKANSAS NUCLEAR ONE UNIT #1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	141.6626	GEN629075 1-OTTUMWA GENERATOR FOR OTTUMWA UNIT NO 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03701	141.6308	MCLEOD - PANTHER 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04472	141.6031	LAKEFIELD 3 - LKFLDXL3 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	141.595	GEN681542 6-JP MADGETT
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03720	141.5457	NORTH LA CROSSE - NORTH ROCHESTER 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03753	141.5418	NORTH ROCHESTER - PRAIRIE ISLAND 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03730	141.537	FERGSFL4 230.00 - WAHPETON 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03682	141.5216	EAGLE 4 230.00 - PAHOJA 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	141.4473	J510 345.00 - J510 POI 345.00 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	141.4447	J510 345.00 345/25.0KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03614	141.4374	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	141.4334	CLAY BOSWELL 230/20.9KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03723	141.3566	FERGSFL4 230.00 - GRE-SILVRLK4230.00 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	141.3002	GEN659453 1-GI1414GEN W0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	141.2886	GEN338146 1-INDEPENDENCE UNIT #2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	141.2872	GEN338143 1-INDEPENDENCE UNIT #1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	141.2857	GEN337652 1-WHITE BLUFF UNIT #1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03693	141.2855	APPLEDORN 4 230.00 - WATERTOWN 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03693	141.2855	APPLEDORN 4 230.00 - WATERTOWN 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03793	141.2209	HURON WEST PARK - MITCHELL NW 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03793	141.2209	HURON WEST PARK - MITCHELL NW 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03723	141.1976	GRE-SILVRLK4230.00 - HENNING 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03686	141.1818	KELLY - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03682	141.157	PAHOJA - SIOUX FALLS 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	141.1553	GEN337653 1-WHITE BLUFF UNIT #2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03805	141.1451	BYRON - NORTH ROCHESTER 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03693	141.1425	APPLEDORN 4 230.00 - GRANITE FALLS 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03693	141.1425	APPLEDORN 4 230.00 - GRANITE FALLS 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03877	141.1266	ALEXMRES3 345.00 - WAITE PARK 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	141.11	PROSE WIND7 115.00 115/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03676	141.0984	PAYNSVILLE - WILLMAR 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	141.071	PROSE WIND7 115.00 115/34.5KV TRANSFORMER CKT 2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	141.0706	GEN659141 1-K10215A
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03676	141.0414	PAYNSVILLE () 230/115/13.8KV TRANSFORMER CKT 9
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03679	141.0083	GRANITE FALLS - WILLMAR 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03679	141.0083	GRANITE FALLS - WILLMAR 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03723	140.9997	HENNING - INMANN 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.9406	GEN501801 1-DOLET HILLS UNIT1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	140.9264	ALMA 161 161/24.0KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.9184	LUVERNE4 230.00 - PILSBRY4 230.00 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.9058	LUVERNE4 230.00 230/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	140.9042	GEN659289 1-DAYCNTYWND W0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.8823	GEN336252 1-NINEMILE POINT UNIT#5

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03681	140.8806	BIG STONE - HIGHWAY 12 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03726	140.8584	NMA B3 345 345.00 - NORTH LA CROSSE 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03718	140.825	FENTON - NOBLES 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.7977	GEN336251 1-NINEMILE POINT UNIT#4
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	140.7952	J460 345.00 345/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	140.7952	J460 345.00 345/34.5KV TRANSFORMER CKT 1
FDNSLock	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03862	140.7902	NUNDRWD - WAYSIDE 230KV CKT 1
FDNSLock	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04078	140.7765	BISON - HETINGER 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03737	140.7703	HAMPTON CORNER - NORTH ROCHESTER 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.7597	GEN336831 1-BAXTER WILSON SES
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	140.7543	GEN659407 1-ANTELPHILLSW0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.7254	GEN600021 3-ANGUS ANSON2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03592	140.7248	KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.7099	GEN645012 2-NEBRASKA CITY 2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.7057	GEN337041 1-GERALD ANDRUS
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.7014	GEN600020 2-ANGUS ANSON1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.6805	HOOT LAKE 115/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.6793	GEN344897 4-1LAB G4 20.000
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.6791	GEN344896 3-1LAB G3 20.000
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.6779	GEN344894 1-1LAB G1 20.000
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.6777	GEN344895 2-1LAB G2 20.000
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.6757	GEN501813 1-RODEMACHER UNIT 3
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03592	140.6541	SIDNEY-KEYSTONE-TLINE-REACTORS-CKT1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03683	140.64	BUFFALO RIDGE - LAKE YANKTON 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03867	140.6381	FLANDRU - SIOUX FALLS 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.6205	GEN645011 1-NEBRASKA CITY 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	140.62	GEN659110 1-LELAND OLDS UNIT1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03592	140.6129	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	140.6127	YANKEE 115/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03681	140.6095	HIGHWAY 12 - ORTONVILLE 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03716	140.605	FENTON - NOBLES 115KV CKT 2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03801	140.6041	BYRON - PLEASANT VALLEY 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.5978	GEN345671 2-1RUSH G2 18.000
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.5972	J262_J263 115.00 115/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.5972	J262_J263 115.00 115/34.5KV TRANSFORMER CKT 2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03393	140.597	BSSOUTH3 345.00 - J436&437_POI345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.5927	GEN345670 1-1RUSH G1 18.000
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03793	140.5806	MITCHELL - MITCHELL NW 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03793	140.5806	MITCHELL - MITCHELL NW 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.5708	GEN640009 1-COOPER NUCLEAR STATION
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.5677	GRE-LKFDGEN3345.00 (345/13.8) 345/13.8/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.5671	NOBLES 115/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.5646	GRE-LKFDGEN3345.00 - LKFLDXL3 345KV CKT Z
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	140.561	YANKEE 115/34.5KV TRANSFORMER CKT 2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.5262	GEN600149 W-J183 PROSEW10.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.5003	GEN600150 W-J183 PROSEW20.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04263	140.4993	GLENHAM - WHITLOK 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.4904	GEN335206 1-NELSON UNIT 6
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.4691	GEN636641 1-LOUISA UNIT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.4557	GEN334440 1-SABINE UNIT 4
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04263	140.4478	P12:230:UMZB:# 114 #: SB IN SD. SB-WK-GH
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04263	140.4478	P12:230:UMZB:# 117 #: WK IN SD. SB-WK-GH
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.4263	GEN338388 1-1PLUM PT U1 23.000
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.4092	NOBLES 115/34.5KV TRANSFORMER CKT 2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03670	140.3953	GRACEVT7 - ORTONVILLE 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04263	140.3909	SULLYBT-LNX3230.00 - WHITLOK 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04279	140.3905	GLENHAM - L3 HAWDON 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04263	140.3898	SULLEY BUTTE - SULLYBT-LNX3230.00 230KV CKT Z
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04263	140.3876	SULLYBUTTE-WHITLOCK-TLINE-REACTOR-CKT1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.3734	PRAIRIE ISLAND 345/20.0KV TRANSFORMER CKT 2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.3722	PRAIRIE ISLAND 345/20.0KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.3584	GEN336191 1-LITTLE GYPSY UNIT#3
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03720	140.3575	HOLT.CO3 345.00 - THEDFRD3 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.3475	GEN501812 1-RODEMACHER UNIT 2
FDNSLock	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04078	140.3051	BISON - MAURINE 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03630	140.2862	FT THOMPSON - WESSINGTON 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03630	140.2862	FT THOMPSON - WESSINGTON 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.28	MEC345 - WILMARTH 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.2784	MEC345 345/19.5KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03669	140.2595	GRAND ISLAND - MCCOOL 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03702	140.2404	ELLENDLMVP4 230.00 - OAKES 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03702	140.2404	ELLENDLMVP4 230.00 - OAKES 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03722	140.2367	AUDUBON - SHEYNNE 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	140.2322	GEN587033 1-G16-004-GEN10.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.231	GEN336801 1-BAXTER WILSON UNIT #1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.2296	GEN335614 1-WILLOW GLENN UNIT#4
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.2201	GEN334441 1-SABINE UNIT 5
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03726	140.2192	GRE-WINGRIV4230.00 - INMANN 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.2178	GEN336464 1-MICHOUD UNIT #3
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.2118	GEN335204 1-NELSON UNIT 4
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	140.2001	BROOKING COUNTY - J432 POI 345.00 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	140.1985	J432 POI 345.00 345/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03762	140.1947	GLENBORO SOUTH - J290_SUB 230.00 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04263	140.1901	OAHE - SULLEY BUTTE 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.1825	MEC115 - WILMARTH 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.1825	MEC115 115/15.0KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.1082	HOOT LAKE 115/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	140.1039	GEN657749 1-YOUNG 1 GENERATOR
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03791	140.0943	HIGHLND 3 345.00 - RAUN 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03674	140.091	GRANT - MITCHELL 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03674	140.091	GRANT - MITCHELL 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.0878	RGBYWND4 230.00 - RUGBY 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.0828	RGBYWND4 230.00 230/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.0575	GEN542962 2-IATAN UNIT #2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	140.0439	GEN672321 1-SHAND GENERATOR 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03697	140.0435	MISSION - ST FRANCIS 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.0346	GEN334433 1-SABINE UNIT 3
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03704	140.0309	FORMAN - OAKES 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03720	140.0282	ARPIN B3 345.00 - ROCKY RN B8 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.0065	GEN635407 W-SHD415 W 0.6000
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.0065	GEN635408 W-SHD425 W 0.6000
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	140.0049	GEN635409 W-SHD435 W 0.6000
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.9934	GEN336222 1-LITTLE GYPSY UNIT#2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.9874	GEN629074 1-ARNOLD LOWSIDE OF GSU XFMR
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03697	139.9848	HARMONY - ST FRANCIS 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03717	139.9832	ELM CREEK - MONTICELLO 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03656	139.9759	RAUN - SUB 3451 FT CAL 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03656	139.9759	RAUN - SUB 3451 FT CAL 345KV CKT 1
FDNSLock	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03697	139.9633	HARMONY - VALENTINE 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.9584	FARIBALT GEN115.00 - FEP TAP 115KV CKT Z
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.9504	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	139.9401	GEN672311 2-POPLAR RIVER GENERATOR 2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	139.94	GEN672310 1-POPLAR RIVER GENERATOR 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03648	139.9252	SIDNEY - STEGALL 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.9244	GEN635693 3-GREATER DES MOINES ENERGY CENTER ST
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03670	139.9218	GRACEVT7 - MORRIS 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03670	139.9218	GRACEVT7 - MORRIS 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	139.9203	GEN672306 6-BOUNDARY DAM GENERATOR 6
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03874	139.9189	P12:230:UMZW:# 733 #: FT IN SD. FT-BG2 LINE FAULT
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.9082	PLEASANT VALLEY 161/16.0KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.9078	PLEASANT VALLEY 161/16.0KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.897	GEN336151 1-WATERFORD UNIT#1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.897	GEN336152 1-WATERFORD UNIT#2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03672	139.8922	MCCOOL - MOORE 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03704	139.8852	AIRTECH - FEP TAP 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.8703	GEN542957 1-IATAN UNIT #1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03762	139.8682	J290_SUB 230.00 - RUGBY 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03704	139.8594	AIRTECH - WEST FARIBAULT 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03686	139.8488	FT RANDAL - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03710	139.8301	FENTON 115/69KV TRANSFORMER CKT 5
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.8286	GEN303007 1-1BC2 U2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.8242	GEN303006 1-1BC2 U1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.8207	BARNES 4 230.00 - PILSBRY4 230.00 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	139.8165	GEN 61044 1-J460 G 0.6900
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	139.8165	GEN 61045 1-J460 G2 0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03827	139.8108	HURON - WOONSOCKET 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.7934	GEN562003 1-G11_027_3 0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03687	139.791	GRE-CHUBLAK3345.00 - HELENA 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03727	139.7818	AUDUBON - HUBBARD 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.781	GEN645025 5-NORTH OMAHA 5
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.7748	GENOA 161 161/24.0KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.7743	GEN635691 1-GREATER DES MOINES ENERGY CENTERGT1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.7743	GEN635692 2-GREATER DES MOINES ENERGY CENTERGT2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.765	FENTON 115/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.7639	AS KING 345/20.0KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.7561	GEN336170 1-GULF OXY U4
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.7504	GEN303008 1-1BC2 U3
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03719	139.7462	P12:115:UMZZ:# 232 #: AB IN SD. ABERDEEN A TAP BETWEEN ELLENDALE AND ABERDEEN-SIEBRECHT.
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03714	139.7441	MENNO JCT - TRIPP JCT 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.7413	GEN563222 1-G15088_3 0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03725	139.735	FARGO - SHEYNNE 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03725	139.735	FARGO - SHEYNNE 230KV CKT 1
FDNSLock	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03697	139.7299	AINSWORTH - VALENTINE 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.7236	GEN532652 1-JEFFREY ENERGY CENTER UNIT 2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.7234	GEN532653 1-JEFFREY ENERGY CENTER UNIT 3
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.7194	GEN532651 1-JEFFREY ENERGY CENTER UNIT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03708	139.7055	FORT RIDGELY - FRANKLIN 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.6808	GEN542951 5-HAWTHORN UNIT #5
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03711	139.6725	CNTSHNT3 345.00 - PRAIRIE3 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03680	139.6597	G15088_T 345.00 - MOORE 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03779	139.6578	ANTELOP-LNX3345.00 - BRDLAND-LNX3345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03705	139.655	CHISAGO COUNTY - LINDSTROM FUTURE 115KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.6463	GEN501811 1-RODEMACHER UNIT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03714	139.6437	MENNO JCT - UTICA 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03827	139.6412	P12:115:UMZW:# 152 #: HU-WO-ST IN SD. WOONSOCKET IS A TAP
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03685	139.6375	AXTELL - SWEETWATER 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.6297	LANGDON - LANGWIN7 115.00 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.6252	GEN542955 1-LACYGNE UNIT #1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03677	139.61	RASMUSN - UTICA JCT 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03694	139.6081	PAYNESVILLE - WAKEFIELD 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.6024	LANGWIN7 115.00 115/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03674	139.5936	CHERRY CREEK - GRANT 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03695	139.5908	MCLEOD (230/115) 230/115/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03709	139.59	FORMAN - HANKINSON 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03714	139.5825	P12:115:UMZZ:# 237 #: MEN IN SD. MENNO JUNCTION IS A TAP (UJ-MEN-TP).
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03714	139.5808	GERALD GENTLEMAN STATION - THEDFRD3 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.5806	GEN334070 1-LEWIS CREEK 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.5806	GEN334071 1-LEWIS CREEK 2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03693	139.5792	MINGO - RED WILLOW 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03693	139.5792	MINGO - RED WILLOW 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03627	139.5672	GERALD GENTLEMAN STATION - KEYSTONE 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03705	139.5654	LINDSTROM FUTURE - SHAEFER 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.5613	GEN345765 H-1SIOUX 2 18.000
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03779	139.557	DAGLUM 4230.00 - RHAME 4 230.00 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03705	139.5469	LAWERENCE CREEK - SHAEFER 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03665	139.5441	G1623&1629-T345.00 - SIDNEY2-LNX3345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.5411	GEN337766 1-TRACTEBEL UNIT S1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03708	139.5402	BLACKBERRY - HILLTOP 98 LINE TP 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03705	139.5359	LYON COUNTY 115/69KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03704	139.5279	WINNER - WITTEN 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.526	GEN337757 1-DUKE HOTSPRINGS STG1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.5225	GEN629069 1-EMERY STEAM TURBINE 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03677	139.5206	RASMUSN - SIOUX CITY 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.5096	GEN336221 1-LITTLE GYPSY UNIT#1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.5084	GEN501910 1-ACADIA UNIT ST1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03703	139.5077	BLUE LAKE - MCLEOD 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03827	139.5069	STORLA - WOONSOCKET 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03665	139.4955	SIDNEY - SIDNEY2-LNX3345.00 345KV CKT Z
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.4895	GEN542956 2-LACYGNE UNIT #2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.4869	INTRNATIONL FALLS7 - LITTLE FORK 118KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.479	GEN345756 H-1SIOUX 1 18.000
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.478	GEN659116 1-SPIRIT MOUND UNIT1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03708	139.4755	KOSSUTH 3 345.00 - WEBSTER 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.4755	GEN532663 1-LAWRENCE ENERGY CENTER UNIT 5
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.4686	ADAMS NORTH - HIPRAR_WF5 161.00 161KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03727	139.4675	KARLSTAD - WINGER 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03702	139.4649	NOBLES () 345/115/34.5KV TRANSFORMER CKT 9
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.463	FARIBALT GEN115.00 115/18.0KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03705	139.4629	POPLAR LAKE 161 - ST CROIX FALLS 161KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03702	139.461	NOBLES () 345/115/34.5KV TRANSFORMER CKT 10
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.4545	GEN629071 1-BURLINGTON GENERATOR FOR UNIT NO 1 E
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.4543	GEN334432 1-SABINE UNIT 2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.4542	GEN334431 1-SABINE UNIT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.4488	GEN336446 1-MICHOUD UNIT #2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03705	139.4479	LAWERENCE CREEK (82578T7IC002) 161/115/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.4453	GEN345832 1-1TS G1 13.800
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.4449	GEN345841 2-1TS G2 13.800
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.441	BARNES 4 230.00 - SIBLEY 4 230.00 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	139.4375	GEN600004 2-PRAIRIE ISLAND G2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.4351	GEN337764 1-TRACTEBEL UNIT C1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.4351	GEN337765 1-TRACTEBEL UNIT C2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03684	139.4337	GERALD GENTLEMAN STATION - SWEETWATER 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03703	139.4325	BLUE LAKE () 230/115/13.8KV TRANSFORMER CKT 7
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03705	139.4318	LAWERENCE CREEK - ST CROIX FALLS 161KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	139.4295	GEN600003 1-PRAIRIE ISLAND G1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03727	139.4292	MT VERN - STORLA 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03856	139.4231	NUNDRWD - NUNDRWD-LNX3230.00 230KV CKT Z
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03715	139.4165	ELM CREEK - PARKERS LAKE 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03856	139.4156	MAURINE - NUNDRWD-LNX3230.00 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03856	139.4156	NUNDERWOOD-MAURIN-TLINE-REACTOR-CKT1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03704	139.4119	GREGORY - WINNER 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03708	139.4055	JAMES TOWN - PICKERT 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.4039	GEN336242 1-1NMIL ST1 18.000
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03701	139.3994	ARKANSAS NUCLEAR ONE - FT SMITH 500KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03701	139.3994	ARKANSAS NUCLEAR ONE - FT SMITH 500KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.396	GEN501823 1-TECHE UNIT 3
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03694	139.3958	FT RANDAL - SPENCER 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03694	139.3909	P12:115:NPPD:WAPA6:FTRANDL7:ONEILL 7:BTB
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03694	139.3909	P12:115:UMZB:# 115 #: SE IN NE. FR-SE-ON
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.3878	GRAND MEADOW - PLEASANT VALLEY 161KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.3798	GEN629046 3-FOX LAKE 5 GENERATOR NO 3
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03703	139.3796	ARROWHEAD - FORBES 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03704	139.3781	P12:115:UMZW:# 172 #: WI IN SD.

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03707	139.3777	MINNESOTA VALLEY - REDWOOD FALLS 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.3697	LKFLDXL3 - TRIMONT WD 3345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.3669	GEN659117 2-SPIRIT MOUND UNIT2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.3662	GEN336944 1-REX BROWN
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03708	139.3661	P12:115:UMZW:# 173 #: WI-WE-MS IN SD. WITTEN IS A TAP
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03694	139.3639	ONEILL - SPENCER 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03708	139.363	LOWERBRULE 4230.00 - RELIANCE 4 230.00 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.353	GEN338443 1-PANDA S1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03705	139.3508	FT RANDAL - WHITE SWAN 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.3506	GEN334030 1-FRONTIER UNIT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.3503	GEN334031 1-FRONTIER UNIT 2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.3494	GEN501970 1-EVANGELINE UNIT 7
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.3466	GEN335612 1-WILLOW GLENN UNIT#2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03799	139.3434	P12:115:UMZW:# 151 #: HU-RF-GR IN SD. ERC REDFIELD IS A TAP
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03696	139.3377	ELBOWLK7 115.00 - GRANTCO7 115.00 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03703	139.3339	P12:115:NPPD:WAPA2:HEMINGF7:SNAKECK7:BTB
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.3325	GEN337430 1-PERYVILLE UNIT #3
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.3324	GEN337428 1-PERYVILLE UNIT #1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.3316	GEN345156 H-1MER 4 18.000
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.3305	GEN600112 W-G287 NOB2G W0.5750
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03705	139.32	TYNDALL - WHITE SWAN 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03713	139.3197	ARNOLD - HAZLETON 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.3169	GEN336240 1-1NMIL CT1 18.000
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.3169	GEN336241 1-1NMIL CT2 18.000
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03703	139.3159	PLEZIOZO1ARC
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.3143	GEN645042 2-CASS COUNTY 2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.3125	GEN645041 1-CASS COUNTY 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03687	139.3083	HELENA - SCOTTCO3 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.3078	GEN501912 1-ACADIA UNIT CT1B
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.3077	GEN501911 1-ACADIA UNIT CT1A
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.3039	GEN635803 3-PLEASANT HILL GEN 3
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.2975	GEN629067 1-EMERY GAS TURBINE 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.2972	GEN501972 1-EVANGELINE UNIT 7-2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.2971	GEN501971 1-EVANGELINE UNIT 7-1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03876	139.2955	BOWMAN - RHAME 4 230.00 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.2939	GEN629068 1-EMERY GAS TURBINE 2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03707	139.2937	FRANKLIN - REDWOOD FALLS 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.2935	GEN335570 1-CARVILLE CTG
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.2935	GEN335571 1-CARVILLE UNIT #1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.2928	GEN640020 2-SHELDON STATION UNIT 2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.2927	FENTON 115/34.5KV TRANSFORMER CKT 2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.2914	GEN336167 1-GULF OXY U1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.2914	GEN336168 1-GULF OXY U2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.2914	GEN336169 1-GULF OXY U3
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.2903	GEN635708 1-SYCAMRG1 13.800
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.2903	GEN635709 2-SYCAMRG2 13.800
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.2889	HIPRAR_WF5 161.00 161/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.2855	WHEATON () 161/13.8/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.2697	GEN337008 1-DUKE MCADAMS S1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.2696	GEN334392 1-EXXON MOBIL IPP 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.2679	GEN337432 1-PERYVILLE UNIT #5
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03692	139.2651	GRE-CHUBLAK3345.00 - HAMPTON CORNER 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.2602	GEN345882 3-1VENICE3 15.000
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.2569	GEN337758 1-DUKE HOTSPRINGS CTG1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.2569	GEN337759 1-DUKE HOTSPRINGS CTG2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.2538	GEN600114 W-G287 NOB4G W0.5750
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.2523	GEN660016 1-B_H WIND 0.7000
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	139.2424	GEN 61033 G1-J432 G 0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	139.2335	GEN640010 1-GERALD GENTLEMAN STATION UNIT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03724	139.2233	LAKEFIELD 3 - OBRIEN 3 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.8271	BASE CASE
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	138.7414	GEN600006 1-AS KING
FDNSLock	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	138.7321	GEN661015 1-COYOTE
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03681	138.5507	RAUN - SIOUX CITY 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03681	138.5507	RAUN - SIOUX CITY 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03734	138.447	LYON COUNTY (8779072) 345/115/34.5KV TRANSFORMER CKT 9
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	138.4307	ALEXMRES3 345.00 () 345/115/34.5KV TRANSFORMER CKT 9
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03706	138.4097	COLUMEAST - NW68TH & HOLDREGE 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03706	138.4097	COLUMEAST - NW68TH & HOLDREGE 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03723	138.3915	STORLA (KV1A) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03704	138.3884	MADISON COUNTY - RLHILLS3 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.3806	GEN590010 1-ERCOT EQUIVALENCE
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.3778	NEW MADRID 345/22.0KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03697	138.3759	CENTER - COYOTE 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03874	138.3754	FT THOMPSON - LOWERBRULE 4230.00 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03874	138.3754	FT THOMPSON - LOWERBRULE 4230.00 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03706	138.3722	FALLOW 3 345.00 - GRIMES 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.37	NEW MADRID 161/22.0KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.3688	GEN681540 5-ALMA UNIT 5
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.3674	GEN590011 2-ERCOT EQUIVALENCE
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.3662	DELL 500 - ESSEX UNIT 2 500KV CKT Z1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03700	138.3624	CARROLL COUNTY - VICTORY 161KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.3621	GEN672383 1-MLTC 1G 13.800
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.361	GEN600047 1-MECCT1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.3276	GEN587053 1-G16-007-GEN10.6500
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.3224	ULRICH (ULRICH) 115/69/41.6KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.322	GEN672339 16-QE 16G 13.800
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.319	GEN600088 W-BUFFALO RIDGE WIND GEN 11
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.3145	GEN629072 4-LANSING GENERATOR FOR UNITS NO4 EIA CODE 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	138.3066	DIXONCO 230.00 - HOSKINS 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.3023	GRE-STNYCRK7115.00 (115-69) 115/69/12.8KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.3018	GEN563302 1-G15096_3 0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03702	138.3003	G14-021T 345.00 - SUB 3458 NEB CTY 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.2992	GEN660003 3-HURON WEST PARK
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.2953	GEN652410 3-FT PECK
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.2788	GEN600081 W-BUFFALO RIDGE WIND GEN 4
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.2746	GEN652907 1-G09_007IS_3 0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.2727	GEN652004 1-G13_001IS_3 0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03700	138.2714	COLUMEAST - SHELL CREEK 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03789	138.269	GAVINS POINT - SPIRIT MOUND 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03701	138.266	DENISON (DN KV1A) 230/161/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03701	138.2655	DENISON - EXIRA 161KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.2648	GEN600130 W-G586 - CWN 10.6000
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.2637	GEN600131 W-G586 - CWN 20.6000
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.2621	GEN619954 1-HUTCHINSON
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03688	138.2608	BISON 3 345.00 - MAPLE R3 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03674	138.2569	HOSKINS - SHELL CREEK 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.253	GEN672371 2-COTEAU CREEK GENERATOR 2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.2529	GEN672370 1-COTEAU CREEK GENERATOR 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.2529	GEN672372 3-COTEAU CREEK GENERATOR 3
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03700	138.2519	COOPER - FAIRPORT 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03700	138.2519	COOPER - FAIRPORT 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.2476	GEN652414 4-FT PECK
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.2476	GEN652415 5-FT PECK
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03705	138.2448	PLYMOUTH - SIOUX CITY 161KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03705	138.2448	PLYMOUTH - SIOUX CITY 161KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.2425	GEN620857 1-LKPRSTN9 41.600
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.2405	GEN659148 1-LONESMCRK 1G13.800
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.2405	GEN659156 2-LONESMCRK 2G13.800
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.2405	GEN659157 3-LONESMCRK 3G13.800
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.2301	GEN620115 1-HRDLKGEN 0.6000
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.2301	LAKOTA 115/69KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.2274	GEN659147 1-PIONEER 1G13.800
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.2274	GEN659158 2-PIONEER G213.800
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.2274	GEN659159 3-PIONEER G313.800
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03703	138.2214	BROOKING COUNTY - YANKEE 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03703	138.2214	BROOKING COUNTY - YANKEE 115KV CKT 2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.2204	GEN659417 1X-BEPCPKFT 1GX13.800
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.2204	GEN659418 2X-BEPCPKFT 2GX13.800
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.2204	GEN659419 3X-BEPCPKFT 3GX13.800
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.2165	WINGER (WINGER) 115/69/41.6KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.2104	GEN615031 1-PLEASANT VALLEY
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.2053	GEN615032 2-PLEASANT VALLEY
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03706	138.2036	FREEBORN5 161.00 - HAYWD#15 161.00 161KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.2026	MITCHLCO3 345.00 345/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03674	138.1893	SIOUX CITY - TWIN CHURCH 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.1867	GEN672369 3-MERIDIAN GENERATOR 3 ST
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03669	138.1819	ELLENDLMVP4 230.00 - J316_SUB 230.00 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03699	138.1761	COOPER - SUB 3458 NEB CTY 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03699	138.1761	COOPER - SUB 3458 NEB CTY 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03700	138.1756	STMDSJFAFACO
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03700	138.1754	COPSTJCPFRSJ
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03700	138.1754	P12:345:NPPD:3517:COOPER 3:ST JOE 3:BTB
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.1682	THIEF RIVER FALLS (TRF) 115/69/13.2KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03703	138.1649	EDEN 345 345.00 - HCKRYCK3 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.1454	PICKERT (230/69) 230/69/41.6KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.1404	GEN672384 1-CENTENNIAL WINDFARM
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.1281	GEN672340 1-QUEEN ELIZABETH GENERATOR 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.125	GEN600125 2-FEP ST G 13.800
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.1128	GEN659118 1-LARAMIE RIVER UNIT1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.1033	H081_SUB 345.00 345/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03643	138.1013	HOSKINS - RAUN 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03643	138.1013	HOSKINS - RAUN 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03700	138.1009	P13:230:UMZW:# 2218 #: FP IN MT. LOSS OF TRANSFORMER (AT2).
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03704	138.0944	BLACKHAWK 3 345.00 - HAZLETON 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.0903	GEN652556 2-OAHE
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.0903	GEN652557 4-OAHE
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.0903	GEN652558 6-OAHE
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.0898	GEN620285 1-SOLWAY
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.0734	DONALDSON - DONALDSON PIPE 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.0602	FRONTER4 230.00 (FRONTIER) 230/69/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.0489	GEN600056 W-BUFFALO RIDGE WIND GEN

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.0462	GEN600013 3-BLACK DOG GEN 3
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03726	138.0342	HILLS - MONTEZUMA 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.0284	GEN672347 1-CORY COGEN GENERATOR 1 GT1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.0284	GEN672348 2-CORY COGEN GENERATOR 2 GT2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03700	138.0271	COLBY3 345.00 - KILLDEER3 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.01	GEN652559 1-OAHE
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	138.004	GEN672358 1-CHAPLN1W 0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.9886	G830_SUB 115.00 - GRE-MCHENRY7115.00 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.9859	G830_SUB 115.00 115/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03780	137.9696	ELLSBORO - LAKE YANKTON 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.9624	GEN659162 4-RED WLCK
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.9624	GEN659163 5-BLACK WDCK
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.962	GEN659192 6-LYNN
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.9581	GEN672367 1-MERIDIAN GENERATOR 1 GT1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.9581	GEN672368 2-MERIDIAN GENERATOR 2 GT2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03700	137.9502	COOPER - ST JOE 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03780	137.9443	CHANARANBIE - ELLSBORO 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.9343	GEN652353 2-GR PRAIRIEG 0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.9322	GEN672352 3-NIPAWIN GENERATOR 3
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.9321	GEN672350 1-NIPAWIN GENERATOR 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.9321	GEN672351 2-NIPAWIN GENERATOR 2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.9247	GEN672349 3-CORY COGEN GENERATOR 3 ST
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.9158	GEN600018 S-LS POWER STEAM
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.9115	GEN659273 2-GROTON SYNC COND
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.9115	GEN659294 1-WILTONCOL9
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03701	137.8985	ANITA TAP POINT TO CRESTON AND DENISON - EXIRA 161KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.8862	GEN603185 1-FIBROMINN GENERATION
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	137.8843	J460 345.00 - J460 POI 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.8815	GEN657964 1-ASH2GEN9 0.5750
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.8795	CLEARBROOK - CLEARBROOK PIPE 115KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	137.877	GEN659354 1-DEERCREK STG18.000
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.8769	BISONMP4 230.00 - SQUARE BUTTE 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.8745	MORANVILLE (MORANVILLE #) 230/115/13.8KV TRANSFORMER CKT 2
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	137.8727	GEN659353 1-DEERCREK CTG18.000
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.8723	WILTON (WILTON) 115/69/41.6KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.8685	MORANVILLE (MORANVILLE #) 115/69/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.8569	YANKEE 115/34.5KV TRANSFORMER CKT 2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.8474	GEN681522 3-GENOA 3
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.8462	GEN620323 2-HOOT LAKE 2 GEN
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.8445	GEN659290 1-EDGECOL
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.8428	LADISH 115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	137.8094	GEN657748 1-YOUNG 2 GENERATOR
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.8069	GEN 11143 1-J436GEN1 0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.8069	GEN 11153 1-J437GEN1 0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.7968	LANSING WEST 161/22.0KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.7955	GEN672357 2-FUT-WL2X 13.800
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03616	137.787	P13:345:UMZW:# 260 #: SC2 IN IA. LOSS OF TRANSFORMER (KU1A
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.7814	GEN672393 2-NBECST2G 13.800
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.7746	GEN672390 2-FUT-SW2X 13.800
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.7735	GEN600050 1-FEP
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.7722	J526 345.00 345/34.5KV TRANSFORMER CKT 2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.7614	J526 345.00 345/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.7598	GEN 60421 1-J488 G 0.6500
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.759	GEN 61421 1-J489 G 0.6500
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03685	137.7478	GRIMES - LEHIGH 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.7449	BEMIDJI (BEMIDJI #2) 115/69/41.6KV TRANSFORMER CKT 2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.7449	J493 345.00 - J510 POI 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03333	137.7402	MERRCRT4 230.00 - WISHEK 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03727	137.7339	ELK - MAGNOLIA 5 161KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.7265	GEN 10212 1-H081_GEN 0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.7212	GEN600012 2-BLACK DOG GEN 2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.7125	GEN562872 1-G15046_3 0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03545	137.6782	SPLIT ROCK (SPLT 11) 345/115/13.8KV TRANSFORMER CKT 11
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.6526	J493 345.00 345/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03696	137.6405	P12:115:UMZW:# 162 #: NEL IN ND. FAULT ON ML-NEL-MX-GA 115 KV
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03539	137.6322	SPLIT ROCK (SPLT 10) 345/115/13.8KV TRANSFORMER CKT 10
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	137.6245	GEN 6060 1-G736 0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03333	137.6133	HESKETT - WISHEK 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03791	137.5876	HIGHLND 3 345.00 - OBRIEN 3 345.00 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	137.5833	GEN 72036 1-J526 G2 0.6900
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	137.5774	GEN 72034 1-J526 G 0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03702	137.5739	G15-005T 345.00 - MULLNCR7 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03702	137.5738	G14-021T 345.00 - MULLNCR7 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.5334	GEN910006 1-G12_012IS_3 0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03706	137.5065	KOSSUTH 3 345.00 - OBRIEN 3 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.4787	RCDC EAST 4230.00 - RED CEDAR DC 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03702	137.4772	G15-005T 345.00 - SIBLEY 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.4643	P12:230:UMZB:# 112 #: NU IN SD. NU-RCDC & DRY CREEK XFMR
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.4514	GEN660001 2-ABERDEEN SIEBRECHT
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.4471	GEN620324 3-HOOT LAKE 3 GEN
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.4418	GEN600063 1-COLVILLE GEN 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.4418	GEN600064 2-COLVILLE GEN 2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03734	137.4361	BONDURANT - MONTEZUMA 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.4338	GEN659411 1-CAMPBLCNTY W0.6900
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	137.4216	GEN 60214 1-J493 G 0.6500
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03701	137.4143	BLACKHAWK 3 345.00 - KILLDEER3 345.00 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	137.4059	GEN659111 2-LELAND OLDS UNIT2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03399	137.4023	ELLENDLMVP3 345.00 - J436&437_POI345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03399	137.4023	ELLENDLMVP3 345.00 - J436&437_POI345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03704	137.3999	DENISON - SIOUX CITY 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04377	137.3967	HELENA - SHEAS LK3 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.3364	GEN 10648 1-G830_GEN 0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.3283	GEN600014 4-BLACK DOG GEN 4
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.3166	GEN600065 7-HIGH BRIDGE
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.3166	GEN600066 8-HIGH BRIDGE
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	137.3102	GEN 50324 1-J442 G 0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.3077	GEN652460 4-GARRISON
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.3077	GEN652461 5-GARRISON
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03399	137.2985	ELLENDLMVP3 345.00 (1) 345/230/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.2919	GEN600071 10-RIVER SIDE
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.2912	GEN600070 9-RIVER SIDE
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.2829	GEN 11104 1-J262_GEN 0.6000
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.2829	GEN 11108 1-J263_GEN 0.6000
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.2807	GEN652345 W-G07_023IS_2 0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.28	GEN652457 1-GARRISON
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.28	GEN652458 2-GARRISON
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.28	GEN652459 3-GARRISON
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03685	137.2747	HUNTLEY3 345.00 - LAKEFIELD 3 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.2716	GEN600011 5-BLACK DOG GEN 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.267	GEN600007 7-RIVERSIDE GEN 7
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.255	GEN600043 7-BLUE LAKE5
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.255	GEN600044 8-BLUE LAKE6
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.2515	GEN657705 X-DRAYTON
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.2492	GEN659018 1-G14_003IS_3 0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.2414	GEN600017 C-LS POWER CT
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.1897	GEN615052 1-CAMBRIDGE GENERATING STATION
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.1895	GEN615015 1-GRE-SPRITWDG13.200
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03730	137.084	DAN JUHL - SPLIT ROCK 161KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03730	137.0835	SPLIT ROCK () 161/115/36.2KV TRANSFORMER CKT 6
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.0654	J526 345.00 - J526 POI 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.0472	GEN659031 1-G12_014IS_4 0.6900
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	137.0409	GEN652173 1-G09_001IS_2 0.6900
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	137.0405	GEN659125 1-COVEY
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03819	137.0028	CARPENTER - WATERTOWN 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03819	137.0028	CARPENTER - WATERTOWN 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.0019	GEN672305 5-BOUNDARY DAM GENERATOR 5
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.0017	GEN672303 3-BOUNDARY DAM GENERATOR 3
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	137.0017	GEN672304 4-BOUNDARY DAM GENERATOR 4
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	136.9905	GEN659194 1-NDPRAIRWND1W0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	136.9854	GEN659366 3-WILTON 3 W0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	136.9585	GEN600077 W-YANKEE 2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	136.9585	GEN600099 W-YANKEE 4
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03819	136.9553	HURON - WATERTOWN 230KV CKT 2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03819	136.9553	HURON - WATERTOWN 230KV CKT 2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	136.9448	GEN672356 1-FUT-WL1X 18.000
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03730	136.9361	DAN JUHL - MAGNOLIA 5 161KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	136.9326	GEN600078 W-YANKEE 3
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	136.9231	GEN600069 W-YANKEE 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	136.9147	GEN659103 1-ANTELOPE VALLEY UNIT1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	136.9147	GEN659107 2-ANTELOPE VALLEY UNIT2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	136.9021	GEN672389 1-FUT-SW1X 18.000
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03730	136.8954	LEHIGH - RAUN 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	136.8922	GEN615021 1-GRE-ER 14G 16.000
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	136.8872	GEN672392 1-NBECGT1G 18.000
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	136.8857	GEN659403 1-NDSUNFLWR W0.6900
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	136.8424	GEN600005 1-MONTICELLO
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03722	136.8043	COLBY3 345.00 - LEDYARD3 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	136.6968	GEN600067 9-HIGH BRIDGE
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03819	136.6917	CARPENTER - HURON 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03690	136.5852	EAGLE 4 230.00 - PAHOJA 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	136.5535	GEN681542 6-JP MADGETT
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	136.5487	J510 345.00 - J510 POI 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	136.5442	J510 345.00 345/25.0KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04304	136.4225	SHEAS LK3 345.00 - WILMARTH 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	136.3777	GEN600000 1-SHERBURNECNTY G1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	136.2975	GEN659453 1-GI1414GEN W0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03690	136.2495	PAHOJA - SIOUX FALLS 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04472	136.0759	FIELD SOUTH - WILMARTH 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	136.0404	GEN659141 1-K10215A
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04472	136.0363	FIELD NORTH - FIELD SOUTH 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	136.0149	SQUARE BUTTE - YNG2 4 230.00 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	136.0145	YNG2 4 230.00 230/20.0KV TRANSFORMER CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	136.0077	ALMA 161 161/24.0KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04472	135.9993	FIELD NORTH - LKFLDXL3 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	135.8962	GEN659289 1-DAYCNTYWND W0.6900
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03801	135.796	GRPRAR1-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	135.7437	GEN659407 1-ANTELPHILLSW0.6900
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03801	135.7318	GRPRAR1-LNX3345.00 - YANKTON 345KV CKT Z
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03801	135.7315	GRANDPRAIRIE-HOLT-TLINE-REACTOR-CKT1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	135.7233	J460 345.00 345/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	135.7232	J460 345.00 345/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03399	135.6204	BSSOUTH3 345.00 - J436&437_POI345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	135.6185	GEN659110 1-LELAND OLDS UNIT1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	135.4846	YANKEE 115/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	135.4323	YANKEE 115/34.5KV TRANSFORMER CKT 2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	135.4322	COYOTE 345/24.0KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.02951	135.1478	BSSOUTH3 345.00 - J526 POI 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	135.1439	GEN587033 1-G16-004-GEN10.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	135.0735	BROOKING COUNTY - J432 POI 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	135.0725	J432 POI 345.00 345/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03585	134.9578	HANLON - STORLA 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	134.9483	GEN672310 1-POPLAR RIVER GENERATOR 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	134.9483	GEN672311 2-POPLAR RIVER GENERATOR 2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	134.9478	GEN672321 1-SHAND GENERATOR 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03664	134.9154	RAUN - SUB 3451 FT CAL 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03664	134.9154	RAUN - SUB 3451 FT CAL 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	134.9133	GEN657749 1-YOUNG 1 GENERATOR
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	134.8215	GEN672306 6-BOUNDARY DAM GENERATOR 6
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	134.7774	GEN 61044 1-J460 G 0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	134.7774	GEN 61045 1-J460 G2 0.6900
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	134.7465	GEN615001 1-COAL CREEK
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	134.6991	GEN615002 2-COAL CREEK
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03594	134.6825	P12:230:UMZB:# 116 #: ST IN SD. WSG-ST-VH
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	134.5253	GEN600001 2-SHERBURNE CNTY G2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	134.5235	GEN635214 4-NEAL UNIT 4
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	134.5034	GEN600002 3-SHERBURNE CNTY G3
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	134.4538	GEN600004 2-PRAIRIE ISLAND G2
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	134.4442	GEN600003 1-PRAIRIE ISLAND G1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	134.2099	GEN 61033 G1-J432 G 0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03690	134.1768	RAUN - SIOUX CITY 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03690	134.1768	RAUN - SIOUX CITY 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03522	133.9342	HANKINSON - WAHPETON 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03704	133.9056	BUFFALO RIDGE - YANKEE 115KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	133.7459	GEN600006 1-AS KING
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	133.59	CLAY BOSWELL 230/20.9KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	133.4467	GEN661015 1-COYOTE
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03666	133.2225	GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	133.1795	SHERBURNE CO 345/24.0KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03666	133.1767	GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03644	133.1599	GRE-CEDARMT3345.00 - HELENA 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03644	133.1599	GRE-CEDARMT3345.00 - HELENA 345KV CKT 2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	133.0728	GEN635024 4-WALTER SCOTT UNIT 4
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	132.9126	GEN635213 3-NEAL UNIT 3
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	132.9116	GEN659354 1-DEERCREK STG18.000
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	132.907	GEN659353 1-DEERCREK CTG18.000
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03639	132.899	GRE-CEDARMT3345.00 - LYON COUNTY 345KV CKT 2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03639	132.8707	GRE-CEDARMT3345.00 - LYON COUNTY 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	132.8249	J460 345.00 - J460 POI 345.00 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03788	132.8158	RIEL - ROSEAU 500KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03788	132.8134	ROSEAU - ROSEAUM 2 500.00 500KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03788	132.8134	ROSEAU - ROSEAUM 2 500.00 500KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03788	132.7908	FORBES - ROSEAU 500KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	132.4764	GEN 6060 1-G736 0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	132.4671	GEN 72036 1-J526 G2 0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	132.4505	GEN 72034 1-J526 G 0.6900
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03586	132.4333	STORLA - WESSINGTON 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	132.4126	GEN659111 2-LELAND OLDS UNIT2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03880	132.3368	AURORA - BROOKINGS 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03880	132.3368	AURORA - BROOKINGS 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	132.3311	GEN635023 3-WALTER SCOTT UNIT 3
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03562	132.312	FT THOMPSON - LETCHER 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03562	132.312	FT THOMPSON - LETCHER 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	132.2972	GEN 60214 1-J493 G 0.6500
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03754	132.2437	HAZLETON - MITCHLCO3 345.00 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03706	132.2249	AS KING - EAU CLAIRE 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	132.1636	GEN 50324 1-J442 G 0.6900
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	132.144	MAPLE RIVER - PILSBRY4 230.00 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	132.0541	CENTER 230/22.0KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	132.0293	GEN659125 1-COVEY
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	131.963	GEN652173 1-G09_001IS_2 0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	131.9313	GEN659103 1-ANTELOPE VALLEY UNIT1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	131.9313	GEN659107 2-ANTELOPE VALLEY UNIT2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04419	131.8617	LAKEFIELD 3 - LKFLDXL3 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	131.8404	GEN600005 1-MONTICELLO
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	131.8312	GEN657748 1-YOUNG 2 GENERATOR
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03590	131.7621	LETCHER - SIOUX FALLS 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03732	131.7391	CHANARANBIE - FENTON 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03758	131.7059	BUFFALO RIDGE - PIPESTONE 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03880	131.6575	AURORA - FLANDRU 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03880	131.6575	AURORA - FLANDRU 115KV CKT 1
FDNSLock	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03833	131.6376	WATERTOWN (WT2 KU1A) 345/230/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03472	131.4777	BIG STONE - BROWNS VALLEY 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03629	131.4063	WHITE (WHT KU1A) 345/115/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	131.3877	GEN600000 1-SHERBURNECNTY G1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03725	131.1626	ARROWHEAD - ARROWHEAD 230 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04991	131.1339	FTTHOM1-LNX3345.00 - G16-017-TAP 345.00 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03629	131.1178	BROOKINGS - WHITE 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03629	131.1178	BROOKINGS - WHITE 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03666	131.0879	BLAIR - GRANITE FALLS 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03666	131.0879	BLAIR - GRANITE FALLS 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04991	131.0859	FT THOMPSON - FTTHOM1-LNX3345.00 345KV CKT Z
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03696	131.0821	BIG STONE - BLAIR 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03696	131.0821	BIG STONE - BLAIR 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04991	131.0799	GEN-2016-017TAP-FTTHOMPSONREACTOR-FTTHOMPSON-CKT1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	131.058	J262_J263 115.00 - JAMESTOWN 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03754	131.0029	ADAMS - MITCHLCO3 345.00 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03472	130.9712	BROWNS VALLEY - HANKINSON 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	130.9009	PROSE CAP7 115.00 - PROSE WIND7 115.00 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03762	130.8988	ADAMS - PLEASANT VALLEY 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	130.8556	PROSE CAP7 115.00 - SPLIT ROCK 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	130.7888	GEN344225 1-1CAL G1 25.000
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03599	130.7667	HANLON - SIOUX FALLS 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	130.6843	GEN336821 1-GRAND GULF UNIT
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.02955	130.471	BSSOUTH3 345.00 - J526 POI 345.00 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03643	130.4187	BIG STONE (230/115) 230/115/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03764	130.4068	BYRON - NORTH ROCHESTER 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03670	130.3271	P12:230:UMZW:# 1786 #: GF IN MN. GF-MNVLTAP LINE FAULT
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03670	130.3206	MN VALLEY TAP - PANTHER 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04991	130.3171	P12:345:UMZB:# 108 #: LOS FT IN ND. LOS FT
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03781	130.2959	PIPESTONE - SPLIT ROCK 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04991	130.2348	2810X2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04991	130.2329	G16-017-TAP 345.00 - LELAND2-LNX3345.00 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03713	130.2323	NORTH ROCHESTER - PRAIRIE ISLAND 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03700	130.2189	ARPIN B4 345.00 - EAU CLAIRE 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03533	130.1928	FT RANDAL - UTICA JCT 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04991	130.1869	LELAND OLDS - LELAND2-LNX3345.00 345KV CKT Z
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	130.1233	GEN336153 1-WATERFORD UNIT#3
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	130.1192	BARNES 4 230.00 - PILSBRY4 230.00 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	130.0924	GEN337911 1-ARKANSAS NUCLEAR ONE UNIT #2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03682	130.0053	NORTH LA CROSSE - NORTH ROCHESTER 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03760	129.8736	BYRON - PLEASANT VALLEY 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	129.8322	LANGDON - LANGWIN7 115.00 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	129.828	GEN335831 1-RIVERBEND UNIT#1
FDNSLock	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	129.775	GEN629075 1-OTTUMWA GENERATOR FOR OTTUMWA UNIT NO 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03663	129.7687	MCLEOD - PANTHER 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03801	129.7598	FTTHOM2-LNX3345.00 - GRPRAR2-LNX3345.00 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03575	129.7526	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	129.7498	GEN 71033 1-J510 G 25.000
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03801	129.707	GRPRAR2-LNX3345.00 - YANKTON 345KV CKT Z
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03801	129.7047	FTTHOMPSON-GRANDPRAIRIE-TLINE-REACTOR-CKT1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	129.7038	GEN337910 1-ARKANSAS NUCLEAR ONE UNIT #1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03801	129.7037	FT THOMPSON - FTTHOM2-LNX3345.00 345KV CKT Z
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03801	129.6984	GRANDPRAIRIE-FTTHOMPSON-TLINE-REACTORS-CKT1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	129.6881	GEN600001 2-SHERBURNE CNTY G2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04419	129.6786	FIELD SOUTH - WILMARTH 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03734	129.6621	FT RANDAL - FT THOMPSON 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03734	129.6621	FT RANDAL - FT THOMPSON 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03732	129.6589	FT THOMPSON - LAKE PLATT 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03732	129.6589	FT THOMPSON - LAKE PLATT 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	129.6555	GEN615001 1-COAL CREEK
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04419	129.6314	FIELD NORTH - FIELD SOUTH 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	129.6185	GEN615002 2-COAL CREEK
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04419	129.603	FIELD NORTH - LKFLDXL3 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	129.5462	HAMPTON CORNER - NORTH ROCHESTER 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	129.5449	BARNES 4 230.00 230/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	129.5381	GEN600002 3-SHERBURNE CNTY G3
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	129.5274	FERGSFL4 230.00 - WAHPETON 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03732	129.4765	FT RANDAL - LAKE PLATT 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03687	129.441	NMA B3 345 345.00 - NORTH LA CROSSE 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03684	129.4041	FERGSFL4 230.00 - GRE-SILVRLK4230.00 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	129.3952	LUVERNE4 230.00 - PILSBRY4 230.00 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	129.383	LUVERNE4 230.00 230/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03655	129.3785	APPLEDORN 4 230.00 - WATERTOWN 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03655	129.3785	APPLEDORN 4 230.00 - WATERTOWN 230KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03642	129.3477	BIG STONE - HIGHWAY 12 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	129.3401	GEN337653 1-WHITE BLUFF UNIT #2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03684	129.2687	GRE-SILVRLK4230.00 - HENNING 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	129.2609	J262_J263 115.00 115/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	129.2609	J262_J263 115.00 115/34.5KV TRANSFORMER CKT 2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03655	129.2568	APPLEDORN 4 230.00 - GRANITE FALLS 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03655	129.2568	APPLEDORN 4 230.00 - GRANITE FALLS 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03641	129.2497	GRANITE FALLS - WILLMAR 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03641	129.2497	GRANITE FALLS - WILLMAR 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	129.2439	LANGWIN7 115.00 115/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	129.2075	PROSE WIND7 115.00 115/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	129.2049	GEN645012 2-NEBRASKA CITY 2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	129.1915	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	129.1782	PROSE WIND7 115.00 115/34.5KV TRANSFORMER CKT 2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	129.1725	GEN337652 1-WHITE BLUFF UNIT #1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	129.1724	GEN338146 1-INDEPENDENCE UNIT #2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	129.1711	GEN338143 1-INDEPENDENCE UNIT #1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	129.1611	GEN501801 1-DOLET HILLS UNIT1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03638	129.1358	PAYNSVILLE - WILLMAR 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03642	129.1326	HIGHWAY 12 - ORTONVILLE 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	129.1125	GEN640009 1-COOPER NUCLEAR STATION
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	129.1058	GEN645011 1-NEBRASKA CITY 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	129.1013	HOOT LAKE 115/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03762	129.0987	HURON WEST PARK - MITCHELL NW 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03762	129.0987	HURON WEST PARK - MITCHELL NW 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03684	129.0923	HENNING - INMANN 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03638	129.0728	PAYNSVILLE () 230/115/13.8KV TRANSFORMER CKT 9
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03629	129.023	GRAND ISLAND - MCCOOL 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03644	128.9992	BUFFALO RIDGE - LAKE YANKTON 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03632	128.9979	GRACEVT7 - ORTONVILLE 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03678	128.9676	FENTON - NOBLES 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.9671	GEN344897 4-1LAB G4 20.000
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.9666	GEN344894 1-1LAB G1 20.000
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.9664	GEN344896 3-1LAB G3 20.000
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03782	128.9401	ALEXMRES3 345.00 - BISON 3 345.00 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.9317	PRAIRIE ISLAND 345/20.0KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.93	PRAIRIE ISLAND 345/20.0KV TRANSFORMER CKT 2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.9265	GEN501813 1-RODEMACHER UNIT 3
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.9235	GEN344895 2-1LAB G2 20.000
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04326	128.9147	HELENA - SHEAS LK3 345.00 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03647	128.9066	KELLY - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.9063	MEC345 - WILMARTH 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.9043	MEC345 345/19.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.8839	GEN345670 1-1RUSH G1 18.000
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.8835	GEN345671 2-1RUSH G2 18.000
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03676	128.8055	FENTON - NOBLES 115KV CKT 2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.8004	RGBYWND4 230.00 - RUGBY 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.798	RGBYWND4 230.00 230/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.7907	MEC115 - WILMARTH 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.7905	MEC115 115/15.0KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.784	GEN335206 1-NELSON UNIT 6
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03664	128.773	ELLENDLMVP4 230.00 - OAKES 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03664	128.773	ELLENDLMVP4 230.00 - OAKES 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.7395	GEN600149 W-J183 PROSEW10.6900
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.7206	GEN600150 W-J183 PROSEW20.6900
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03762	128.7086	MITCHELL - MITCHELL NW 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03762	128.7086	MITCHELL - MITCHELL NW 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.7077	NOBLES 115/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.702	GEN542962 2-IATAN UNIT #2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.6931	PLEASANT VALLEY 161/16.0KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.692	GEN336252 1-NINEMILE POINT UNIT#5
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03632	128.6825	MCCOOL - MOORE 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03760	128.6713	CHISAGO COUNTY - FORBES 500KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.6683	GEN501812 1-RODEMACHER UNIT 2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03640	128.6615	G15088_T 345.00 - MOORE 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.6478	HOOT LAKE 115/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03636	128.6421	GRANT - MITCHELL 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03636	128.6421	GRANT - MITCHELL 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.6367	GEN336831 1-BAXTER WILSON SES
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03586	128.6263	FT THOMPSON - WESSINGTON 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03586	128.6263	FT THOMPSON - WESSINGTON 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.6256	GEN636641 1-LOUISA UNIT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03632	128.6242	GRACEVT7 - MORRIS 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03632	128.6242	GRACEVT7 - MORRIS 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03552	128.611	KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03552	128.5981	SIDNEY-KEYSTONE-TLINE-REACTORS-CKT1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03666	128.5974	FORMAN - OAKES 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03682	128.5916	AUDUBON - SHEYNNE 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.5873	GEN337041 1-GERALD ANDRUS
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03552	128.5867	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04216	128.5838	GLENHAM - WHITLOK 230KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03760	128.5837	CHISAGO COUNTY - CHISAGO COUNTY 500KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03721	128.5708	GLENBORO SOUTH - J290_SUB 230.00 230KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	128.5508	SHERBURNE CO 345/24.0KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03687	128.5497	GRE-WINGRIV4230.00 - INMANN 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.5361	GEN336251 1-NINEMILE POINT UNIT#4
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04216	128.5294	P12:230:UMZB:# 114 #: SB IN SD. SB-WK-GH
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04216	128.5294	P12:230:UMZB:# 117 #: WK IN SD. SB-WK-GH
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04026	128.5251	BISON - HETINGER 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.5183	GEN542957 1-IATAN UNIT #1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.4988	FARIBALT GEN115.00 - FEP TAP 115KV CKT Z
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.4768	GEN334440 1-SABINE UNIT 4
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04216	128.4763	SULLYBUTTE-WHITLOCK-TLINE-REACTOR-CKT1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04216	128.4761	SULLYBT-LNX3230.00 - WHITLOK 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04216	128.4758	SULLEY BUTTE - SULLYBT-LNX3230.00 230KV CKT Z
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.4631	GEN562003 1-G11_027_3 0.6900
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03678	128.4628	ELM CREEK - MONTICELLO 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.4576	GENOA 161 161/24.0KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03665	128.4529	AIRTECH - FEP TAP 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.4398	GEN563222 1-G15088_3 0.6900
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03665	128.4377	AIRTECH - WEST FARIBAULT 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03671	128.4311	FENTON 115/69KV TRANSFORMER CKT 5
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.4213	LKFLDXL3 - TRIMONT WD 3345.00 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04232	128.4012	GLENHAM - L3 HAWDON 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.3843	GEN336191 1-LITTLE GYPSY UNIT#3
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03880	128.3636	FLANDRU - SIOUX FALLS 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04216	128.3445	OAHE - SULLEY BUTTE 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03636	128.3394	CHERRY CREEK - GRANT 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03721	128.329	J290_SUB 230.00 - RUGBY 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.3271	GEN335204 1-NELSON UNIT 4
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03665	128.3132	CHISAGO COUNTY - LINDSTROM FUTURE 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.3122	GEN629074 1-ARNOLD LOWSIDE OF GSU XFMR
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.3062	GEN336801 1-BAXTER WILSON UNIT #1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.3006	AS KING 345/20.0KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.2991	GEN542955 1-LACYGNE UNIT #1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.298	GEN335614 1-WILLOW GLENN UNIT#4
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.2927	GEN336464 1-MICHOUD UNIT #3
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.2923	GEN542951 5-HAWTHORN UNIT #5
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.2743	GEN303007 1-1BC2 U2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.2712	GEN334441 1-SABINE UNIT 5
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.271	GEN303006 1-1BC2 U1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03648	128.2551	GRE-CHUBLAK3345.00 - HELENA 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03834	128.2549	ALEXMRES3 345.00 - WAITE PARK 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03665	128.2549	LINDSTROM FUTURE - SHAEFER 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03665	128.239	LAWERENCE CREEK - SHAEFER 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.2225	GEN336170 1-GULF OXY U4
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03675	128.22	P12:115:UMZZ:# 232 #: AB IN SD. ABERDEEN A TAP BETWEEN ELLENDALE AND ABERDEEN-SIEBRECHT.
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.2154	GEN303008 1-1BC2 U3
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03687	128.2004	AUDUBON - HUBBARD 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.196	GEN542956 2-LACYGNE UNIT #2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03664	128.1943	BLUE LAKE - MCLEOD 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.19	GEN532652 1-JEFFREY ENERGY CENTER UNIT 2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.1899	GEN532653 1-JEFFREY ENERGY CENTER UNIT 3
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.1867	GEN532651 1-JEFFREY ENERGY CENTER UNIT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.1865	GEN338388 1-1PLUM PT U1 23.000
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03793	128.1862	HURON - WOONSOCKET 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03608	128.1844	SIDNEY - STEGALL 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.181	GEN334433 1-SABINE UNIT 3
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.1799	BARNES 4 230.00 - SIBLEY 4 230.00 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03669	128.1778	JAMES TOWN - PICKERT 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03669	128.1756	FORT RIDGELY - FRANKLIN 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03674	128.1723	MENNO JCT - TRIPP JCT 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03639	128.162	RASMUSN - UTICA JCT 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03655	128.1521	MAPLE RIVER - WINGER 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03665	128.151	LAWERENCE CREEK - ST CROIX FALLS 161KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03665	128.1497	LYON COUNTY 115/69KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03665	128.1488	LAWERENCE CREEK (82578T7IC002) 161/115/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.1434	GEN501811 1-RODEMACHER UNIT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03522	128.1414	MANNING - SPIRIT MOUND 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03543	128.1404	UTICA JCT - VFODNES 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03657	128.1373	P12:115:NPPD:1091:VALENTN7:MISSION7:BTB
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03819	128.1325	NUNDRWD - WAYSIDE 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03665	128.1303	POPLAR LAKE 161 - ST CROIX FALLS 161KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.1256	GEN336222 1-LITTLE GYPSY UNIT#2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03587	128.1212	GERALD GENTLEMAN STATION - KEYSTONE 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03657	128.1171	MISSION - ST FRANCIS 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03664	128.1169	BLUE LAKE () 230/115/13.8KV TRANSFORMER CKT 7
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03674	128.1088	MENNO JCT - UTICA 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03664	128.0994	WINNER - WITTEN 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03639	128.097	RASMUSN - SIOUX CITY 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.0922	ADAMS NORTH - HIPRAR_WF5 161.00 161KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03676	128.09	ELM CREEK - PARKERS LAKE 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.089	FENTON 115/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03645	128.0789	AXTELL - SWEETWATER 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03657	128.0769	HARMONY - ST FRANCIS 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03742	128.0725	DAGLUM 4230.00 - RHAME 4 230.00 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.0679	FARIBALT GEN115.00 115/18.0KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03758	128.0676	P12:115:UMZW:# 151 #: HU-RF-GR IN SD. ERC REDFIELD IS A TAP
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.0665	GEN336152 1-WATERFORD UNIT#2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.0657	GEN336151 1-WATERFORD UNIT#1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.0655	GEN334071 1-LEWIS CREEK 2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.0613	GEN334070 1-LEWIS CREEK 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03647	128.0591	FT RANDAL - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03670	128.0584	FORMAN - HANKINSON 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03674	128.0575	P12:115:UMZZ:# 237 #: MEN IN SD. MENNO JUNCTION IS A TAP (UJ-MEN-TP).
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.0569	GEN345765 H-1SIOUX 2 18.000
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03657	128.0443	HARMONY - VALENTINE 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.0436	GEN337766 1-TRACTEBEL UNIT S1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.0416	GEN659116 1-SPIRIT MOUND UNIT1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.0416	GEN659117 2-SPIRIT MOUND UNIT2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.0381	LANGWIN7 115.00 115/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03670	128.0363	AS KING - KOHLMAN LAKE 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03681	128.0292	HOLT.CO3 345.00 - THEDFRD3 345.00 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03685	128.0264	FARGO - SHEYNNE 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03685	128.0264	FARGO - SHEYNNE 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03793	128.0253	P12:115:UMZW:# 152 #: HU-WO-ST IN SD. WOONSOCKET IS A TAP
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03438	128.0249	LAWRENCE - SIOUX FALLS 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03438	128.0249	LAWRENCE - SIOUX FALLS 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.0242	GEN645025 5-NORTH OMAHA 5
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.0228	GEN501910 1-ACADIA UNIT ST1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.0223	GEN629992 1-G164_WF9 34.500
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03656	128.0131	MCLEOD (230/115) 230/115/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03669	128.011	GRAND FORKS - PICKERT 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03666	128.0089	CANBY - GRANITE FALLS 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03666	128.0089	CANBY - GRANITE FALLS 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	128.0087	GEN629071 1-BURLINGTON GENERATOR FOR UNIT NO 1 E
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	127.9965	GRAND MEADOW - PLEASANT VALLEY 161KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	127.9926	GEN345756 H-1SIOUX 1 18.000
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04026	127.9913	BISON - MAURINE 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03687	127.9903	KARLSTAD - WINGER 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03522	127.9893	BERSFORD - MANNING 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03678	127.989	BLUE LAKE - HAMPTON CORNER 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03835	127.9819	P12:230:UMZW:# 733 #: FT IN SD. FT-BG2 LINE FAULT
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	127.979	GEN562517 1-G14_021_S2 0.6900
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03668	127.9758	KOSSUTH 3 345.00 - WEBSTER 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	127.9695	GEN345832 1-1TS G1 13.800
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	127.9691	GEN345841 2-1TS G2 13.800
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03664	127.9636	GREGORY - WINNER 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	127.9621	GEN640020 2-SHELDON STATION UNIT 2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	127.9619	GEN337764 1-TRACTEBEL UNIT C1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	127.9619	GEN337765 1-TRACTEBEL UNIT C2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	127.9613	GEN635407 W-SHD415 W 0.6000
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	127.9613	GEN635408 W-SHD425 W 0.6000
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	127.9613	GEN635409 W-SHD435 W 0.6000
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	127.9594	TRIMONT WD 3345.00 345/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	127.9572	TRIMONT WD 3345.00 345/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	127.9528	GEN660016 1-B_H WIND 0.7000
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03668	127.9507	MINNESOTA VALLEY - REDWOOD FALLS 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	127.9408	GEN336242 1-1NMIL ST1 18.000
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	127.9239	GEN501823 1-TECHE UNIT 3
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	127.9215	GEN635592 W-ECLIPSEW 0.6900
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03674	127.9204	ARNOLD - HAZLETON 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	127.9107	GEN334030 1-FRONTIER UNIT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	127.9105	GEN334031 1-FRONTIER UNIT 2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03659	127.9086	P12:115:UMZW:# 1586 #: AG IN SD. AG-BR LINE FAULT
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03659	127.9086	P12:115:UMZW:# 1587 #: AG IN SD. AG-WT LINE FAULT
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03659	127.9086	P13:115:UMZW:# 1588 #: AG IN SD. LOSS OF TRANSFORMER (KY1A).
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03548	127.8942	SIOUX FALLS - SPLIT ROCK 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03548	127.8942	SIOUX FALLS - SPLIT ROCK 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03548	127.8932	SPLIT ROCK () 230/115/13.8KV TRANSFORMER CKT 7
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	127.4907	BASE CASE
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04051	127.3795	NOBLES - SPLIT ROCK 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03666	127.0853	FALLOW 3 345.00 - POTTCO 3 345.00 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	127.0681	GEN600046 1-MECST
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	127.054	DELL 500 - ESSEX UNIT 2 500KV CKT Z1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03755	127.0497	MONTICELLO - WAITE PARK 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	127.0489	P13:115-230:NPPD:NUCOR-3
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	127.0476	SPLIT ROCK - SPLITRK CAP7115.00 115KV CKT Z
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	127.0294	GEN652414 4-FT PECK
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	127.0294	GEN652415 5-FT PECK
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	127.0242	GEN672383 1-MLTC 1G 13.800
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	127.0229	GEN681540 5-ALMA UNIT 5
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03662	127.0128	G14-021T 345.00 - SUB 3458 NEB CTY 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	127.008	GEN587053 1-G16-007-GEN10.6500
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.9998	GEN563302 1-G15096_3 0.6900
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03665	126.998	PLYMOUTH - SIOUX CITY 161KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03665	126.998	PLYMOUTH - SIOUX CITY 161KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03666	126.9954	FALLOW 3 345.00 - GRIMES 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03666	126.9899	COLUMEAST - NW68TH & HOLDREGE 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03666	126.9899	COLUMEAST - NW68TH & HOLDREGE 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.9887	GEN672336 7-E B CAMPBELL GENERATOR 7
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.9887	GEN672337 8-E B CAMPBELL GENERATOR 8
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03663	126.9876	EDEN 345 345.00 - HCKRYCK3 345.00 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.9858	GEN600047 1-MECCT1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.9811	GEN672382 1-MEADOW LAKE GENERATOR 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.9805	KARLSTA7 115.00 (KARLSTAD) 115/69/41.6KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03661	126.9804	CARROLL COUNTY - VICTORY 161KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03687	126.9784	STORLA (KV1A) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.9722	GEN600056 W-BUFFALO RIDGE WIND GEN
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04232	126.9665	BISMARK - L3 HAWDON 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03660	126.9657	COOPER - FAIRPORT 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03663	126.9619	BROOKING COUNTY - YANKEE 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03663	126.9619	BROOKING COUNTY - YANKEE 115KV CKT 2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.9599	GEN659159 3-PIONEER G313.800
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03660	126.9481	DRAGER5 161.00 - GRAND JUNCTION 161KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03660	126.9481	DRAGER5 161.00 - GRAND JUNCTION 161KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03665	126.9464	MADISON COUNTY - RLHILLS3 345.00 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.9455	GEN659156 2-LONESMCRK 2G13.800
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.9455	GEN659157 3-LONESMCRK 3G13.800
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.9452	GEN652004 1-G13_001IS_3 0.6900
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.9385	GEN659147 1-PIONEER 1G13.800
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.9385	GEN659158 2-PIONEER G213.800
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.9369	GEN672396 1-YHPS 1G 13.800
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.9369	GEN672397 2-YHPS 2G 13.800
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03660	126.9329	COLUMEAST - SHELL CREEK 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.9187	GEN652353 2-GR PRAIRIEG 0.6900
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.917	GEN600130 W-G586 - CWN 10.6000
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.9147	GEN600131 W-G586 - CWN 20.6000
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03360	126.9093	ELLENDLMVP3 345.00 - J436&437_POI345.00 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03360	126.9093	ELLENDLMVP3 345.00 - J436&437_POI345.00 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.907	MITCHLCO3 345.00 345/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03664	126.9069	BLACKHAWK 3 345.00 - HAZLETON 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.9063	GEN629072 4-LANSING GENERATOR FOR UNITS NO4 EIA CODE 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03634	126.9059	HOSKINS - SHELL CREEK 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.8937	GEN620115 1-HRDLKGEN 0.6000
FDNSLock	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03660	126.8842	COPSTJCPFRSJ
FDNSLock	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03660	126.8842	STMDSJFAFACO
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.8791	YANKEE 115/34.5KV TRANSFORMER CKT 2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03649	126.8778	BISON 3 345.00 - MAPLE R3 345.00 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03631	126.8755	ELLENDLMVP4 230.00 - J316_SUB 230.00 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03687	126.8735	HILLS - MONTEZUMA 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.8683	GEN672378 1-ERMINE GENERATOR 4
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.8683	GEN672379 2-ERMINE2X 13.800
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03828	126.8664	BOWMAN - HETINGER 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.8596	GEN672370 1-COTEAU CREEK GENERATOR 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.8596	GEN672372 3-COTEAU CREEK GENERATOR 3
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.8595	GEN672371 2-COTEAU CREEK GENERATOR 2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.858	LAKOTA 115/69KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03660	126.857	P13:230:UMZW:# 2218 #: FP IN MT. LOSS OF TRANSFORMER (AT2).
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03660	126.8549	COOPER - SUB 3458 NEB CTY 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03660	126.8549	COOPER - SUB 3458 NEB CTY 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03662	126.847	DENISON (DN KV1A) 230/161/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03835	126.8413	FT THOMPSON - LOWERBRULE 4230.00 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03835	126.8413	FT THOMPSON - LOWERBRULE 4230.00 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03662	126.8402	DENISON - EXIRA 161KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03652	126.838	ALEXMRES3 345.00 () 345/115/34.5KV TRANSFORMER CKT 9
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.8378	GEN652559 1-OAHE
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.8354	GEN672369 3-MERIDIAN GENERATOR 3 ST
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.8351	GEN600043 7-BLUE LAKE5
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.8309	CENTER - COYOTE 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03666	126.8191	FREEBORN5 161.00 - HAYWD#15 161.00 161KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.8186	GEN672314 1-TNTLLN1X 13.800
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.8186	GEN672315 2-TNTLLN2X 13.800
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.8118	GEN600125 2-FEP ST G 13.800
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.7983	GEN620857 1-LKPRSTN9 41.600
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.7777	GEN615032 2-PLEASANT VALLEY
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.7774	G830_SUB 115.00 - GRE-MCHENRY7115.00 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.7773	G830_SUB 115.00 115/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03360	126.7508	ELLENDLMVP3 345.00 (1) 345/230/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04060	126.736	FT THOMPSON - HURON 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04060	126.736	FT THOMPSON - HURON 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04060	126.736	FT THOMPSON - HURON 230KV CKT 2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04060	126.736	FT THOMPSON - HURON 230KV CKT 2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.7249	GEN620285 1-SOLWAY

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.714	GEN672340 1-QUEEN ELIZABETH GENERATOR 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.707	DONALDSON - DONALDSON PIPE 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.7066	GEN600013 3-BLACK DOG GEN 3
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.6811	GEN672384 1-CENTENNIAL WINDFARM
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03661	126.6709	COOPER - ST JOE 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03661	126.6703	COLBY3 345.00 - KILLDEER3 345.00 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.6653	GEN659192 6-LYNN
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.6652	GEN659162 4-RED WLCK
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.6652	GEN659163 5-BLACK WDCK
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.621	GEN659273 2-GROTON SYNC COND
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.621	GEN659294 1-WILTONCOL9
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.6209	ULRICH (ULRICH) 115/69/41.6KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03577	126.6011	P13:345:UMZW:# 260 #: SC2 IN IA. LOSS OF TRANSFORMER (KU1A
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.5982	LADISH 115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03662	126.5771	ANITA TAP POINT TO CRESTON AND DENISON - EXIRA 161KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.5769	GEN600018 S-LS POWER STEAM
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.5606	PICKERT (230/69) 230/69/41.6KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.5561	GEN657600 1-L1GEN3 9 0.5750
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.5556	H081_SUB 345.00 345/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03751	126.5529	HIGHLND 3 345.00 - OBRIEN 3 345.00 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.5492	GEN603185 1-FIBROMINN GENERATION
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.5455	GEN659290 1-EDGECOL
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.5425	THIEF RIVER FALLS (TRF) 115/69/13.2KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.5306	GEN672358 1-CHAPLN1W 0.6900
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.5279	LANSING WEST 161/22.0KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.5185	CLEARBROOK - CLEARBROOK PIPE 115KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.5174	GEN657964 1-ASH2GEN9 0.5750
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03686	126.4988	ELK - MAGNOLIA 5 161KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.4851	GEN672347 1-CORY COGEN GENERATOR 1 GT1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.4851	GEN672348 2-CORY COGEN GENERATOR 2 GT2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.4777	GEN620323 2-HOOT LAKE 2 GEN
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.4571	GEN600050 1-FEP
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.4421	GEN 11143 1-J436GEN1 0.6900
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.4421	GEN 11153 1-J437GEN1 0.6900
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.4416	GEN672350 1-NIPAWIN GENERATOR 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.4416	GEN672351 2-NIPAWIN GENERATOR 2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.4416	GEN672352 3-NIPAWIN GENERATOR 3
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.4321	GEN672367 1-MERIDIAN GENERATOR 1 GT1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.4321	GEN672368 2-MERIDIAN GENERATOR 2 GT2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03666	126.4263	KOSSUTH 3 345.00 - OBRIEN 3 345.00 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.4157	GEN562872 1-G15046_3 0.6900
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.3989	GEN681522 3-GENOA 3
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.3968	J526 345.00 345/34.5KV TRANSFORMER CKT 2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03694	126.3863	BONDURANT - MONTEZUMA 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.381	GEN600012 2-BLACK DOG GEN 2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.3803	GEN 60421 1-J488 G 0.6500
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.3797	GEN 61421 1-J489 G 0.6500
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.3718	GEN660001 2-ABERDEEN SIEBRECHT
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.3651	J526 345.00 345/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.3649	GEN672349 3-CORY COGEN GENERATOR 3 ST
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.3543	RCDC EAST 4230.00 - RED CEDAR DC 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.3492	GEN672339 16-QE 16G 13.800
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.3492	GEN672342 3-QUEEN ELIZABETH GENERATOR 3
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03659	126.3444	P12:230:UMZB:# 112 #: NU IN SD. NU-RCDC & DRY CREEK XFMR
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.3343	WINGER (WINGER) 115/69/41.6KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.3336	GEN652460 4-GARRISON
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.3335	GEN652461 5-GARRISON
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.3303	FRONTER4 230.00 (FRONTIER) 230/69/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.315	GEN652457 1-GARRISON
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.315	GEN652459 3-GARRISON
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.3149	GEN652458 2-GARRISON
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03662	126.3125	G14-021T 345.00 - MULLNCR7 345.00 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03662	126.3116	G15-005T 345.00 - MULLNCR7 345.00 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.2988	J493 345.00 - J510 POI 345.00 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.2735	J493 345.00 345/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.2605	GEN910006 1-G12_012IS_3 0.6900
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.2571	GEN672393 2-NBECST2G 13.800
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.2335	GEN659411 1-CAMPBLCNTY W0.6900
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03662	126.2081	G15-005T 345.00 - SIBLEY 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03657	126.2002	P12:115:UMZW:# 162 #: NEL IN ND. FAULT ON ML-NEL-MX-GA 115 KV
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03645	126.1903	GRIMES - LEHIGH 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03665	126.179	DENISON - SIOUX CITY 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.1658	GEN 10212 1-H081_GEN 0.6900
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03511	126.14	SPLIT ROCK (SPLT 11) 345/115/13.8KV TRANSFORMER CKT 11
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.1324	BEMIDJI (BEMIDJI #2) 115/69/41.6KV TRANSFORMER CKT 2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03505	126.0859	SPLIT ROCK (SPLT 10) 345/115/13.8KV TRANSFORMER CKT 10
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.0758	GEN620324 3-HOOT LAKE 3 GEN
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03662	126.0566	BLACKHAWK 3 345.00 - KILLDEER3 345.00 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03645	126.031	HUNTLEY3 345.00 - LAKEFIELD 3 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	126.012	BISONMP4 230.00 - SQUARE BUTTE 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03775	125.9958	CARPENTER - WATERTOWN 230KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03775	125.9958	CARPENTER - WATERTOWN 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	125.9952	GEN659018 1-G14_003IS_3 0.6900
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	125.9866	GEN600065 7-HIGH BRIDGE
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	125.9866	GEN600066 8-HIGH BRIDGE
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	125.984	GEN600014 4-BLACK DOG GEN 4
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	125.9743	GEN652345 W-G07_023IS_2 0.6900
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	125.9552	GEN 10648 1-G830_GEN 0.6900
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	125.9518	GEN600071 10-RIVER SIDE
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	125.9516	GEN600070 9-RIVER SIDE
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	125.9377	GEN 11104 1-J262_GEN 0.6000
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	125.9377	GEN 11108 1-J263_GEN 0.6000
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	125.9377	GEN657985 1-ASH1GEN9 0.5750
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03689	125.937	SPLIT ROCK () 161/115/36.2KV TRANSFORMER CKT 6
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03689	125.9353	DAN JUHL - SPLIT ROCK 161KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	125.9309	GEN600011 5-BLACK DOG GEN 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	125.9286	GEN600007 7-RIVERSIDE GEN 7
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	125.9264	MORANVILLE (MORANVILLE #) 115/69/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	125.925	MORANVILLE (MORANVILLE #) 230/115/13.8KV TRANSFORMER CKT 2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	125.9163	GEN615052 1-CAMBRIDGE GENERATING STATION
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03775	125.9109	HURON - WATERTOWN 230KV CKT 2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03775	125.9109	HURON - WATERTOWN 230KV CKT 2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	125.8997	GEN600017 C-LS POWER CT
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03689	125.8612	DAN JUHL - MAGNOLIA 5 161KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	125.8457	GEN615015 1-GRE-SPRITWDG13.200
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	125.8067	WILTON (WILTON) 115/69/41.6KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	125.73	GEN659366 3-WILTON 3 W0.6900
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	125.7042	GEN659194 1-NDPRAIRWND1W0.6900
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	125.6559	GEN657705 X-DRAYTON
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03650	125.6483	EAGLE 4 230.00 - PAHOJA 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	125.6325	GEN659403 1-NDSUNFLWR W0.6900
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	125.5513	GEN600077 W-YANKEE 2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	125.5513	GEN600099 W-YANKEE 4
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	125.5512	GEN600078 W-YANKEE 3
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03690	125.549	LEHIGH - RAUN 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03775	125.5445	CARPENTER - HURON 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	125.527	GEN600069 W-YANKEE 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	125.4833	GEN620315 1-BIG STONE GEN
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03681	125.476	COLBY3 345.00 - LEDYARD3 345.00 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	125.4126	GEN672303 3-BOUNDARY DAM GENERATOR 3
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	125.4126	GEN672304 4-BOUNDARY DAM GENERATOR 4
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	125.4126	GEN672305 5-BOUNDARY DAM GENERATOR 5
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	125.3593	GEN600067 9-HIGH BRIDGE
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03650	125.3235	PAHOJA - SIOUX FALLS 230KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	125.2757	GEN615021 1-GRE-ER 14G 16.000
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	125.2293	GEN672392 1-NBECGT1G 18.000
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	125.2255	J526 345.00 - J526 POI 345.00 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	125.0805	GEN681542 6-JP MADGETT
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	125.055	GEN659453 1-GI1414GEN W0.6900
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03360	124.9906	BSSOUTH3 345.00 - J436&437_POI345.00 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04066	124.9492	NOBLES - SPLIT ROCK 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	124.8626	GEN659110 1-LELAND OLDS UNIT1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	124.785	ALMA 161 161/24.0KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	124.744	GEN659141 1-K10215A
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	124.7181	J510 345.00 - J510 POI 345.00 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	124.7176	J510 345.00 345/25.0KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	124.6999	GEN659031 1-G12_014IS_4 0.6900
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	124.6263	GEN659289 1-DAYCNTYWND W0.6900
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	124.6225	GEN 71033 1-J510 G 25.000
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	124.5237	GEN659407 1-ANTELPHILLSW0.6900
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	124.1842	J460 345.00 345/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	124.1842	J460 345.00 345/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	124.1271	YANKEE 115/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	124.0705	YANKEE 115/34.5KV TRANSFORMER CKT 2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03623	124.0014	RAUN - SUB 3451 FT CAL 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03623	124.0014	RAUN - SUB 3451 FT CAL 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03691	123.9838	BIG STONE 230/24.0KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	123.9338	GEN587033 1-G16-004-GEN10.6900
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	123.7141	BROOKING COUNTY - J432 POI 345.00 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	123.7109	J432 POI 345.00 345/34.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03647	123.5265	RAUN - SIOUX CITY 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03647	123.5265	RAUN - SIOUX CITY 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	123.3031	GEN657749 1-YOUNG 1 GENERATOR
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03205	123.1951	SIOUX CITY - SIOUXCY-LNX3345.00 345KV CKT Z
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03205	123.1829	P12:345:UMZW:# 907 #: SC2-SR IN IA. SC2-SR 345 KV LINE
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03205	123.1539	SIOUXCY-LNX3345.00 - SPLIT ROCK 345KV CKT 1
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03205	123.1539	SIOUXCY-LNX3345.00 - SPLIT ROCK 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	123.1476	GEN 61044 1-J460 G 0.6900
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	123.1476	GEN 61045 1-J460 G2 0.6900
FDNSLock	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	123.0197	GEN672321 1-SHAND GENERATOR 1
FDNSLock	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	122.9182	GEN672310 1-POPLAR RIVER GENERATOR 1
FDNSLock	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	122.9182	GEN672311 2-POPLAR RIVER GENERATOR 2

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	122.8705	GEN600004 2-PRAIRIE ISLAND G2
FDNSLock	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	122.868	GEN672306 6-BOUNDARY DAM GENERATOR 6
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	122.8636	GEN600003 1-PRAIRIE ISLAND G1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	122.7585	GEN 61033 G1-J432 G 0.6900
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	122.5867	GEN659353 1-DEERCREK CTG18.000
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	122.5781	GEN659354 1-DEERCREK STG18.000
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	122.2424	GEN600006 1-AS KING
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	122.1476	GEN659111 2-LELAND OLDS UNIT2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	121.7369	GEN659103 1-ANTELOPE VALLEY UNIT1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	121.7369	GEN659107 2-ANTELOPE VALLEY UNIT2
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	120.9727	GEN 72036 1-J526 G2 0.6900
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	120.9572	J460 345.00 - J460 POI 345.00 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	120.9468	GEN 72034 1-J526 G 0.6900
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	120.9104	GEN 6060 1-G736 0.6900
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	120.826	GEN 60214 1-J493 G 0.6500
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	120.7999	GEN659125 1-COVEY
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	120.7365	GEN652173 1-G09_001IS_2 0.6900
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	120.6067	GEN661015 1-COYOTE
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	120.5973	GEN 50324 1-J442 G 0.6900
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	120.3578	GEN600005 1-MONTICELLO
FDNS	00NR	0	20SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03854	120.0506	LAKEFIELD 3 - NOBLES 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	120.0497	GEN620315 1-BIG STONE GEN
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	119.9398	GEN657748 1-YOUNG 2 GENERATOR
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	119.9115	GEN600000 1-SHERBURNECNTY G1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03218	118.8476	SIOUX CITY - SIOUXCY-LNX3345.00 345KV CKT Z
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03218	118.8351	P12:345:UMZW:# 907 #: SC2-SR IN IA. SC2-SR 345 KV LINE
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03218	118.8169	SIOUXCY-LNX3345.00 - SPLIT ROCK 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03218	118.8169	SIOUXCY-LNX3345.00 - SPLIT ROCK 345KV CKT 1
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03698	118.7936	BIG STONE 230/24.0KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	118.5092	GEN600001 2-SHERBURNE CNTY G2
FDNSLock	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	118.0088	GEN600002 3-SHERBURNE CNTY G3
FDNS	00NR	0	25SP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03867	115.0795	LAKEFIELD 3 - NOBLES 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	112.9167	GEN 71033 1-J510 G 25.000
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04008	112.4376	NOBLES - SPLIT ROCK 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03175	111.8051	SIOUX CITY - SIOUXCY-LNX3345.00 345KV CKT Z
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03175	111.6812	P12:345:UMZW:# 907 #: SC2-SR IN IA. SC2-SR 345 KV LINE
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03175	111.6669	SIOUXCY-LNX3345.00 - SPLIT ROCK 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03175	111.6669	SIOUXCY-LNX3345.00 - SPLIT ROCK 345KV CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	108.59	GEN620315 1-BIG STONE GEN
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03658	107.7176	BIG STONE 230/24.0KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.03814	107.415	LAKEFIELD 3 - NOBLES 345KV CKT 1
FDNS	16NR	0	20L	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.05460	102.7627	H081_SUB 345.00 - LYON COUNTY 345KV CKT 1
FDNS	16NR	0	20L	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.05460	101.4468	H081_SUB 345.00 - J460 POI 345.00 345KV CKT 1
FDNS	16NR	0	20L	G16_004	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.05460	99.4	BROOKING COUNTY - J460 POI 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	16WP	G16_005		Non-Converged Contingency	726.6	726.6	0.15870	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	03ALL	0	16WP	G16_005		Non-Converged Contingency	726.6	726.6	0.15870	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	03ALL	0	16WP	G16_005		Non-Converged Contingency	1793.0	1793.0	0.15442	-	G13-010T 345.00 - G16-049-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	16WP	G16_005		Non-Converged Contingency	1793.0	1793.0	0.15442	-	G13-010T 345.00 - POST ROCK 345KV CKT 1
FDNSLock-Blown up	03ALL	0	17G	G16_005		Non-Converged Contingency	726.6	726.6	0.15973	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	03ALL	0	17G	G16_005		Non-Converged Contingency	1505.0	1793.0	0.14925	-	G13-010T 345.00 - G16-049-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	17G	G16_005		Non-Converged Contingency	1505.0	1793.0	0.14925	-	G13-010T 345.00 - POST ROCK 345KV CKT 1
FDNSLock-Blown up	03ALL	0	17G	G16_005		Non-Converged Contingency	956.09	1051.7	0.08132	-	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1
FDNSLock-Blown up	03ALL	0	17SP	G16_005		Non-Converged Contingency	726.6	726.6	0.15820	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	03ALL	0	17SP	G16_005		Non-Converged Contingency	1505.0	1793.0	0.15340	-	G13-010T 345.00 - G16-049-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	17SP	G16_005		Non-Converged Contingency	1505.0	1793.0	0.15340	-	G13-010T 345.00 - POST ROCK 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20L	G16_005		Non-Converged Contingency	726.6	726.6	0.17095	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20L	G16_005		Non-Converged Contingency	726.6	726.6	0.17095	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20L	G16_005		Non-Converged Contingency	1505.0	1793.0	0.14110	-	G13-010T 345.00 - G16-049-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20L	G16_005		Non-Converged Contingency	1505.0	1793.0	0.14110	-	G13-010T 345.00 - POST ROCK 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20L	G16_005		Non-Converged Contingency	0.0	0.0	0.13768	-	P12:345:SPS:J07.1.FINN.HITCH
FDNSLock-Blown up	03ALL	0	20L	G16_005		Non-Converged Contingency	956.09	1051.7	0.07092	-	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20L	G16_005		Non-Converged Contingency	956.09	1051.7	0.07092	-	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20SP	G16_005		Non-Converged Contingency	726.6	726.6	0.16185	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20SP	G16_005		Non-Converged Contingency	1505.0	1793.0	0.15056	-	G13-010T 345.00 - G16-049-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20SP	G16_005		Non-Converged Contingency	1505.0	1793.0	0.15056	-	G13-010T 345.00 - POST ROCK 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20SP	G16_005		Non-Converged Contingency	956.09	1051.7	0.08332	-	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20WP	G16_005		Non-Converged Contingency	726.6	726.6	0.16306	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20WP	G16_005		Non-Converged Contingency	1793.0	1793.0	0.15102	-	G13-010T 345.00 - G16-049-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20WP	G16_005		Non-Converged Contingency	1793.0	1793.0	0.15102	-	G13-010T 345.00 - POST ROCK 345KV CKT 1
FDNSLock-Blown up	03ALL	0	25SP	G16_005		Non-Converged Contingency	726.6	726.6	0.15982	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	03ALL	0	25SP	G16_005		Non-Converged Contingency	1505.0	1793.0	0.15146	-	G13-010T 345.00 - G16-049-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	25SP	G16_005		Non-Converged Contingency	1505.0	1793.0	0.15146	-	G13-010T 345.00 - POST ROCK 345KV CKT 1
FDNSLock-Blown up	03ALL	0	25SP	G16_005		Non-Converged Contingency	956.09	1051.7	0.08124	-	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	25SP	G16_005		Non-Converged Contingency	956.09	1051.7	0.07284	-	FINNEY SWITCHING STATION - WALKTAP7 345.00 345KV CKT 1
FDNS	03ALL	0	20SP	G16_005	TO->FROM	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1	328.0	398.0	0.03998	104.3921	BASE CASE
FDNS	03ALL	0	17G	G16_005	TO->FROM	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1	328.0	398.0	0.04131	104.1876	BASE CASE
FDNS	03ALL	0	17SP	G16_005	TO->FROM	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1	328.0	398.0	0.04105	103.2944	BASE CASE
FDNS	03ALL	2	17G	G16_005	TO->FROM	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1	328.0	398.0	0.03643	99.7	BASE CASE
FDNS	03ALL	2	20SP	G16_005	TO->FROM	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1	328.0	398.0	0.03494	99.5	BASE CASE
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.08156	114.4813	LITCHFIELD - SUB 349 - ASBURY 161KV CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.08156	114.4813	LITCHFIELD - SUB 349 - ASBURY 161KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.03552	112.3619	7JASPER 345.00 - BLACKBERRY 345KV CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.03351	111.5522	BLACKBERRY - NEOSHO 345KV CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04646	105.2947	KETCHUM5 161.00 - PENSACOLA 161KV CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04646	105.2947	KETCHUM5 161.00 - PENSACOLA 161KV CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.03814	105.2087	BROOKLINE - MORGAN 345KV CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04646	104.9828	AFTON - KETCHUM5 161.00 161KV CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04698	104.9453	P12:161:GRDA:KETCHUM-MIAMI
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.05640	104.8795	BAKER - NEOSHO 161KV CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.05640	104.7143	P12:161:WERE:LITC-NSES_161::
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.03772	104.6188	7JASPER 345.00 - MORGAN 345KV CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.05640	104.5725	BAKER - LITCHFIELD 161KV CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04082	104.4372	GRDA1 - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04082	104.4372	GRDA1 - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00NR	0	16WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.07277	104.3263	LITCHFIELD - SUB 349 - ASBURY 161KV CKT 1
FDNS	00NR	0	16WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.07277	104.3263	LITCHFIELD - SUB 349 - ASBURY 161KV CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04266	103.3534	FLINT CREEK - SUB 392 - DECATUR SOUTH 161KV CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04266	103.3534	FLINT CREEK - SUB 392 - DECATUR SOUTH 161KV CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04159	103.3004	GEN547649 1-ASBURY UNIT #1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04122	103.07	CHAMBER SPRINGS - CLARKSVILLE 345KV CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04622	102.4718	AFTON - MIAMI 161KV CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04341	102.1086	HAWTHORNE - NORTHEAST STATION 138KV CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04159	102.0388	BASE CASE
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04341	102.0004	CHELSEA - HAWTHORNE 138KV CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04341	101.3639	ALLUWE TAP - CHELSEA 138KV CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04341	101.3588	P12:138:AEPW:VINTAJC4:N.E.S.-4
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04341	101.3416	ALLUWE TAP - VINITA JUNCTION 138KV CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04159	101.1196	GEN509394 1-FLINT CREEK
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04105	100.6961	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04105	100.6961	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04234	100.5096	SUB 392 - DECATUR SOUTH - SUB 435 - NOEL SOUTHWEST 161KV CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04234	100.5096	SUB 392 - DECATUR SOUTH - SUB 435 - NOEL SOUTHWEST 161KV CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04220	100.4113	SUB 184 - NEOSHO SOUTH JCT. - SUB 435 - NOEL SOUTHWEST 161KV CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04220	100.4113	SUB 184 - NEOSHO SOUTH JCT. - SUB 435 - NOEL SOUTHWEST 161KV CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04635	100.3662	CRAWFORD - MARMTNE5 161KV CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04140	100.1149	GRDA1 - GREC TAP5 345.00 345KV CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04275	99.9	MAID - PENSACOLA 161KV CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04275	99.9	MAID - PENSACOLA 161KV CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04275	99.7	PENSACOLA - PENSACOLA 161KV CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04275	99.7	PENSACOLA - PENSACOLA 161KV CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04089	99.7	5JASPER 161.00 - LAMAR 161KV CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04089	99.7	7JASPER 345.00 345/161KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04385	99.6	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04385	99.6	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04138	99.6	LACYGNE - STILWELL 345KV CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04385	99.5	P13:138-161:HOC_161TO138XFMR::
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04385	99.5	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04087	99.4	AVOCA - EAST ROGERS 161KV CKT 1
FDNS	00NR	0	20WP	G16_013_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04159	99.3	GEN549893 2-SOUTHWEST 2
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.08156	114.4813	LITCHFIELD - SUB 349 - ASBURY 161KV CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.08156	114.4813	LITCHFIELD - SUB 349 - ASBURY 161KV CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.03552	112.3619	7JASPER 345.00 - BLACKBERRY 345KV CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.03351	111.5522	BLACKBERRY - NEOSHO 345KV CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04646	105.2947	KETCHUM5 161.00 - PENSACOLA 161KV CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04646	105.2947	KETCHUM5 161.00 - PENSACOLA 161KV CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.03814	105.2087	BROOKLINE - MORGAN 345KV CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04646	104.9828	AFTON - KETCHUM5 161.00 161KV CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04698	104.9453	P12:161:GRDA:KETCHUM-MIAMI
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.05640	104.8795	BAKER - NEOSHO 161KV CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.05640	104.7143	P12:161:WERE:LITC-NSES_161::
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.03772	104.6188	7JASPER 345.00 - MORGAN 345KV CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.05640	104.5725	BAKER - LITCHFIELD 161KV CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04082	104.4372	GRDA1 - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04082	104.4372	GRDA1 - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00NR	0	16WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.07277	104.3263	LITCHFIELD - SUB 349 - ASBURY 161KV CKT 1
FDNS	00NR	0	16WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.07277	104.3263	LITCHFIELD - SUB 349 - ASBURY 161KV CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04266	103.3534	FLINT CREEK - SUB 392 - DECATUR SOUTH 161KV CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04266	103.3534	FLINT CREEK - SUB 392 - DECATUR SOUTH 161KV CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04159	103.3004	GEN547649 1-ASBURY UNIT #1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04122	103.07	CHAMBER SPRINGS - CLARKSVILLE 345KV CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04622	102.4718	AFTON - MIAMI 161KV CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04341	102.1086	HAWTHORNE - NORTHEAST STATION 138KV CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04159	102.0388	BASE CASE
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04341	102.0004	CHELSEA - HAWTHORNE 138KV CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04341	101.3639	ALLUWE TAP - CHELSEA 138KV CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04341	101.3588	P12:138:AEPW:VINTAJC4:N.E.S.-4
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04341	101.3416	ALLUWE TAP - VINITA JUNCTION 138KV CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04159	101.1196	GEN509394 1-FLINT CREEK
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04105	100.6961	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04105	100.6961	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04234	100.5096	SUB 392 - DECATUR SOUTH - SUB 435 - NOEL SOUTHWEST 161KV CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04234	100.5096	SUB 392 - DECATUR SOUTH - SUB 435 - NOEL SOUTHWEST 161KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04220	100.4113	SUB 184 - NEOSHO SOUTH JCT. - SUB 435 - NOEL SOUTHWEST 161KV CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04220	100.4113	SUB 184 - NEOSHO SOUTH JCT. - SUB 435 - NOEL SOUTHWEST 161KV CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04635	100.3662	CRAWFORD - MARMTNE5 161KV CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04140	100.1149	GRDA1 - GREC TAP5 345.00 345KV CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04275	99.9	MAID - PENSACOLA 161KV CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04275	99.9	MAID - PENSACOLA 161KV CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04275	99.7	PENSACOLA - PENSACOLA 161KV CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04275	99.7	PENSACOLA - PENSACOLA 161KV CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04089	99.7	5JASPER 161.00 - LAMAR 161KV CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04089	99.7	7JASPER 345.00 345/161KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04385	99.6	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04385	99.6	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04138	99.6	LACYGNE - STILWELL 345KV CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04385	99.5	P13:138-161:HOC_161TO138XFMR::
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04385	99.5	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04087	99.4	AVOCA - EAST ROGERS 161KV CKT 1
FDNS	00NR	0	20WP	G16_014_WP	FROM->TO	NEOSHO - SUB 452 - RIVERTON 161KV CKT 1	209.0	223.0	0.04159	99.3	GEN549893 2-SOUTHWEST 2
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	1022.0	1124.0	0.19912	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	1022.0	1124.0	0.19912	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	987.2	1082.8	0.18631	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	987.2	1082.8	0.18631	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	552.14	607.52	0.18422	-	TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	552.14	607.52	0.18422	-	TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	956.0	956.0	0.17893	-	CIMARRON - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	1195.0	1195.0	0.17893	-	GRACEMONT - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	556.53	611.5	0.17439	-	NEWHART 230 - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	560.0	644.0	0.17279	-	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	560.0	644.0	0.17279	-	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	616.0	700.0	0.17279	-	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	616.0	700.0	0.17279	-	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	560.0	560.0	0.16911	-	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	1330.0	1940.0	0.16512	-	CHISHOLM7 345.00 - G16-037-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	1330.0	1940.0	0.16512	-	G16-037-TAP 345.00 - GRACEMONT 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	1792.0	1972.0	0.15779	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	1792.0	1972.0	0.15779	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	557.0	557.0	0.15757	-	BUSHLAND INTERCHANGE - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	557.0	557.0	0.15757	-	BUSHLAND INTERCHANGE - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	427.05	427.05	0.15687	-	JONES STATION - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	427.05	427.05	0.15687	-	JONES STATION - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	1792.0	1792.0	0.15370	-	BORDER 7345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	1792.0	1972.0	0.14647	-	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	987.16	1082.77	0.14414	-	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	956.09	1051.7	0.14414	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	956.09	1051.7	0.14414	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	329.0	360.9	0.14136	-	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	329.0	360.9	0.14136	-	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	329.05	360.92	0.13965	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	329.05	360.92	0.13965	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	0.0	0.0	0.13764	-	P12:230:AEPW-SPS:SWEETWT6:WHEELER 6
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	0.0	0.0	0.13439	-	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	557.0	557.0	0.11627	-	NEWHART 230 - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	1420.0	1775.0	0.10051	-	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	1420.0	1775.0	0.10051	-	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	1793.0	1793.0	0.08700	-	G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	1716.0	1793.0	0.08700	-	G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	329.05	360.92	0.08553	-	AMARILLO SOUTH INTERCHANGE - G15031_T 230.00 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	439.0	439.0	0.06882	-	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	557.0	557.0	0.06882	-	STATELINE INTERCHANGE - STLN-DEMARC6 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	500.0	723.0	0.06882	-	STLN-DEMARC6 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	556.92	556.92	0.06722	-	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	556.92	556.92	0.06722	-	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	439.0	439.0	0.06557	-	CHISHOLM6 230.00 - ELK CITY 230KV 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	450.0	450.0	0.06557	-	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	450.0	450.0	0.06557	-	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	329.05	360.92	0.05854	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	329.05	360.92	0.05854	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	557.0	557.0	0.05851	-	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	557.0	557.0	0.05851	-	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	329.05	360.92	0.05682	-	MOORE COUNTY INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_015		Non-Converged Contingency	329.05	360.92	0.05682	-	MOORE COUNTY INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	0.0	0.0	0.69897	-	P12:345:SPS:J15.1.XRDS.TOLK
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	414.0	414.0	0.25231	-	AMOCO SWITCHING STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	414.0	414.0	0.25231	-	AMOCO SWITCHING STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	717.0	926.0	0.23299	-	CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	560.0	560.0	0.23299	-	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	560.0	560.0	0.23299	-	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	956.0	1042.0	0.19365	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	956.0	1042.0	0.19365	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	478.05	546.96	0.18151	-	TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	478.05	546.96	0.18151	-	TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	956.1	1051.7	0.17702	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	956.1	1051.7	0.17702	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	956.0	956.0	0.17489	-	CIMARRON - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	1195.0	1195.0	0.17489	-	GRACEMONT - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	478.05	547.36	0.17232	-	NEWHART 230 - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	560.0	644.0	0.16798	-	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	560.0	644.0	0.16798	-	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	560.0	644.0	0.16798	-	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	560.0	644.0	0.16798	-	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	560.0	560.0	0.16420	-	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	1330.0	1940.0	0.16069	-	CHISHOLM7 345.00 - G16-037-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	1330.0	1940.0	0.16069	-	G16-037-TAP 345.00 - GRACEMONT 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	478.0	502.0	0.15579	-	BUSHLAND INTERCHANGE - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	478.0	502.0	0.15579	-	BUSHLAND INTERCHANGE - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	1792.0	1972.0	0.15325	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	1792.0	1972.0	0.15325	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	497.0	547.0	0.15178	-	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	497.6	547.4	0.15120	-	JONES STATION - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	497.6	547.4	0.15120	-	JONES STATION - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	1792.0	1792.0	0.14764	-	BORDER 7345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	1792.0	1972.0	0.14230	-	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	318.7	350.6	0.13987	-	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	318.7	350.6	0.13987	-	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	318.7	350.57	0.13770	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	318.7	350.57	0.13770	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	956.09	1051.7	0.13435	-	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	956.09	1051.7	0.13435	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	956.09	1051.7	0.13435	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	0.0	0.0	0.13032	-	P12:230:AEPW-SPS:SWEETWT6:WHEELER 6
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	0.0	0.0	0.12849	-	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	1398.0	1549.0	0.12343	-	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	1493.0	1493.0	0.12343	-	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	478.0	502.0	0.11499	-	NEWHART 230 - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	1420.0	1775.0	0.09981	-	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	1420.0	1775.0	0.09981	-	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	318.7	350.57	0.08541	-	AMARILLO SOUTH INTERCHANGE - G15031_T 230.00 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	318.7	350.57	0.08541	-	G15031_T 230.00 - SWISHER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	1793.0	1793.0	0.08368	-	G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	1716.0	1793.0	0.08368	-	G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	1792.0	1792.0	0.07943	-	BORDER 7345.00 - CHISHOLM7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	1792.0	1792.0	0.07943	-	BORDER 7345.00 - CHISHOLM7 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	1532.0	1793.0	0.07407	-	G1524G1525 345.00 - THISTLE7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	1532.0	1793.0	0.07407	-	G1524G1525 345.00 - THISTLE7 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	478.0	502.0	0.06732	-	CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	478.0	502.0	0.06732	-	CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	439.0	439.0	0.06516	-	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	502.0	502.0	0.06516	-	STATELINE INTERCHANGE - STLN-DEMARC6 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	500.0	723.0	0.06516	-	STLN-DEMARC6 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	501.95	501.95	0.06376	-	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	501.95	501.95	0.06376	-	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	439.0	439.0	0.06333	-	CHISHOLM6 230.00 - ELK CITY 230KV 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	450.0	450.0	0.06333	-	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	450.0	450.0	0.06333	-	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	717.1	717.1	0.06100	-	HOLCOMB - SETAB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	717.1	717.1	0.06100	-	HOLCOMB - SETAB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	1413.0	1517.0	0.05788	-	BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	318.7	350.57	0.05558	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	318.7	350.57	0.05558	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	502.0	502.0	0.05542	-	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	502.0	502.0	0.05542	-	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	318.7	350.57	0.05420	-	MOORE COUNTY INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_015		Non-Converged Contingency	318.7	350.57	0.05420	-	MOORE COUNTY INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17SP	G16_015		Non-Converged Contingency	956.0	1042.0	0.20025	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17SP	G16_015		Non-Converged Contingency	1792.0	1972.0	0.15966	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17SP	G16_015		Non-Converged Contingency	1792.0	1972.0	0.15966	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1792.0	1792.0	0.34829	-	HOBBS - YOAKUM_345 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1792.0	1792.0	0.32612	-	TUCO INTERCHANGE - YOAKUM_345 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	560.0	644.0	0.28488	-	HOBBS (UPDATE DATA) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1792.0	1972.0	0.24970	-	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	318.7	350.57	0.21019	-	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	0.0	0.0	0.20979	-	P12:345:SPS:J07.1.FINN.HITCH
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	956.0	1042.0	0.17619	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	956.0	1042.0	0.17619	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	956.0	1042.0	0.17619	-	OKLAUNION 345KV SWITCHED SHUNT
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	956.0	956.0	0.15937	-	CIMARRON - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1195.0	1195.0	0.15937	-	GRACEMONT - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1792.0	1792.0	0.15682	-	BORDER 7345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1792.0	1972.0	0.14913	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1792.0	1972.0	0.14913	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	414.0	414.0	0.14644	-	AMOCO SWITCHING STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	414.0	414.0	0.14644	-	AMOCO SWITCHING STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	717.0	926.0	0.13890	-	CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	560.0	560.0	0.13890	-	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	560.0	560.0	0.13890	-	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	956.1	1051.7	0.13397	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	956.1	1051.7	0.13397	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1584.0	2098.0	0.12792	-	CHISHOLM7 345.00 - G16-037-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1584.0	2098.0	0.12792	-	G16-037-TAP 345.00 - GRACEMONT 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	956.09	1051.7	0.11122	-	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	956.09	1051.7	0.11122	-	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	478.0	502.0	0.10529	-	BUSHLAND INTERCHANGE - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	478.0	502.0	0.10529	-	BUSHLAND INTERCHANGE - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	478.0	502.0	0.10529	-	BUSHLAND INTERCHANGE 230KV SWITCHED SHUNT
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1398.0	1549.0	0.10354	-	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1493.0	1493.0	0.10354	-	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	956.09	1051.7	0.09856	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	956.09	1051.7	0.09856	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	956.09	1051.7	0.09856	-	FINNEY SWITCHING STATION - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	956.09	1051.7	0.09856	-	FINNEY SWITCHING STATION - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	478.05	547.36	0.09724	-	NEWHART 230 - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	318.7	350.57	0.09437	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	318.7	350.57	0.09437	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	318.7	350.6	0.09381	-	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	318.7	350.6	0.09381	-	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	497.0	547.0	0.09258	-	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	478.0	502.0	0.08892	-	NEWHART 230 - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	0.0	0.0	0.08877	-	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	0.0	0.0	0.08858	-	P12:115:SPS:T59.1.CARGIL.CURRY
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	0.0	0.0	0.08756	-	P12:138:WFEC:MSL03
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	0.0	0.0	0.08334	-	P12:115:LCEC:W56.1.HOBBG.LE-LVN
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	478.0	502.0	0.07675	-	AMARILLO SOUTH INTERCHANGE - G15031_T 230.00 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	478.0	502.0	0.07675	-	G15031_T 230.00 - SWISHER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	0.0	0.0	0.07524	-	P12:230:AEPW-SPS:SWEETWT6:WHEELER 6
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	442.0	752.0	0.07516	-	PLANT X STATION - TOLK STATION WEST 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	442.0	752.0	0.07516	-	PLANT X STATION - TOLK STATION WEST 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	442.0	752.0	0.07402	-	PLANT X STATION - TOLK STATION EAST 230KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	442.0	752.0	0.07402	-	PLANT X STATION - TOLK STATION EAST 230KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	0.0	0.0	0.07342	-	P12:115:SPS:W40.1.WCANYON.DFSMTH
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1561.0	1793.0	0.07105	-	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1561.0	1793.0	0.07105	-	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1561.0	1793.0	0.07105	-	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1561.0	1793.0	0.07105	-	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1792.0	1792.0	0.07073	-	BORDER 7345.00 - CHISHOLM7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1792.0	1792.0	0.07073	-	BORDER 7345.00 - CHISHOLM7 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	560.0	560.0	0.06698	-	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	560.0	560.0	0.06698	-	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	560.0	560.0	0.06698	-	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	478.0	502.0	0.06421	-	CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	478.0	502.0	0.06421	-	CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	0.0	0.0	0.06276	-	P12:345:SPS:J15.1.XRDS.TOLK
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	478.05	546.96	0.06017	-	TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	478.05	546.96	0.06017	-	TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1792.0	1792.0	0.05854	-	BVRCNTY7 345.00 - OPTIMA 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1792.0	1792.0	0.05854	-	BVRCNTY7 345.00 - OPTIMA 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1793.0	1793.0	0.05854	-	G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1716.0	1793.0	0.05854	-	G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1793.0	1793.0	0.05854	-	G16-003-TAP 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1716.0	1793.0	0.05854	-	G16-003-TAP 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1420.0	1775.0	0.05718	-	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1420.0	1775.0	0.05718	-	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1420.0	1775.0	0.05718	-	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1420.0	1775.0	0.05718	-	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1532.0	1793.0	0.05493	-	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	0.0	0.0	0.05240	-	P12:115:SPS:T14.1.MADDOX.WBENDR
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	785.0	785.0	0.05195	-	MINGO - RED WILLOW 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	785.0	785.0	0.05195	-	MINGO - RED WILLOW 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	762.5	762.5	0.05116	-	MINGO - SETAB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	762.5	762.5	0.05116	-	MINGO - SETAB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	439.0	439.0	0.05115	-	CHISHOLM6 230.00 - ELK CITY 230KV 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	450.0	450.0	0.05115	-	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	450.0	450.0	0.05115	-	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	717.1	717.1	0.05090	-	HOLCOMB - SETAB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	717.1	717.1	0.05090	-	HOLCOMB - SETAB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	560.0	644.0	0.04989	-	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	560.0	644.0	0.04989	-	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	560.0	644.0	0.04989	-	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	560.0	644.0	0.04989	-	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	560.0	560.0	0.04856	-	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	501.95	501.95	0.04835	-	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	501.95	501.95	0.04835	-	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1195.0	1195.0	0.04827	-	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1195.0	1195.0	0.04814	-	JOHNSON COUNTY - SUNNYSIDE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	0.0	0.0	0.04742	-	P12:138:WFEC:MSL14

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	0.0	0.0	0.04637	-	P12:115:SPS:T66.1.RNDALL.HAPPY
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	0.0	0.0	0.04637	-	P12:115:SPS:T67.1.HAPPY.KRESS
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	497.6	547.4	0.04522	-	JONES STATION - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	497.6	547.4	0.04522	-	JONES STATION - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1505.0	1793.0	0.04430	-	G13-010T 345.00 - POST ROCK 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1505.0	1793.0	0.04430	-	G16-049-TAP 345.00 - SPEARVILLE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	497.0	547.0	0.04401	-	CRAWFISH_DR2230.00 - SWISHER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	0.0	0.0	0.04399	-	917X
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	478.05	501.55	0.04305	-	AMARILLO SOUTH INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	478.05	501.55	0.04305	-	AMARILLO SOUTH INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1504.0	1792.0	0.04299	-	AXTELL - G16-050-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1504.0	1792.0	0.04299	-	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	318.7	350.57	0.04090	-	MOORE COUNTY INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	318.7	350.57	0.04090	-	MOORE COUNTY INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	726.6	726.6	0.03928	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	726.6	726.6	0.03928	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1413.0	1517.0	0.03928	-	BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1413.0	1517.0	0.03928	-	BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1141.0	1195.0	0.03882	-	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	1141.0	1195.0	0.03882	-	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	421.0	439.0	0.03762	-	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	348.58	381.24	0.03762	-	STATELINE INTERCHANGE - STLN-DEMARC6 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	500.0	723.0	0.03762	-	STLN-DEMARC6 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	318.7	350.57	0.03276	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	318.7	350.57	0.03276	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	318.7	350.57	0.03209	-	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	318.7	350.57	0.03209	-	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	0.0	0.0	0.03128	-	P12:230:SPS:K43.1.PRNGLE.HARR_E
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	0.0	0.0	0.03075	-	P12:115:SPS:W08.1.HITCH.LASLEY
FDNSLock-Blown up	06ALL	0	20L	G16_015		Non-Converged Contingency	0.0	0.0	0.03052	-	P12:138:AEPW:REDROCKRD4:WTH_JCT4
FDNSLock-Blown up	06ALL	0	20SP	G16_015		Non-Converged Contingency	956.0	1042.0	0.21247	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_015		Non-Converged Contingency	1792.0	1792.0	0.36138	-	TUCO INTERCHANGE - YOAKUM_345 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_015		Non-Converged Contingency	1792.0	1972.0	0.28246	-	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_015		Non-Converged Contingency	1022.0	1124.0	0.20732	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_015		Non-Converged Contingency	1792.0	1792.0	0.17905	-	BORDER 7345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_015		Non-Converged Contingency	1792.0	1972.0	0.17273	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_015		Non-Converged Contingency	1792.0	1972.0	0.17273	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20WP	G16_015		Non-Converged Contingency	1195.0	1195.0	0.17190	-	GRACEMONT - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_015		Non-Converged Contingency	987.2	1082.8	0.16106	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_015		Non-Converged Contingency	1584.0	2098.0	0.15278	-	CHISHOLM7 345.00 - G16-037-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_015		Non-Converged Contingency	1584.0	2098.0	0.15278	-	G16-037-TAP 345.00 - GRACEMONT 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_015		Non-Converged Contingency	987.16	1082.77	0.13187	-	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_015		Non-Converged Contingency	557.0	557.0	0.11983	-	BUSHLAND INTERCHANGE - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_015		Non-Converged Contingency	956.09	1051.7	0.11722	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_015		Non-Converged Contingency	987.16	1082.77	0.11722	-	FINNEY SWITCHING STATION - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_015		Non-Converged Contingency	329.05	360.92	0.10766	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_015		Non-Converged Contingency	329.0	360.9	0.10713	-	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_015		Non-Converged Contingency	557.0	557.0	0.10045	-	NEWHART 230 - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_015		Non-Converged Contingency	478.0	502.0	0.08509	-	AMARILLO SOUTH INTERCHANGE - G15031_T 230.00 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_015		Non-Converged Contingency	421.0	439.0	0.04858	-	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_015		Non-Converged Contingency	329.05	360.92	0.04219	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	2	16WP	G16_015		Non-Converged Contingency	1022.0	1124.0	0.19914	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20L	G16_015		Non-Converged Contingency	956.0	1042.0	0.17572	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20L	G16_015		Non-Converged Contingency	956.0	1042.0	0.17572	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20L	G16_015		Non-Converged Contingency	1792.0	1972.0	0.15052	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20L	G16_015		Non-Converged Contingency	1792.0	1972.0	0.15052	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	2	20L	G16_015		Non-Converged Contingency	956.1	1051.7	0.13487	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20L	G16_015		Non-Converged Contingency	956.1	1051.7	0.13487	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20WP	G16_015		Non-Converged Contingency	1022.0	1124.0	0.20627	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20WP	G16_015		Non-Converged Contingency	1022.0	1124.0	0.20627	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20WP	G16_015		Non-Converged Contingency	1792.0	1972.0	0.17379	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20WP	G16_015		Non-Converged Contingency	1792.0	1972.0	0.17379	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	3	17G	G16_015		Non-Converged Contingency	956.0	1042.0	0.21659	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	3	20L	G16_015		Non-Converged Contingency	956.0	1042.0	0.18135	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	3	20L	G16_015		Non-Converged Contingency	956.0	1042.0	0.18135	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	3	20L	G16_015		Non-Converged Contingency	1792.0	1972.0	0.15667	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	3	20L	G16_015		Non-Converged Contingency	1792.0	1972.0	0.15667	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	3	20WP	G16_015		Non-Converged Contingency	1022.0	1124.0	0.21230	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	3	20WP	G16_015		Non-Converged Contingency	1022.0	1124.0	0.21230	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	0	25SP	G16_015	FROM->TO	ANDREWS 3115.00 - National Enrichment Plant Sub 115KV CKT 1	525.0	525.0	1.00000	103.7801	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20SP	G16_015	FROM->TO	ANDREWS 3115.00 - National Enrichment Plant Sub 115KV CKT 1	525.0	525.0	1.00000	102.5287	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	157.1727	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	157.1524	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	157.1007	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	157.0137	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20275	134.0213	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20275	134.0213	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20275	132.236	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20275	132.236	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	122.0845	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20274	121.2972	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	06ALL	0	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20274	121.2972	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	121.158	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20274	120.0455	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20274	120.0455	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20283	110.0365	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20283	110.0365	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20283	108.4003	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20283	108.4003	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	17SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	105.3573	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	105.3573	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	16WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	105.0736	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	16WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	105.0736	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.9162	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	17G	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.8823	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.8823	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.7777	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	20L	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.6918	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.5473	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	20L	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.5435	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.0267	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.0267	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	16WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.8896	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	16WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.8896	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.8187	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	17G	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.8039	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.8039	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.7598	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	20L	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.7251	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.6705	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	20L	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.6421	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	00	0	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20276	101.629	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00	0	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20276	101.629	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00	0	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20276	100.3724	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00	0	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20276	100.3724	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	156.4035	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	156.3826	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	156.3318	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	156.2446	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20245	133.8307	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	0	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20245	132.0459	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	0	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	121.4865	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20244	121.122	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	0	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	120.5653	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20244	119.8715	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	0	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20253	109.881	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	0	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20253	108.2447	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	0	17SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.8412	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.8412	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	16WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.5589	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	16WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.5589	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.4023	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	17G	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.3686	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.3686	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.2645	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	20L	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.179	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.0353	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	20L	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.0314	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.518	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.518	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	16WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.3815	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	16WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.3815	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.3109	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	17G	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.2962	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.2962	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.2523	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	20L	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.2178	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.1634	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	20L	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.1352	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	00	0	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20245	101.4848	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00	0	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20245	100.2289	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	0	20WP	G16_015	FROM->TO	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1	329.05	360.92	0.10766	101.1848	BASE CASE
FDNS	06ALL	0	20WP	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23359	119.3308	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	0	16WP	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24144	118.0707	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	0	20WP	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23359	114.0226	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	0	16WP	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24144	113.137	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	0	17SP	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24247	111.5106	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	0	17SP	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24247	106.2194	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	0	20SP	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24018	102.8346	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	0	17SP	G16_015	TO->FROM	COCHRAN INTERCHANGE - G15-014T 115.00 115KV CKT 1	120.9	120.9	0.04434	107.0929	BASE CASE
FDNS	06ALL	0	17G	G16_015	TO->FROM	COCHRAN INTERCHANGE - G15-014T 115.00 115KV CKT 1	120.9	120.9	0.04277	102.1826	BASE CASE
FDNS	06ALL	0	17SP	G16_015	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.29410	160.0401	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	06ALL	0	20SP	G16_015	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.30455	159.952	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	0	20SP	G16_015	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.30455	154.1703	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	0	17SP	G16_015	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.29410	153.9968	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	0	20SP	G16_015	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.34611	187.3884	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	0	17SP	G16_015	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.28877	185.0941	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	0	17SP	G16_015	FROM->TO	CURRY COUNTY INTERCHANGE - DEAF SMITH REC-#20 115KV CKT 1	96.0	96.0	0.03389	100.9705	BASE CASE
FDNS	06ALL	0	17SP	G16_015	TO->FROM	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1	318.7	350.6	0.13748	114.5202	BASE CASE
FDNS	06ALL	0	20SP	G16_015	TO->FROM	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1	318.7	350.6	0.10954	108.9563	BASE CASE
FDNS	06ALL	0	25SP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51155	192.3608	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20SP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51161	192.2685	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.64334	169.9194	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.64334	169.9194	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17SP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.64457	160.3051	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17SP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.64457	160.3051	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	16WP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	103.0	114.0	0.64320	155.835	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	16WP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	103.0	114.0	0.64320	155.835	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20WP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	103.0	114.0	0.51180	124.0658	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20L	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51317	114.3105	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	20L	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51317	113.6863	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	25SP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51155	100.9979	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	20SP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51161	99.3	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	25SP	G16_015	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.51155	137.953	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20SP	G16_015	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.51161	135.6755	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_015	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.64334	118.7644	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_015	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.64334	118.7644	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17SP	G16_015	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.64457	114.3749	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17SP	G16_015	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.64457	114.3749	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	16WP	G16_015	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	165.0	177.0	0.64320	109.4244	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	16WP	G16_015	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	165.0	177.0	0.64320	109.4244	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20SP	G16_015	FROM->TO	DRINKARD TAP - WEST HOBBS SWITCHING STATION 115KV CKT 1	159.0	160.0	0.51161	111.4781	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	25SP	G16_015	FROM->TO	DRINKARD TAP - WEST HOBBS SWITCHING STATION 115KV CKT 1	159.0	160.0	0.51155	106.4978	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_015	FROM->TO	DRINKARD TAP - WEST HOBBS SWITCHING STATION 115KV CKT 1	159.0	160.0	0.64334	102.369	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_015	FROM->TO	DRINKARD TAP - WEST HOBBS SWITCHING STATION 115KV CKT 1	159.0	160.0	0.64334	102.369	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	25SP	G16_015	FROM->TO	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	422.0	422.0	1.00000	123.2716	ANDRWSXFMR12
FDNS	06ALL	0	25SP	G16_015	FROM->TO	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	422.0	422.0	1.00000	123.2559	ANDREWS 3115.00 - National Enrichment Plant Sub 115KV CKT 1
FDNS	06ALL	0	20SP	G16_015	FROM->TO	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	422.0	422.0	1.00000	123.1476	ANDRWSXFMR12
FDNS	06ALL	0	20SP	G16_015	FROM->TO	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	422.0	422.0	1.00000	123.1322	ANDREWS 3115.00 - National Enrichment Plant Sub 115KV CKT 1
FDNS	06ALL	0	17SP	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.44770	111.8672	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	17SP	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.44770	111.8672	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	17SP	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.44770	111.8642	CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1
FDNS	06ALL	0	17SP	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.44626	111.692	P12:345:SPS:J15.1.XRDS.TOLK
FDNS	06ALL	0	16WP	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	329.05	360.92	0.44698	109.7159	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	16WP	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	329.05	360.92	0.44698	109.7159	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	16WP	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	329.05	360.92	0.44698	109.7131	CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1
FDNS	06ALL	0	16WP	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	329.05	360.92	0.44537	109.4636	P12:345:SPS:J15.1.XRDS.TOLK
FDNS	06ALL	0	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.39115	109.4577	OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1
FDNS	06ALL	0	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.39115	109.4577	OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1
FDNS	06ALL	0	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.39640	108.5593	JOHNSON DRAW - TAYLOR SWITCHING STATION 115KV CKT 1
FDNS	06ALL	0	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.39640	108.5593	JOHNSON DRAW - TAYLOR SWITCHING STATION 115KV CKT 1
FDNS	06ALL	0	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37661	107.5654	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1
FDNS	06ALL	0	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.42929	106.6391	CUNNINGHAM STATION - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.42929	106.6391	CUNNINGHAM STATION - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.35757	105.4188	BASE CASE
FDNS	06ALL	0	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37977	103.0935	LEA COUNTY REC-LOVINGTON INTERCHANGE - LEA COUNTY REC-WAITS INTERCHANGE 115KV CKT 1
FDNS	06ALL	0	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37977	103.0935	LEA COUNTY REC-LOVINGTON INTERCHANGE - LEA COUNTY REC-WAITS INTERCHANGE 115KV CKT 1
FDNS	06ALL	0	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37467	102.9124	P12:115:SPS:T98.1.HIGG.HOBBG
FDNS	06ALL	0	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37467	102.8398	HOBBS INTERCHANGE - NEW_NHOBBS 3115.00 115KV CKT 1
FDNS	06ALL	0	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.35962	102.4212	P12:115:SPS:T14.1.MADDOX.WBENDR
FDNS	06ALL	0	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37467	102.2252	Higg Switch Station - NEW_NHOBBS 3115.00 115KV CKT 1
FDNS	06ALL	0	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37661	101.9536	HOBBS INTERCHANGE - LE-WEST_SUB3115.00 115KV CKT 1
FDNS	06ALL	0	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37120	101.9085	CUNNINGHAM STATION - POTASH JUNCTION INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37120	101.9085	CUNNINGHAM STATION - POTASH JUNCTION INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.38197	101.6173	JOHNSON DRAW - OXY_WSEM_TP3115.00 115KV CKT 1
FDNS	06ALL	0	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37661	101.5991	P12:115:LCEC:W56.1.HOBBG.LE-LVN
FDNS	06ALL	0	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.38197	101.3053	P12:115:SPS:W35.1.GAINES.JNSDRW
FDNS	06ALL	0	20SP	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.31143	101.1406	HOBBS (UPDATE DATA) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37977	101.1376	ALLRED TAP - LEA COUNTY REC-WAITS INTERCHANGE 115KV CKT 1
FDNS	06ALL	0	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.38197	100.637	GAINES COUNTY INTERCHANGE - OXY_WSEM_TP3115.00 115KV CKT 1
FDNS	06ALL	0	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.39734	100.6363	CUNNINGHAM STATION - EDDY COUNTY INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.39734	100.6363	CUNNINGHAM STATION - EDDY COUNTY INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.36309	100.5383	P12:115:SPS:T13.1.TAYLOR.WHOBBS
FDNS	06ALL	0	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.38231	100.1799	ANDRWSXFMR12
FDNS	06ALL	0	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.38231	100.1506	ANDREWS 3115.00 - National Enrichment Plant Sub 115KV CKT 1
FDNS	06ALL	0	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37977	100.1002	P12:115:SPS:V80.1.DC_STH.LE-WAIT
FDNS	06ALL	0	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.35757	99.9	GEN527163 1-MUSTANG GEN #3 22 KV
FDNS	06ALL	0	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.38732	99.8	Higg Switch Station - XTO_RUSSEL 3115.00 115KV CKT 1
FDNS	06ALL	0	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37214	99.4	P12:115:SPS:T84.1.WHOBBS.NEF
FDNS	06ALL	0	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.35859	99.4	P12:115:SPS:T97.1.TAYLOR.HOBBG
FDNS	06ALL	0	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.38732	99.2	P12:115:SPS:T89.1.DC_N.HIGG
FDNS	06ALL	0	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.35976	99.2	P12:115:SPS:V98.1.CUNN.LE-SNANDR
FDNS	06ALL	0	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.35757	99.1	GEN527164 1-MUSTANG GEN #4 22 KV

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	06ALL	0	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.35756	99.1	P12:115:SPS:V84.1.LEA_NA.MALJMR
FDNS	06ALL	0	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.36179	99	DENVER CITY INTERCHANGE N. - EL PASO SUB 115KV CKT 1
FDNS	06ALL	0	17G	G16_015	TO->FROM	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1	318.7	350.57	0.05558	100.3944	BASE CASE
FDNS	06ALL	0	20SP	G16_015	TO->FROM	JAL SUB - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.24933	102.5845	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	25SP	G16_015	TO->FROM	JAL SUB - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.24935	102.4747	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_015	TO->FROM	JOHNSON DRAW - TAYLOR SWITCHING STATION 115KV CKT 1	159.0	160.0	0.21410	135.4951	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17SP	G16_015	TO->FROM	JOHNSON DRAW - TAYLOR SWITCHING STATION 115KV CKT 1	159.0	160.0	0.21586	121.147	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	16WP	G16_015	TO->FROM	JOHNSON DRAW - TAYLOR SWITCHING STATION 115KV CKT 1	165.0	177.0	0.21497	107.1889	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20SP	G16_015	FROM->TO	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1	143.4	179.3	0.04334	104.4352	BASE CASE
FDNS	06ALL	0	17SP	G16_015	FROM->TO	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1	143.4	179.3	0.06917	103.7113	BASE CASE
FDNS	06ALL	0	17G	G16_015	FROM->TO	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1	143.4	179.3	0.06869	102.645	BASE CASE
FDNS	06ALL	0	25SP	G16_015	FROM->TO	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1	143.4	179.3	0.04341	100.3701	BASE CASE
FDNS	06ALL	0	17G	G16_015	FROM->TO	National Enrichment Plant Sub - TARGA 3115.00 115KV CKT 1	120.0	120.0	0.35666	110.6932	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_015	FROM->TO	National Enrichment Plant Sub - TARGA 3115.00 115KV CKT 1	120.0	120.0	0.35666	110.6932	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_015	TO->FROM	National Enrichment Plant Tap - TARGA 3115.00 115KV CKT 1	120.0	120.0	0.35666	100.5592	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_015	TO->FROM	National Enrichment Plant Tap - TARGA 3115.00 115KV CKT 1	120.0	120.0	0.35666	100.5592	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	25SP	G16_015	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.24935	109.2401	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20SP	G16_015	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.24933	108.1383	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17SP	G16_015	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.35543	102.4665	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17SP	G16_015	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.35543	102.4665	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_015	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.35666	100.5136	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_015	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.35666	100.5136	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	25SP	G16_015	FROM->TO	ANDREWS 3115.00 - National Enrichment Plant Sub 115KV CKT 1	525.0	525.0	1.00000	103.7795	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20SP	G16_015	FROM->TO	ANDREWS 3115.00 - National Enrichment Plant Sub 115KV CKT 1	525.0	525.0	1.00000	102.5271	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	157.1724	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	157.1542	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	157.0998	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	157.0142	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20277	134.0116	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20277	134.0116	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20277	132.2253	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20277	132.2253	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	122.0762	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20276	121.2656	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20276	121.2656	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	121.1564	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20276	120.0109	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20276	120.0109	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20284	109.9451	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20284	109.9451	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20284	108.2989	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20284	108.2989	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	105.3576	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	105.3576	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	16WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	105.0763	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	16WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	105.0763	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.9085	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.8861	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.8861	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.7784	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	2	20L	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.7045	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	2	20L	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.5557	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.5495	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	2	17SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.0269	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.0269	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	16WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.8909	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	16WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.8909	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.8153	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.8056	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.8056	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.7601	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	2	20L	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.7302	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	2	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.6713	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	2	20L	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.6468	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	156.4032	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	156.3845	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	156.331	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	156.2451	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20246	133.8209	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20246	132.0352	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	121.4783	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20245	121.0904	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	120.5637	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20245	119.837	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20254	109.7896	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20254	108.1434	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.8415	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.8415	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	16WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.5616	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	16WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.5616	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.3947	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	06ALL	2	17G	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.3723	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.3723	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.2652	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	2	20L	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.1916	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	2	20L	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.0436	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.0375	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	2	17SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.5181	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.5181	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	16WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.3827	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	16WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.3827	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.3075	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.2979	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.2979	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.2526	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	2	20L	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.2228	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	2	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.1642	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	2	20L	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.1398	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23627	116.7163	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	2	16WP	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24180	115.1362	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	2	20WP	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23373	114.0499	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	2	17G	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23627	111.498	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	2	20L	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.21077	110.6646	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	2	17SP	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24252	110.352	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	2	16WP	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24180	109.7596	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	2	20WP	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23373	108.768	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	2	20L	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.21077	105.663	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	2	17SP	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24252	104.9863	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	2	20SP	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23994	101.7908	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	2	16WP	G16_015	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.24482	111.1535	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	16WP	G16_015	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.24482	111.1535	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	16WP	G16_015	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.24482	111.1535	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	16WP	G16_015	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.24482	111.1535	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	16WP	G16_015	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.24482	109.6686	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	16WP	G16_015	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.24482	109.6686	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	16WP	G16_015	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.24482	109.6686	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	16WP	G16_015	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.24482	109.6686	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17G	G16_015	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.23790	105.2982	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.23790	105.2982	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.23790	105.2982	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17G	G16_015	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.23790	105.2982	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17G	G16_015	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.23790	105.2982	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17G	G16_015	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.23790	103.5752	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.23790	103.5752	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17G	G16_015	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.23790	103.5752	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17G	G16_015	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.22747	100.5203	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17G	G16_015	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.22747	100.5203	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17G	G16_015	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.22747	100.5203	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17G	G16_015	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.22747	100.5203	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17SP	G16_015	TO->FROM	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1	318.7	350.6	0.13750	111.1037	BASE CASE
FDNS	06ALL	2	20SP	G16_015	TO->FROM	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1	318.7	350.6	0.10972	105.6192	BASE CASE
FDNS	06ALL	2	25SP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51157	192.3525	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20SP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51163	192.265	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.64334	169.8804	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.64334	169.8804	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17SP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.64457	160.3283	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17SP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.64457	160.3283	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	16WP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	103.0	114.0	0.64320	155.8356	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	16WP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	103.0	114.0	0.64320	155.8356	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20WP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	103.0	114.0	0.51183	124.1579	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20L	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51322	114.2645	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	2	20L	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51322	113.6389	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	25SP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51157	100.9911	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	2	20SP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51163	99.3	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	2	25SP	G16_015	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.51157	137.9474	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20SP	G16_015	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.51163	135.673	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_015	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.64334	118.7402	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_015	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.64334	118.7402	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17SP	G16_015	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.64457	114.3898	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17SP	G16_015	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.64457	114.3898	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	16WP	G16_015	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	165.0	177.0	0.64320	109.425	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	16WP	G16_015	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	165.0	177.0	0.64320	109.425	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20SP	G16_015	FROM->TO	DRINKARD TAP - WEST HOBBS SWITCHING STATION 115KV CKT 1	159.0	160.0	0.51163	111.4757	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	25SP	G16_015	FROM->TO	DRINKARD TAP - WEST HOBBS SWITCHING STATION 115KV CKT 1	159.0	160.0	0.51157	106.4919	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	DRINKARD TAP - WEST HOBBS SWITCHING STATION 115KV CKT 1	159.0	160.0	0.64334	102.3466	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	DRINKARD TAP - WEST HOBBS SWITCHING STATION 115KV CKT 1	159.0	160.0	0.64334	102.3466	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	25SP	G16_015	FROM->TO	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	422.0	422.0	1.00000	123.2777	ANDRWSXFMR12
FDNS	06ALL	2	25SP	G16_015	FROM->TO	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	422.0	422.0	1.00000	123.262	ANDREWS 3115.00 - National Enrichment Plant Sub 115KV CKT 1
FDNS	06ALL	2	20SP	G16_015	FROM->TO	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	422.0	422.0	1.00000	123.148	ANDRWSXFMR12
FDNS	06ALL	2	20SP	G16_015	FROM->TO	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	422.0	422.0	1.00000	123.1325	ANDREWS 3115.00 - National Enrichment Plant Sub 115KV CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.44201	134.1501	P12:345:SPS:J15.1.XRDS.TOLK
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.44363	133.6393	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.44363	133.6393	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.44363	133.637	CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1
FDNS	06ALL	2	17SP	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.44770	111.935	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17SP	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.44770	111.935	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17SP	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.44770	111.932	CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1
FDNS	06ALL	2	17SP	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.44626	111.7389	P12:345:SPS:J15.1.XRDS.TOLK
FDNS	06ALL	2	16WP	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	329.05	360.92	0.44699	109.7832	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	16WP	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	329.05	360.92	0.44699	109.7832	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	16WP	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	329.05	360.92	0.44699	109.7805	CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1
FDNS	06ALL	2	16WP	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	329.05	360.92	0.44538	109.486	P12:345:SPS:J15.1.XRDS.TOLK
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.39117	108.9702	OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.39117	108.9702	OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.39643	108.0899	JOHNSON DRAW - TAYLOR SWITCHING STATION 115KV CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.39643	108.0899	JOHNSON DRAW - TAYLOR SWITCHING STATION 115KV CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37664	107.122	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.42930	106.5003	CUNNINGHAM STATION - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.42930	106.5003	CUNNINGHAM STATION - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.35760	105.1382	BASE CASE
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37980	102.7358	LEA COUNTY REC-LOVINGTON INTERCHANGE - LEA COUNTY REC-WAITS INTERCHANGE 115KV CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37980	102.7358	LEA COUNTY REC-LOVINGTON INTERCHANGE - LEA COUNTY REC-WAITS INTERCHANGE 115KV CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37470	102.5753	P12:115:SPS:T98.1.HIGG.HOBBG
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37470	102.4853	HOBBS INTERCHANGE - NEW_NHOBBS 3115.00 115KV CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.35964	102.1115	P12:115:SPS:T14.1.MADDOX.WBENDR
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37470	101.8682	Higg Switch Station - NEW_NHOBBS 3115.00 115KV CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37122	101.7134	CUNNINGHAM STATION - POTASH JUNCTION INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37122	101.7134	CUNNINGHAM STATION - POTASH JUNCTION INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37664	101.6091	HOBBS INTERCHANGE - LE-WEST_SUB3115.00 115KV CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.38201	101.2774	JOHNSON DRAW - OXY_WSEM_TP3115.00 115KV CKT 1
FDNS	06ALL	2	20SP	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.31133	101.2637	HOBBS (UPDATE DATA) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37664	101.1904	P12:115:LCEC:W56.1.HOBBG.LE-LVN
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.38201	100.9821	P12:115:SPS:W35.1.GAINES.JNSDRW
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37980	100.7971	ALLRED TAP - LEA COUNTY REC-WAITS INTERCHANGE 115KV CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.39735	100.4406	CUNNINGHAM STATION - EDDY COUNTY INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.39735	100.4406	CUNNINGHAM STATION - EDDY COUNTY INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.38201	100.3422	GAINES COUNTY INTERCHANGE - OXY_WSEM_TP3115.00 115KV CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.36312	100.2502	P12:115:SPS:T13.1.TAYLOR.WHOBBS
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.38234	99.9	ANDREWS 3115.00 - National Enrichment Plant Sub 115KV CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.38234	99.9	ANDRWSXFMR12
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37980	99.8	P12:115:SPS:V80.1.DC_STH.LE-WAIT
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.38736	99.5	Higg Switch Station - XTO_RUSSEL 3115.00 115KV CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.36417	99.4	TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.36417	99.4	TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37217	99.1	P12:115:SPS:T84.1.WHOBBS.NEF
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.35862	99.1	P12:115:SPS:T97.1.TAYLOR.HOBBG
FDNS	06ALL	2	17G	G16_015	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.38736	99	P12:115:SPS:T89.1.DC_N.HIGG
FDNS	06ALL	2	20SP	G16_015	TO->FROM	JAL SUB - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.24932	102.5793	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	25SP	G16_015	TO->FROM	JAL SUB - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.24933	102.4786	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_015	TO->FROM	JOHNSON DRAW - TAYLOR SWITCHING STATION 115KV CKT 1	159.0	160.0	0.21413	134.6963	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17SP	G16_015	TO->FROM	JOHNSON DRAW - TAYLOR SWITCHING STATION 115KV CKT 1	159.0	160.0	0.21587	121.2897	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	16WP	G16_015	TO->FROM	JOHNSON DRAW - TAYLOR SWITCHING STATION 115KV CKT 1	165.0	177.0	0.21500	107.1035	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20SP	G16_015	FROM->TO	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1	143.4	179.3	0.04341	104.3304	BASE CASE
FDNS	06ALL	2	17SP	G16_015	FROM->TO	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1	143.4	179.3	0.06918	103.7639	BASE CASE
FDNS	06ALL	2	17G	G16_015	FROM->TO	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1	143.4	179.3	0.06870	102.3415	BASE CASE
FDNS	06ALL	2	25SP	G16_015	FROM->TO	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1	143.4	179.3	0.04348	100.3319	BASE CASE
FDNS	06ALL	2	17G	G16_015	FROM->TO	National Enrichment Plant Sub - TARGA 3115.00 115KV CKT 1	120.0	120.0	0.35666	110.7208	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	National Enrichment Plant Sub - TARGA 3115.00 115KV CKT 1	120.0	120.0	0.35666	110.7208	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_015	TO->FROM	National Enrichment Plant Tap - TARGA 3115.00 115KV CKT 1	120.0	120.0	0.35666	100.5862	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_015	TO->FROM	National Enrichment Plant Tap - TARGA 3115.00 115KV CKT 1	120.0	120.0	0.35666	100.5862	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	25SP	G16_015	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.24933	109.244	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20SP	G16_015	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.24932	108.1333	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17SP	G16_015	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.35543	102.4458	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17SP	G16_015	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.35543	102.4458	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.35666	100.5406	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_015	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.35666	100.5406	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	16WP	G16_015	FROM->TO	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	560.0	644.0	0.26027	101.527	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	16WP	G16_015	FROM->TO	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	560.0	644.0	0.26027	101.527	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	16WP	G16_015	FROM->TO	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	560.0	644.0	0.26027	99.4	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	16WP	G16_015	FROM->TO	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	560.0	644.0	0.26027	99.4	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	3	25SP	G16_015	FROM->TO	ANDREWS 3115.00 - National Enrichment Plant Sub 115KV CKT 1	525.0	525.0	1.00000	103.7788	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20SP	G16_015	FROM->TO	ANDREWS 3115.00 - National Enrichment Plant Sub 115KV CKT 1	525.0	525.0	1.00000	102.5357	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	157.172	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	157.1436	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	157.1047	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	157.0151	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20280	134.0273	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	3	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20280	134.0273	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	3	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20280	132.2392	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	3	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20280	132.2392	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	3	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	122.0869	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20279	121.2685	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	3	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20279	121.2685	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	06ALL	3	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	121.1585	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20279	120.0075	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	3	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20279	120.0075	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	3	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20287	109.9318	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	3	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20287	109.9318	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	3	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20287	108.2733	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	3	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20287	108.2733	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	3	17SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	105.3724	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	17SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	105.3724	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	16WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	105.0922	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	16WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	105.0922	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.9187	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	3	17G	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.9082	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.7795	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	3	20L	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.7134	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	3	20L	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.5643	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.5535	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	3	17SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.0343	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	17SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.0343	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	16WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.8983	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	16WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.8983	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.8198	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	3	17G	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.8152	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.7605	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	3	20L	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.7337	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	3	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.6727	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	3	20L	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.65	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	156.4028	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	156.3739	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	156.3359	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	156.246	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20249	133.8367	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	3	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20249	132.0491	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	3	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	121.4889	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20248	121.0934	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	3	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	120.5658	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20248	119.8335	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	3	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20257	109.7764	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	3	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20257	108.1177	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	3	17SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.8562	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	17SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.8562	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	16WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.5774	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	16WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.5774	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.4048	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	3	17G	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.3943	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.2663	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	3	20L	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.2005	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	3	20L	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.0521	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.0414	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	3	17SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.5255	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	17SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.5255	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	16WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.3901	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	16WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.3901	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.312	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	3	17G	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.3074	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.253	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	3	20L	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.2263	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	3	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.1657	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	3	20L	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.143	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	17G	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25285	118.6959	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	3	16WP	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25866	117.0897	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	3	20WP	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23833	115.2141	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	3	17G	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25285	113.4916	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	3	20L	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.21532	111.7529	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	3	17SP	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25806	111.7525	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	3	16WP	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25866	111.7148	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	3	20WP	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23833	110.0424	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	3	20L	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.21532	106.7271	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	3	17SP	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25806	106.4339	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	3	20SP	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24439	102.7473	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	3	25SP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51128	192.1086	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20SP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51135	191.7576	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	17G	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.64311	168.7586	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	17SP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.64427	159.2516	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	17SP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.64427	159.2516	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	16WP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	103.0	114.0	0.64299	154.4739	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	16WP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	103.0	114.0	0.64299	154.4739	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20WP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	103.0	114.0	0.51156	123.4055	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20L	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51299	113.536	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	3	20L	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51299	112.9085	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	25SP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51128	100.7507	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	06ALL	3	25SP	G16_015	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.51128	137.7886	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20SP	G16_015	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.51135	135.3464	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	17G	G16_015	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.64311	118.0255	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	17SP	G16_015	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.64427	113.6963	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	17SP	G16_015	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.64427	113.6963	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	16WP	G16_015	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	165.0	177.0	0.64299	108.5525	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	16WP	G16_015	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	165.0	177.0	0.64299	108.5525	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20SP	G16_015	FROM->TO	DRINKARD TAP - WEST HOBBS SWITCHING STATION 115KV CKT 1	159.0	160.0	0.51135	111.1445	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	25SP	G16_015	FROM->TO	DRINKARD TAP - WEST HOBBS SWITCHING STATION 115KV CKT 1	159.0	160.0	0.51128	106.3313	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	17G	G16_015	FROM->TO	DRINKARD TAP - WEST HOBBS SWITCHING STATION 115KV CKT 1	159.0	160.0	0.64311	101.6446	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	25SP	G16_015	FROM->TO	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	422.0	422.0	1.00000	123.281	ANDRWSXFMR12
FDNS	06ALL	3	25SP	G16_015	FROM->TO	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	422.0	422.0	1.00000	123.2652	ANDREWS 3115.00 - National Enrichment Plant Sub 115KV CKT 1
FDNS	06ALL	3	20SP	G16_015	FROM->TO	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	422.0	422.0	1.00000	123.148	ANDRWSXFMR12
FDNS	06ALL	3	20SP	G16_015	FROM->TO	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	422.0	422.0	1.00000	123.1325	ANDREWS 3115.00 - National Enrichment Plant Sub 115KV CKT 1
FDNS	06ALL	3	20SP	G16_015	TO->FROM	JAL SUB - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.24925	102.5096	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	25SP	G16_015	TO->FROM	JAL SUB - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.24927	102.4236	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20SP	G16_015	FROM->TO	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1	143.4	179.3	0.04242	102.4287	BASE CASE
FDNS	06ALL	3	25SP	G16_015	FROM->TO	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1	143.4	179.3	0.04246	99.7	BASE CASE
FDNS	06ALL	3	17G	G16_015	FROM->TO	National Enrichment Plant Sub - TARGA 3115.00 115KV CKT 1	120.0	120.0	0.35689	111.6597	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	17G	G16_015	TO->FROM	National Enrichment Plant Tap - TARGA 3115.00 115KV CKT 1	120.0	120.0	0.35689	101.5116	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	25SP	G16_015	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.24927	109.1883	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20SP	G16_015	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.24925	108.0599	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	17SP	G16_015	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.35573	103.414	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	17SP	G16_015	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.35573	103.414	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	17G	G16_015	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.35689	101.4665	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	25SP	G16_015	FROM->TO	ANDREWS 3115.00 - National Enrichment Plant Sub 115KV CKT 1	525.0	525.0	1.00000	103.7785	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20SP	G16_015	FROM->TO	ANDREWS 3115.00 - National Enrichment Plant Sub 115KV CKT 1	525.0	525.0	1.00000	102.5347	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	157.1718	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	157.1449	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	157.1042	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	157.0155	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20279	134.018	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	4	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20279	134.018	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	4	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20279	132.2294	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	4	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20279	132.2294	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	4	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	122.0893	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20278	121.2316	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	4	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20278	121.2316	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	4	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	121.159	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20278	119.9689	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	4	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20278	119.9689	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	4	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20286	109.9014	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	4	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20286	109.9014	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	4	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20286	108.2375	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	4	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20286	108.2375	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	4	17SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	105.3702	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	17SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	105.3702	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	16WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	105.0926	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	16WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	105.0926	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.921	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	4	17G	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.9082	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.7799	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	4	20L	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.7156	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	4	20L	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.5664	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.5547	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	4	17SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.0332	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	17SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.0332	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	16WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.8985	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	16WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.8985	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.8208	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	4	17G	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.8152	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.7607	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	4	20L	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.7346	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	4	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.6731	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	4	20L	G16_015	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.6508	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	156.4026	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	156.3751	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	156.3353	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	156.2463	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20248	133.8274	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	4	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20248	132.0393	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	4	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	121.4913	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20247	121.0566	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	4	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	120.5662	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20247	119.795	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	4	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20256	109.7458	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	4	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20256	108.082	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	4	17SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.8541	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	17SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.8541	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	16WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.5778	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	16WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.5778	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	06ALL	4	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.4071	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	4	17G	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.3943	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.2667	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	4	20L	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.2027	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	4	20L	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.0542	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.0426	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	4	17SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.5244	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	17SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.5244	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	16WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.3903	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	16WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.3903	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20WP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.313	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	4	17G	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.3074	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	25SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.2532	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	4	20L	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.2272	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	4	20SP	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.166	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	4	20L	G16_015	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.1438	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	17G	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23789	116.0714	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	4	16WP	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24358	114.334	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	4	20WP	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.22254	112.0627	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	4	17G	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23789	110.887	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	4	16WP	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24358	109.0011	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	4	20L	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.20179	108.4948	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	4	17SP	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24286	108.3281	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	4	20WP	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.22254	106.6907	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	4	20L	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.20179	103.5292	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	4	17SP	G16_015	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24286	102.9885	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	4	25SP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51109	191.9056	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20SP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51116	191.3781	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	17G	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.64283	168.2516	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	17SP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.64398	158.5923	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	17SP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.64398	158.5923	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	16WP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	103.0	114.0	0.64270	153.9751	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	16WP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	103.0	114.0	0.64270	153.9751	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20WP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	103.0	114.0	0.51138	123.0742	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20L	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51284	113.2039	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	4	20L	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51284	112.5754	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	25SP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51109	100.5464	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	4	25SP	G16_015	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.51109	137.6567	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20SP	G16_015	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.51116	135.1015	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	17G	G16_015	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.64283	117.7008	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	17SP	G16_015	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.64398	113.2722	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	17SP	G16_015	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.64398	113.2722	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	16WP	G16_015	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	165.0	177.0	0.64270	108.2325	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	16WP	G16_015	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	165.0	177.0	0.64270	108.2325	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20SP	G16_015	FROM->TO	DRINKARD TAP - WEST HOBBS SWITCHING STATION 115KV CKT 1	159.0	160.0	0.51116	110.8989	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	25SP	G16_015	FROM->TO	DRINKARD TAP - WEST HOBBS SWITCHING STATION 115KV CKT 1	159.0	160.0	0.51109	106.1978	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	17G	G16_015	FROM->TO	DRINKARD TAP - WEST HOBBS SWITCHING STATION 115KV CKT 1	159.0	160.0	0.64283	101.3214	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	25SP	G16_015	FROM->TO	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	422.0	422.0	1.00000	123.2858	ANDRWSXFMR12
FDNS	06ALL	4	25SP	G16_015	FROM->TO	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	422.0	422.0	1.00000	123.27	ANDREWS 3115.00 - National Enrichment Plant Sub 115KV CKT 1
FDNS	06ALL	4	20SP	G16_015	FROM->TO	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	422.0	422.0	1.00000	123.148	ANDRWSXFMR12
FDNS	06ALL	4	20SP	G16_015	FROM->TO	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	422.0	422.0	1.00000	123.1326	ANDREWS 3115.00 - National Enrichment Plant Sub 115KV CKT 1
FDNS	06ALL	4	20SP	G16_015	TO->FROM	JAL SUB - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.24925	102.4873	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	25SP	G16_015	TO->FROM	JAL SUB - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.24926	102.4146	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20SP	G16_015	FROM->TO	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1	143.4	179.3	0.04181	101.3622	BASE CASE
FDNS	06ALL	4	25SP	G16_015	FROM->TO	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1	143.4	179.3	0.04184	99.2	BASE CASE
FDNS	06ALL	4	17G	G16_015	FROM->TO	National Enrichment Plant Sub - TARGA 3115.00 115KV CKT 1	120.0	120.0	0.35717	112.1017	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	17G	G16_015	TO->FROM	National Enrichment Plant Tap - TARGA 3115.00 115KV CKT 1	120.0	120.0	0.35717	101.9469	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	25SP	G16_015	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.24926	109.1792	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20SP	G16_015	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.24925	108.0377	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	17SP	G16_015	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.35602	104.0081	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	17SP	G16_015	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.35602	104.0081	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	17G	G16_015	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.35717	101.9021	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	5	20SP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51116	177.7923	G14_012T 345.00 - HOBBS 345KV CKT 1
FDNS	06ALL	5	25SP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51109	176.7458	G14_012T 345.00 - HOBBS 345KV CKT 1
FDNS	06ALL	5	17G	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.64283	159.1397	ANDREWS 6345.00 - HOBBS 345KV CKT 1
FDNS	06ALL	5	17SP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.64398	149.2656	ANDREWS 6345.00 - HOBBS 345KV CKT 1
FDNS	06ALL	5	16WP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	103.0	114.0	0.64270	144.785	ANDREWS 6345.00 - HOBBS 345KV CKT 1
FDNS	06ALL	5	20WP	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	103.0	114.0	0.51138	115.1911	G14_012T 345.00 - HOBBS 345KV CKT 1
FDNS	06ALL	5	20L	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51284	106.4971	ANDREWS 6345.00 - G14_012T 345.00 345KV CKT 1
FDNS	06ALL	5	20L	G16_015	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51284	106.001	G14_012T 345.00 - HOBBS 345KV CKT 1
FDNS	06ALL	5	25SP	G16_015	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.51109	127.5618	G14_012T 345.00 - HOBBS 345KV CKT 1
FDNS	06ALL	5	20SP	G16_015	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.51116	125.8809	G14_012T 345.00 - HOBBS 345KV CKT 1
FDNS	06ALL	5	17G	G16_015	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.64283	111.2027	ANDREWS 6345.00 - HOBBS 345KV CKT 1
FDNS	06ALL	5	17SP	G16_015	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.64398	105.2563	ANDREWS 6345.00 - HOBBS 345KV CKT 1
FDNS	06ALL	5	16WP	G16_015	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	165.0	177.0	0.64270	101.8209	ANDREWS 6345.00 - HOBBS 345KV CKT 1
FDNS	06ALL	5	20SP	G16_015	FROM->TO	DRINKARD TAP - WEST HOBBS SWITCHING STATION 115KV CKT 1	159.0	160.0	0.51116	104.6471	G14_012T 345.00 - HOBBS 345KV CKT 1
FDNS	06ALL	5	17G	G16_015	FROM->TO	National Enrichment Plant Sub - TARGA 3115.00 115KV CKT 1	120.0	120.0	0.35717	107.2887	ANDREWS 6345.00 - HOBBS 345KV CKT 1
FDNS	06ALL	5	20SP	G16_015	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.24925	103.2859	G14_012T 345.00 - HOBBS 345KV CKT 1
FDNS	06ALL	5	25SP	G16_015	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.24926	103.1697	G14_012T 345.00 - HOBBS 345KV CKT 1
FDNS	06ALL	5	17SP	G16_015	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.35602	100.7509	ANDREWS 6345.00 - HOBBS 345KV CKT 1
FDNSLock-Blown up	03ALL	0	16WP	G16_016		Non-Converged Contingency	726.6	726.6	0.07216	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNSLock-Blown up	03ALL	0	16WP	G16_016		Non-Converged Contingency	726.6	726.6	0.07216	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	03ALL	0	17G	G16_016		Non-Converged Contingency	726.6	726.6	0.07319	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	03ALL	0	17G	G16_016		Non-Converged Contingency	956.09	1051.7	0.06757	-	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1
FDNSLock-Blown up	03ALL	0	17SP	G16_016		Non-Converged Contingency	726.6	726.6	0.07161	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20L	G16_016		Non-Converged Contingency	0.0	0.0	0.10685	-	P12:345:SPS:J07.1.FINN.HITCH
FDNSLock-Blown up	03ALL	0	20L	G16_016		Non-Converged Contingency	726.6	726.6	0.08345	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20L	G16_016		Non-Converged Contingency	726.6	726.6	0.08345	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20L	G16_016		Non-Converged Contingency	956.09	1051.7	0.05630	-	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20L	G16_016		Non-Converged Contingency	956.09	1051.7	0.05630	-	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20SP	G16_016		Non-Converged Contingency	726.6	726.6	0.07435	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20SP	G16_016		Non-Converged Contingency	956.09	1051.7	0.06870	-	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20WP	G16_016		Non-Converged Contingency	726.6	726.6	0.07556	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	03ALL	0	25SP	G16_016		Non-Converged Contingency	726.6	726.6	0.07232	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	03ALL	0	25SP	G16_016		Non-Converged Contingency	956.09	1051.7	0.06662	-	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	25SP	G16_016		Non-Converged Contingency	956.09	1051.7	0.05664	-	FINNEY SWITCHING STATION - WALKTAP7 345.00 345KV CKT 1
FDNS	03ALL	0	17G	G16_016	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110.0	110.0	0.03207	118.2928	BASE CASE
FDNS	03ALL	0	16WP	G16_016	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110.0	110.0	0.03201	111.897	BASE CASE
FDNS	03ALL	0	17SP	G16_016	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110.0	110.0	0.03493	111.1312	BASE CASE
FDNS	03ALL	0	20WP	G16_016	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110.0	110.0	0.03616	105.0149	BASE CASE
FDNS	03ALL	0	20L	G16_016	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110.0	110.0	0.03487	102.4118	BASE CASE
FDNS	03ALL	0	17G	G16_016	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	138.6	143.4	0.03207	101.8611	BASE CASE
FDNS	03ALL	0	20L	G16_016	FROM->TO	KINSLEY - PAWNEE-EDWARDS_JCT 115KV CKT 1	76.0	76.0	1.00000	99.3	BASE CASE
FDNS	03ALL	2	17G	G16_016	TO->FROM	CONWAY 138.00 - MILAN TAP 138KV CKT 1	100.6	107.6	0.03935	129.1001	BASE CASE
FDNS	03ALL	2	16WP	G16_016	TO->FROM	CONWAY 138.00 - MILAN TAP 138KV CKT 1	100.6	107.6	0.03921	123.6343	BASE CASE
FDNS	03ALL	2	17G	G16_016	FROM->TO	CONWAY 138.00 - VIOLA 4 138.00 138KV CKT 1	100.6	107.6	0.03935	128.9764	BASE CASE
FDNS	03ALL	2	16WP	G16_016	FROM->TO	CONWAY 138.00 - VIOLA 4 138.00 138KV CKT 1	100.6	107.6	0.03921	123.524	BASE CASE
FDNS	03ALL	2	20L	G16_016	FROM->TO	KINSLEY - PAWNEE-EDWARDS_JCT 115KV CKT 1	76.0	76.0	1.00000	99.3	BASE CASE
FDNS	03ALL	3	17G	G16_016	TO->FROM	CONWAY 138.00 - MILAN TAP 138KV CKT 1	100.6	107.6	0.03192	102.7913	BASE CASE
FDNS	03ALL	3	17G	G16_016	FROM->TO	CONWAY 138.00 - VIOLA 4 138.00 138KV CKT 1	100.6	107.6	0.03192	102.6637	BASE CASE
FDNS	15ALL	0	20SP	G16_017	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04702	121.1556	BASE CASE
FDNS	15ALL	0	25SP	G16_017	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04789	119.3293	BASE CASE
FDNS	15ALL	0	20L	G16_017	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04333	116.5128	BASE CASE
FDNS	15ALL	0	20WP	G16_017	TO->FROM	SPLIT ROCK - WHITE 345KV CKT 1	717.0	717.0	0.04340	110.8826	BASE CASE
FDNS	01ALL	0	16WP	G16_020	FROM->TO	CIMARRON - DRAPER LAKE 345KV CKT 1	717.0	717.0	0.06981	104.877	BASE CASE
FDNS	01ALL	0	20SP	G16_020	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.10995	165.2136	BASE CASE
FDNS	01ALL	0	20WP	G16_020	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.10956	162.9945	BASE CASE
FDNS	01ALL	0	17SP	G16_020	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.11075	162.2441	BASE CASE
FDNS	01ALL	0	16WP	G16_020	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.11075	158.2356	BASE CASE
FDNS	01ALL	0	17G	G16_020	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.11098	156.0282	BASE CASE
FDNS	01ALL	0	25SP	G16_020	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.11023	148.897	BASE CASE
FDNS	01ALL	0	20L	G16_020	FROM->TO	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	143.0	187.0	0.11084	137.9914	BASE CASE
FDNS	01ALL	0	25SP	G16_020	FROM->TO	FPL SWITCH - WOODWARD 138KV CKT 1	133.0	153.0	0.34325	112.0593	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1
FDNS	01ALL	0	25SP	G16_020	FROM->TO	FPL SWITCH - WOODWARD 138KV CKT 1	133.0	153.0	0.34325	109.4212	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1
FDNS	01ALL	0	25SP	G16_020	FROM->TO	FPL SWITCH - WOODWARD 138KV CKT 1	133.0	153.0	0.35737	106.4034	BEARCAT 138.00 - MOORELAND 138KV CKT 1
FDNS	01ALL	0	25SP	G16_020	FROM->TO	FPL SWITCH - WOODWARD 138KV CKT 1	133.0	153.0	0.35737	106.3082	P12:138:WFEC:MSL14
FDNS	01ALL	0	25SP	G16_020	FROM->TO	FPL SWITCH - WOODWARD 138KV CKT 1	133.0	153.0	0.35737	104.8407	BEARCAT 138.00 - NINE MILE 138KV CKT 1
FDNS	01ALL	0	25SP	G16_020	FROM->TO	FPL SWITCH - WOODWARD 138KV CKT 1	133.0	153.0	0.35737	102.2342	MOREWOOD SW - NINE MILE 138KV CKT 1
FDNS	01ALL	0	25SP	G16_020	FROM->TO	FPL SWITCH - WOODWARD 138KV CKT 1	133.0	153.0	0.34165	101.657	CLEO CORNER - CLEOPLT4 138.00 138KV CKT 1
FDNS	01ALL	0	20SP	G16_020	FROM->TO	FPL SWITCH - WOODWARD 138KV CKT 1	133.0	153.0	0.34341	101.5239	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1
FDNS	01ALL	0	25SP	G16_020	FROM->TO	FPL SWITCH - WOODWARD 138KV CKT 1	133.0	153.0	0.34165	100.9429	CLEOPLT4 138.00 - MEN TAP 138KV CKT 1
FDNS	01ALL	0	25SP	G16_020	FROM->TO	FPL SWITCH - WOODWARD 138KV CKT 1	133.0	153.0	0.34165	100.3317	IMO TAP - MEN TAP 138KV CKT 1
FDNS	01ALL	0	17SP	G16_020	FROM->TO	FPL SWITCH - WOODWARD 138KV CKT 1	133.0	153.0	0.33910	100.2715	DGRASSE4 138.00 - ROSE_VALLEY 138.00 138KV CKT 1
FDNS	01ALL	0	20WP	G16_020	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.10956	111.1773	BASE CASE
FDNS	01ALL	0	20SP	G16_020	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.10995	110.8406	BASE CASE
FDNS	01ALL	0	17SP	G16_020	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.11075	109.5833	BASE CASE
FDNS	01ALL	0	16WP	G16_020	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.11075	108.1557	BASE CASE
FDNS	01ALL	0	17G	G16_020	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.11098	106.0802	BASE CASE
FDNS	01ALL	0	25SP	G16_020	TO->FROM	NOEL_SW 138.00 - ROSE_VALLEY 138.00 138KV CKT 1	200.0	234.0	0.11023	99.5	BASE CASE
FDNSLock-Blown up	09ALL	0	16WP	G16_023		Non-Converged Contingency	956.0	956.0	0.56261	-	KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	0	16WP	G16_023		Non-Converged Contingency	0.0	0.0	0.07502	-	FTTHOMPSON-GRANDPRAIRIE-TLINE-REACTOR-CKT1
FDNSLock-Blown up	09ALL	0	16WP	G16_023		Non-Converged Contingency	720.0	720.0	0.03751	-	FTTHOM2-LNX3345.00 - GRPRAR2-LNX3345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	0	17G	G16_023		Non-Converged Contingency	0.0	0.0	1.12601	-	SIDNEY-KEYSTONE-TLINE-REACTORS-CKT1
FDNSLock-Blown up	09ALL	0	17G	G16_023		Non-Converged Contingency	956.0	956.0	0.56301	-	KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	0	17G	G16_023		Non-Converged Contingency	956.0	956.0	0.56301	-	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z
FDNSLock-Blown up	09ALL	0	17G	G16_023		Non-Converged Contingency	956.0	1052.0	0.55887	-	G1623&1629-T345.00 - SIDNEY2-LNX3345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	0	17G	G16_023		Non-Converged Contingency	0.0	0.0	0.06515	-	FTTHOMPSON-GRANDPRAIRIE-TLINE-REACTOR-CKT1
FDNSLock-Blown up	09ALL	0	17G	G16_023		Non-Converged Contingency	720.0	720.0	0.03257	-	FT THOMPSON - FTTHOM2-LNX3345.00 345KV CKT Z
FDNSLock-Blown up	09ALL	0	17G	G16_023		Non-Converged Contingency	720.0	720.0	0.03257	-	FTTHOM2-LNX3345.00 - GRPRAR2-LNX3345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	0	17SP	G16_023		Non-Converged Contingency	0.0	0.0	1.12229	-	SIDNEY-KEYSTONE-TLINE-REACTORS-CKT1
FDNSLock-Blown up	09ALL	0	17SP	G16_023		Non-Converged Contingency	956.0	956.0	0.56115	-	KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	0	17SP	G16_023		Non-Converged Contingency	956.0	956.0	0.56115	-	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z
FDNSLock-Blown up	09ALL	0	17SP	G16_023		Non-Converged Contingency	956.0	1052.0	0.55861	-	G1623&1629-T345.00 - SIDNEY2-LNX3345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	0	17SP	G16_023		Non-Converged Contingency	956.0	1052.0	0.43115	-	LARAMIE RIVER - STEGALL 345KV CKT 1
FDNSLock-Blown up	09ALL	0	17SP	G16_023		Non-Converged Contingency	0.0	0.0	0.06248	-	FTTHOMPSON-GRANDPRAIRIE-TLINE-REACTOR-CKT1
FDNSLock-Blown up	09ALL	0	17SP	G16_023		Non-Converged Contingency	720.0	720.0	0.03124	-	FTTHOM2-LNX3345.00 - GRPRAR2-LNX3345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	0	20SP	G16_023		Non-Converged Contingency	0.0	0.0	1.13590	-	SIDNEY-KEYSTONE-TLINE-REACTORS-CKT1
FDNSLock-Blown up	09ALL	0	20SP	G16_023		Non-Converged Contingency	956.0	956.0	0.56795	-	KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	0	20SP	G16_023		Non-Converged Contingency	956.0	956.0	0.56795	-	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z
FDNSLock-Blown up	09ALL	0	20SP	G16_023		Non-Converged Contingency	956.0	1052.0	0.56087	-	G1623&1629-T345.00 - SIDNEY2-LNX3345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	0	20SP	G16_023		Non-Converged Contingency	956.0	1052.0	0.42920	-	LARAMIE RIVER - STEGALL 345KV CKT 1
FDNSLock-Blown up	09ALL	0	25SP	G16_023		Non-Converged Contingency	0.0	0.0	1.13660	-	SIDNEY-KEYSTONE-TLINE-REACTORS-CKT1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNSLock-Blown up	09ALL	0	25SP	G16_023		Non-Converged Contingency	956.0	956.0	0.56830	-	KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	0	25SP	G16_023		Non-Converged Contingency	956.0	956.0	0.56830	-	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z
FDNSLock-Blown up	09ALL	0	25SP	G16_023		Non-Converged Contingency	956.0	1052.0	0.56115	-	G1623&1629-T345.00 - SIDNEY2-LNX3345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	0	25SP	G16_023		Non-Converged Contingency	0.0	0.0	0.56115	-	SIDNEY - SIDNEY2-LNX3345.00 345KV CKT Z
FDNSLock-Blown up	09ALL	0	25SP	G16_023		Non-Converged Contingency	956.0	1052.0	0.42954	-	LARAMIE RIVER - STEGALL 345KV CKT 1
FDNSLock-Blown up	09ALL	2	16WP	G16_023		Non-Converged Contingency	956.0	956.0	0.57025	-	KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	2	17G	G16_023		Non-Converged Contingency	0.0	0.0	1.14119	-	SIDNEY-KEYSTONE-TLINE-REACTORS-CKT1
FDNSLock-Blown up	09ALL	2	17G	G16_023		Non-Converged Contingency	956.0	956.0	0.57060	-	KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	2	17G	G16_023		Non-Converged Contingency	956.0	956.0	0.57060	-	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z
FDNSLock-Blown up	09ALL	2	17G	G16_023		Non-Converged Contingency	956.0	1052.0	0.56130	-	G1623&1629-T345.00 - SIDNEY2-LNX3345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	2	17SP	G16_023		Non-Converged Contingency	0.0	0.0	1.13735	-	SIDNEY-KEYSTONE-TLINE-REACTORS-CKT1
FDNSLock-Blown up	09ALL	2	17SP	G16_023		Non-Converged Contingency	956.0	956.0	0.56867	-	KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	2	17SP	G16_023		Non-Converged Contingency	956.0	956.0	0.56867	-	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z
FDNSLock-Blown up	09ALL	2	17SP	G16_023		Non-Converged Contingency	956.0	1052.0	0.56105	-	G1623&1629-T345.00 - SIDNEY2-LNX3345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	2	17SP	G16_023		Non-Converged Contingency	956.0	1052.0	0.42871	-	LARAMIE RIVER - STEGALL 345KV CKT 1
FDNSLock-Blown up	09ALL	3	25SP	G16_023		Non-Converged Contingency	956.0	1052.0	0.63569	-	BANNER_CO 345.00 - G1623&1629-T345.00 345KV CKT 1
FDNS	09ALL	0	17G	G16_023	TO->FROM	GERALD GENTLEMAN STATION - OGALLALA 230KV CKT 1	320.0	320.0	0.52036	110.8242	GERALD GENTLEMAN STATION - KEYSTONE 345KV CKT 1
FDNS	09ALL	0	16WP	G16_023	TO->FROM	OGALLALA - SIDNEY 230KV CKT 1	320.0	320.0	0.52407	127.7388	SIDNEY-KEYSTONE-TLINE-REACTORS-CKT1
FDNS	09ALL	0	16WP	G16_023	TO->FROM	OGALLALA - SIDNEY 230KV CKT 1	320.0	320.0	0.52407	127.6227	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z
FDNS	09ALL	0	20WP	G16_023	TO->FROM	OGALLALA - SIDNEY 230KV CKT 1	320.0	320.0	0.51859	119.146	KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1
FDNS	09ALL	0	20WP	G16_023	TO->FROM	OGALLALA - SIDNEY 230KV CKT 1	320.0	320.0	0.51859	118.8464	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z
FDNS	09ALL	0	20WP	G16_023	TO->FROM	OGALLALA - SIDNEY 230KV CKT 1	320.0	320.0	0.51859	118.8439	SIDNEY-KEYSTONE-TLINE-REACTORS-CKT1
FDNS	09ALL	0	16WP	G16_023	TO->FROM	SIDNEY - SIDNEY TRANSFORMER 230KV CKT 1	400.0	400.0	0.62489	122.5383	SIDNEY-KEYSTONE-TLINE-REACTORS-CKT1
FDNS	09ALL	0	16WP	G16_023	TO->FROM	SIDNEY - SIDNEY TRANSFORMER 230KV CKT 1	400.0	400.0	0.62489	122.3775	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z
FDNS	09ALL	0	20WP	G16_023	TO->FROM	SIDNEY - SIDNEY TRANSFORMER 230KV CKT 1	400.0	400.0	0.61597	114.3988	KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1
FDNS	09ALL	0	20WP	G16_023	TO->FROM	SIDNEY - SIDNEY TRANSFORMER 230KV CKT 1	400.0	400.0	0.61597	113.7111	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z
FDNS	09ALL	0	20WP	G16_023	TO->FROM	SIDNEY - SIDNEY TRANSFORMER 230KV CKT 1	400.0	400.0	0.61597	113.7	SIDNEY-KEYSTONE-TLINE-REACTORS-CKT1
FDNS	09ALL	0	16WP	G16_023	FROM->TO	SIDNEY (SDQ KV2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	480.0	0.62489	99.9	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z
FDNS	09ALL	0	16WP	G16_023	FROM->TO	SIDNEY (SDQ KV2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	480.0	0.62489	99.8	SIDNEY-KEYSTONE-TLINE-REACTORS-CKT1
FDNS	09ALL	0	16WP	G16_023	FROM->TO	SIDNEY (SDQ KV2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	480.0	0.62489	99	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z
FDNS	09ALL	2	17G	G16_023	TO->FROM	GERALD GENTLEMAN STATION - OGALLALA 230KV CKT 1	320.0	320.0	0.52529	109.1327	GERALD GENTLEMAN STATION - KEYSTONE 345KV CKT 1
FDNS	09ALL	2	16WP	G16_023	TO->FROM	OGALLALA - SIDNEY 230KV CKT 1	320.0	320.0	0.52782	127.6369	SIDNEY-KEYSTONE-TLINE-REACTORS-CKT1
FDNS	09ALL	2	16WP	G16_023	TO->FROM	OGALLALA - SIDNEY 230KV CKT 1	320.0	320.0	0.52782	127.2793	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z
FDNS	09ALL	2	16WP	G16_023	TO->FROM	SIDNEY - SIDNEY TRANSFORMER 230KV CKT 1	400.0	400.0	0.62920	122.4509	SIDNEY-KEYSTONE-TLINE-REACTORS-CKT1
FDNS	09ALL	2	16WP	G16_023	TO->FROM	SIDNEY - SIDNEY TRANSFORMER 230KV CKT 1	400.0	400.0	0.62920	122.0739	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z
FDNS	09ALL	2	16WP	G16_023	FROM->TO	SIDNEY (SDQ KV2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	480.0	0.62920	99.7	SIDNEY-KEYSTONE-TLINE-REACTORS-CKT1
FDNS	09ALL	2	16WP	G16_023	FROM->TO	SIDNEY (SDQ KV2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	480.0	0.62920	99.6	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z
FDNS	09ALL	3	17G	G16_023	TO->FROM	GERALD GENTLEMAN STATION - OGALLALA 230KV CKT 1	320.0	320.0	0.53070	110.1857	GERALD GENTLEMAN STATION - KEYSTONE 345KV CKT 1
FDNS	09ALL	3	17SP	G16_023	FROM->TO	KEYSTONE (KEYSTONE T1) 345/115/13.8KV TRANSFORMER CKT 1	336.0	336.0	0.38672	103.7167	GERALD GENTLEMAN STATION - KEYSTONE 345KV CKT 1
FDNS	09ALL	3	17SP	G16_023	FROM->TO	KEYSTONE (KEYSTONE T1) 345/115/13.8KV TRANSFORMER CKT 1	336.0	336.0	0.38672	103.2214	GERALD GENTLEMAN STATION - KEYSTONE 345KV CKT 1
FDNS	09ALL	3	25SP	G16_023	FROM->TO	KEYSTONE (KEYSTONE T1) 345/115/13.8KV TRANSFORMER CKT 1	336.0	336.0	0.38635	102.3864	GERALD GENTLEMAN STATION - KEYSTONE 345KV CKT 1
FDNS	09ALL	3	25SP	G16_023	FROM->TO	KEYSTONE (KEYSTONE T1) 345/115/13.8KV TRANSFORMER CKT 1	336.0	336.0	0.38635	101.6716	GERALD GENTLEMAN STATION - KEYSTONE 345KV CKT 1
FDNS	09ALL	3	20SP	G16_023	FROM->TO	KEYSTONE (KEYSTONE T1) 345/115/13.8KV TRANSFORMER CKT 1	336.0	336.0	0.38620	101.0537	GERALD GENTLEMAN STATION - KEYSTONE 345KV CKT 1
FDNS	09ALL	3	20SP	G16_023	FROM->TO	KEYSTONE (KEYSTONE T1) 345/115/13.8KV TRANSFORMER CKT 1	336.0	336.0	0.38620	100.4563	GERALD GENTLEMAN STATION - KEYSTONE 345KV CKT 1
FDNS	14ALL	0	20SP	G16_028	FROM->TO	CLAYTON - SARDIS 138KV CKT 1	98.0	98.0	0.61268	108.1484	CANADIAN RIVER () 345/138/13.8KV TRANSFORMER CKT 1
FDNS	14ALL	0	20SP	G16_028	FROM->TO	CLAYTON - SARDIS 138KV CKT 1	98.0	98.0	0.61268	108.1484	CANADIAN RIVER () 345/138/13.8KV TRANSFORMER CKT 1
FDNS	14ALL	0	20SP	G16_028	FROM->TO	CLAYTON - SARDIS 138KV CKT 1	98.0	98.0	0.61268	108.1112	CANADIAN RIVER - MCALESTER SOUTH 138KV CKT 1
FDNS	14ALL	0	20SP	G16_028	FROM->TO	CLAYTON - SARDIS 138KV CKT 1	98.0	98.0	0.61268	108.1112	CANADIAN RIVER - MCALESTER SOUTH 138KV CKT 1
FDNS	14ALL	0	25SP	G16_028	FROM->TO	CLAYTON - SARDIS 138KV CKT 1	98.0	98.0	0.61270	104.2487	CANADIAN RIVER () 345/138/13.8KV TRANSFORMER CKT 1
FDNS	14ALL	0	25SP	G16_028	FROM->TO	CLAYTON - SARDIS 138KV CKT 1	98.0	98.0	0.61270	104.2487	CANADIAN RIVER () 345/138/13.8KV TRANSFORMER CKT 1
FDNS	14ALL	0	25SP	G16_028	FROM->TO	CLAYTON - SARDIS 138KV CKT 1	98.0	98.0	0.61270	104.2155	CANADIAN RIVER - MCALESTER SOUTH 138KV CKT 1
FDNS	14ALL	0	25SP	G16_028	FROM->TO	CLAYTON - SARDIS 138KV CKT 1	98.0	98.0	0.61270	104.2155	CANADIAN RIVER - MCALESTER SOUTH 138KV CKT 1
FDNS	14ALL	0	20SP	G16_028	FROM->TO	ENOWILT - LONE OAK 138KV CKT 1	88.0	98.0	0.61268	103.3477	CANADIAN RIVER () 345/138/13.8KV TRANSFORMER CKT 1
FDNS	14ALL	0	20SP	G16_028	FROM->TO	ENOWILT - LONE OAK 138KV CKT 1	88.0	98.0	0.61268	103.3477	CANADIAN RIVER () 345/138/13.8KV TRANSFORMER CKT 1
FDNS	14ALL	0	20SP	G16_028	FROM->TO	ENOWILT - LONE OAK 138KV CKT 1	88.0	98.0	0.61268	103.3159	CANADIAN RIVER - MCALESTER SOUTH 138KV CKT 1
FDNS	14ALL	0	20SP	G16_028	FROM->TO	ENOWILT - LONE OAK 138KV CKT 1	88.0	98.0	0.61268	103.3159	CANADIAN RIVER - MCALESTER SOUTH 138KV CKT 1
FDNS	14ALL	0	25SP	G16_028	FROM->TO	ENOWILT - LONE OAK 138KV CKT 1	88.0	98.0	0.61270	99.3	CANADIAN RIVER - MCALESTER SOUTH 138KV CKT 1
FDNS	14ALL	0	25SP	G16_028	FROM->TO	ENOWILT - LONE OAK 138KV CKT 1	88.0	98.0	0.61270	99.3	CANADIAN RIVER - MCALESTER SOUTH 138KV CKT 1
FDNS	14ALL	0	25SP	G16_028	FROM->TO	ENOWILT - LONE OAK 138KV CKT 1	88.0	98.0	0.61270	99.3	CANADIAN RIVER () 345/138/13.8KV TRANSFORMER CKT 1
FDNS	14ALL	0	25SP	G16_028	FROM->TO	ENOWILT - LONE OAK 138KV CKT 1	88.0	98.0	0.61270	99.3	CANADIAN RIVER () 345/138/13.8KV TRANSFORMER CKT 1
FDNS	14ALL	0	20SP	G16_028	TO->FROM	ENOWILT - SARDIS 138KV CKT 1	98.0	98.0	0.61268	104.9117	CANADIAN RIVER () 345/138/13.8KV TRANSFORMER CKT 1
FDNS	14ALL	0	20SP	G16_028	TO->FROM	ENOWILT - SARDIS 138KV CKT 1	98.0	98.0	0.61268	104.9117	CANADIAN RIVER () 345/138/13.8KV TRANSFORMER CKT 1
FDNS	14ALL	0	20SP	G16_028	TO->FROM	ENOWILT - SARDIS 138KV CKT 1	98.0	98.0	0.61268	104.8669	CANADIAN RIVER - MCALESTER SOUTH 138KV CKT 1
FDNS	14ALL	0	20SP	G16_028	TO->FROM	ENOWILT - SARDIS 138KV CKT 1	98.0	98.0	0.61268	104.8669	CANADIAN RIVER - MCALESTER SOUTH 138KV CKT 1
FDNS	14ALL	0	25SP	G16_028	TO->FROM	ENOWILT - SARDIS 138KV CKT 1	98.0	98.0	0.61270	100.8965	CANADIAN RIVER () 345/138/13.8KV TRANSFORMER CKT 1
FDNS	14ALL	0	25SP	G16_028	TO->FROM	ENOWILT - SARDIS 138KV CKT 1	98.0	98.0	0.61270	100.8965	CANADIAN RIVER () 345/138/13.8KV TRANSFORMER CKT 1
FDNS	14ALL	0	25SP	G16_028	TO->FROM	ENOWILT - SARDIS 138KV CKT 1	98.0	98.0	0.61270	100.8565	CANADIAN RIVER - MCALESTER SOUTH 138KV CKT 1
FDNS	14ALL	0	25SP	G16_028	TO->FROM	ENOWILT - SARDIS 138KV CKT 1	98.0	98.0	0.61270	100.8565	CANADIAN RIVER - MCALESTER SOUTH 138KV CKT 1
FDNSLock-Blown up	09ALL	0	16WP	G16_029		Non-Converged Contingency	956.0	956.0	0.56261	-	KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	0	16WP	G16_029		Non-Converged Contingency	0.0	0.0	0.07502	-	FTTHOMPSON-GRANDPRAIRIE-TLINE-REACTOR-CKT1
FDNSLock-Blown up	09ALL	0	16WP	G16_029		Non-Converged Contingency	720.0	720.0	0.03751	-	FTTHOM2-LNX3345.00 - GRPRAR2-LNX3345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	0	17G	G16_029		Non-Converged Contingency	0.0	0.0	1.12601	-	SIDNEY-KEYSTONE-TLINE-REACTORS-CKT1
FDNSLock-Blown up	09ALL	0	17G	G16_029		Non-Converged Contingency	956.0	956.0	0.56301	-	KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	0	17G	G16_029		Non-Converged Contingency	956.0	956.0	0.56301	-	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z
FDNSLock-Blown up	09ALL	0	17G	G16_029		Non-Converged Contingency	956.0	1052.0	0.55887	-	G1623&1629-T345.00 - SIDNEY2-LNX3345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	0	17G	G16_029		Non-Converged Contingency	0.0	0.0	0.06515	-	FTTHOMPSON-GRANDPRAIRIE-TLINE-REACTOR-CKT1
FDNSLock-Blown up	09ALL	0	17G	G16_029		Non-Converged Contingency	720.0	720.0	0.03257	-	FT THOMPSON - FTTHOM2-LNX3345.00 345KV CKT Z
FDNSLock-Blown up	09ALL	0	17G	G16_029		Non-Converged Contingency	720.0	720.0	0.03257	-	FTTHOM2-LNX3345.00 - GRPRAR2-LNX3345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	0	17SP	G16_029		Non-Converged Contingency	0.0	0.0	1.12229	-	SIDNEY-KEYSTONE-TLINE-REACTORS-CKT1
FDNSLock-Blown up	09ALL	0	17SP	G16_029		Non-Converged Contingency	956.0	956.0	0.56115	-	KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	0	17SP	G16_029		Non-Converged Contingency	956.0	956.0	0.56115	-	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNSLock-Blown up	09ALL	0	17SP	G16_029		Non-Converged Contingency	956.0	1052.0	0.55861	-	G1623&1629-T345.00 - SIDNEY2-LNX3345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	0	17SP	G16_029		Non-Converged Contingency	956.0	1052.0	0.43115	-	LARAMIE RIVER - STEGALL 345KV CKT 1
FDNSLock-Blown up	09ALL	0	17SP	G16_029		Non-Converged Contingency	0.0	0.0	0.06248	-	FTTHOMPSON-GRANDPRAIRIE-TLINE-REACTOR-CKT1
FDNSLock-Blown up	09ALL	0	17SP	G16_029		Non-Converged Contingency	720.0	720.0	0.03124	-	FTTHOM2-LNX3345.00 - GRPRAR2-LNX3345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	0	20SP	G16_029		Non-Converged Contingency	0.0	0.0	1.13590	-	SIDNEY-KEYSTONE-TLINE-REACTORS-CKT1
FDNSLock-Blown up	09ALL	0	20SP	G16_029		Non-Converged Contingency	956.0	956.0	0.56795	-	KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	0	20SP	G16_029		Non-Converged Contingency	956.0	956.0	0.56795	-	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z
FDNSLock-Blown up	09ALL	0	20SP	G16_029		Non-Converged Contingency	956.0	1052.0	0.56087	-	G1623&1629-T345.00 - SIDNEY2-LNX3345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	0	20SP	G16_029		Non-Converged Contingency	956.0	1052.0	0.42920	-	LARAMIE RIVER - STEGALL 345KV CKT 1
FDNSLock-Blown up	09ALL	0	25SP	G16_029		Non-Converged Contingency	0.0	0.0	1.13660	-	SIDNEY-KEYSTONE-TLINE-REACTORS-CKT1
FDNSLock-Blown up	09ALL	0	25SP	G16_029		Non-Converged Contingency	956.0	956.0	0.56830	-	KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	0	25SP	G16_029		Non-Converged Contingency	956.0	956.0	0.56830	-	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z
FDNSLock-Blown up	09ALL	0	25SP	G16_029		Non-Converged Contingency	956.0	1052.0	0.56115	-	G1623&1629-T345.00 - SIDNEY2-LNX3345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	0	25SP	G16_029		Non-Converged Contingency	0.0	0.0	0.56115	-	SIDNEY - SIDNEY2-LNX3345.00 345KV CKT Z
FDNSLock-Blown up	09ALL	0	25SP	G16_029		Non-Converged Contingency	956.0	1052.0	0.42954	-	LARAMIE RIVER - STEGALL 345KV CKT 1
FDNSLock-Blown up	09ALL	2	16WP	G16_029		Non-Converged Contingency	956.0	956.0	0.57025	-	KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	2	17G	G16_029		Non-Converged Contingency	0.0	0.0	1.14119	-	SIDNEY-KEYSTONE-TLINE-REACTORS-CKT1
FDNSLock-Blown up	09ALL	2	17G	G16_029		Non-Converged Contingency	956.0	956.0	0.57060	-	KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	2	17G	G16_029		Non-Converged Contingency	956.0	956.0	0.57060	-	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z
FDNSLock-Blown up	09ALL	2	17G	G16_029		Non-Converged Contingency	956.0	1052.0	0.56130	-	G1623&1629-T345.00 - SIDNEY2-LNX3345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	2	17SP	G16_029		Non-Converged Contingency	0.0	0.0	1.13735	-	SIDNEY-KEYSTONE-TLINE-REACTORS-CKT1
FDNSLock-Blown up	09ALL	2	17SP	G16_029		Non-Converged Contingency	956.0	956.0	0.56867	-	KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	2	17SP	G16_029		Non-Converged Contingency	956.0	956.0	0.56867	-	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z
FDNSLock-Blown up	09ALL	2	17SP	G16_029		Non-Converged Contingency	956.0	1052.0	0.56105	-	G1623&1629-T345.00 - SIDNEY2-LNX3345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	2	17SP	G16_029		Non-Converged Contingency	956.0	1052.0	0.42871	-	LARAMIE RIVER - STEGALL 345KV CKT 1
FDNSLock-Blown up	09ALL	3	25SP	G16_029		Non-Converged Contingency	956.0	1052.0	0.63569	-	BANNER_CO 345.00 - G1623&1629-T345.00 345KV CKT 1
FDNS	09ALL	0	17G	G16_029	TO->FROM	GERALD GENTLEMAN STATION - OGALLALA 230KV CKT 1	320.0	320.0	0.52036	110.8242	GERALD GENTLEMAN STATION - KEYSTONE 345KV CKT 1
FDNS	09ALL	0	16WP	G16_029	TO->FROM	OGALLALA - SIDNEY 230KV CKT 1	320.0	320.0	0.52407	127.7388	SIDNEY-KEYSTONE-TLINE-REACTORS-CKT1
FDNS	09ALL	0	16WP	G16_029	TO->FROM	OGALLALA - SIDNEY 230KV CKT 1	320.0	320.0	0.52407	127.6227	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z
FDNS	09ALL	0	20WP	G16_029	TO->FROM	OGALLALA - SIDNEY 230KV CKT 1	320.0	320.0	0.51859	119.146	KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1
FDNS	09ALL	0	20WP	G16_029	TO->FROM	OGALLALA - SIDNEY 230KV CKT 1	320.0	320.0	0.51859	118.8464	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z
FDNS	09ALL	0	20WP	G16_029	TO->FROM	OGALLALA - SIDNEY 230KV CKT 1	320.0	320.0	0.51859	118.8439	SIDNEY-KEYSTONE-TLINE-REACTORS-CKT1
FDNS	09ALL	0	16WP	G16_029	TO->FROM	SIDNEY - SIDNEY TRANSFORMER 230KV CKT 1	400.0	400.0	0.62489	122.5383	SIDNEY-KEYSTONE-TLINE-REACTORS-CKT1
FDNS	09ALL	0	16WP	G16_029	TO->FROM	SIDNEY - SIDNEY TRANSFORMER 230KV CKT 1	400.0	400.0	0.62489	122.3775	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z
FDNS	09ALL	0	20WP	G16_029	TO->FROM	SIDNEY - SIDNEY TRANSFORMER 230KV CKT 1	400.0	400.0	0.61597	114.3988	KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1
FDNS	09ALL	0	20WP	G16_029	TO->FROM	SIDNEY - SIDNEY TRANSFORMER 230KV CKT 1	400.0	400.0	0.61597	113.7111	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z
FDNS	09ALL	0	20WP	G16_029	TO->FROM	SIDNEY - SIDNEY TRANSFORMER 230KV CKT 1	400.0	400.0	0.61597	113.7	SIDNEY-KEYSTONE-TLINE-REACTORS-CKT1
FDNS	09ALL	0	16WP	G16_029	FROM->TO	SIDNEY (SDQ KV2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	480.0	0.62489	99.9	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z
FDNS	09ALL	0	16WP	G16_029	FROM->TO	SIDNEY (SDQ KV2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	480.0	0.62489	99.8	SIDNEY-KEYSTONE-TLINE-REACTORS-CKT1
FDNS	09ALL	0	16WP	G16_029	FROM->TO	SIDNEY (SDQ KV2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	480.0	0.62489	99	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z
FDNS	09ALL	2	17G	G16_029	TO->FROM	GERALD GENTLEMAN STATION - OGALLALA 230KV CKT 1	320.0	320.0	0.52529	109.1327	GERALD GENTLEMAN STATION - KEYSTONE 345KV CKT 1
FDNS	09ALL	2	16WP	G16_029	TO->FROM	OGALLALA - SIDNEY 230KV CKT 1	320.0	320.0	0.52782	127.6369	SIDNEY-KEYSTONE-TLINE-REACTORS-CKT1
FDNS	09ALL	2	16WP	G16_029	TO->FROM	OGALLALA - SIDNEY 230KV CKT 1	320.0	320.0	0.52782	127.2793	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z
FDNS	09ALL	2	16WP	G16_029	TO->FROM	SIDNEY - SIDNEY TRANSFORMER 230KV CKT 1	400.0	400.0	0.62920	122.4509	SIDNEY-KEYSTONE-TLINE-REACTORS-CKT1
FDNS	09ALL	2	16WP	G16_029	TO->FROM	SIDNEY - SIDNEY TRANSFORMER 230KV CKT 1	400.0	400.0	0.62920	122.0739	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z
FDNS	09ALL	2	16WP	G16_029	FROM->TO	SIDNEY (SDQ KV2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	480.0	0.62920	99.7	SIDNEY-KEYSTONE-TLINE-REACTORS-CKT1
FDNS	09ALL	2	16WP	G16_029	FROM->TO	SIDNEY (SDQ KV2A) 345/230/13.8KV TRANSFORMER CKT 1	400.0	480.0	0.62920	99.6	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z
FDNS	09ALL	3	17G	G16_029	TO->FROM	GERALD GENTLEMAN STATION - OGALLALA 230KV CKT 1	320.0	320.0	0.53070	110.1857	GERALD GENTLEMAN STATION - KEYSTONE 345KV CKT 1
FDNS	09ALL	3	17SP	G16_029	FROM->TO	KEYSTONE (KEYSTONE T1) 345/115/13.8KV TRANSFORMER CKT 1	336.0	336.0	0.38672	103.7167	GERALD GENTLEMAN STATION - KEYSTONE 345KV CKT 1
FDNS	09ALL	3	17SP	G16_029	FROM->TO	KEYSTONE (KEYSTONE T1) 345/115/13.8KV TRANSFORMER CKT 1	336.0	336.0	0.38672	103.2214	GERALD GENTLEMAN STATION - KEYSTONE 345KV CKT 1
FDNS	09ALL	3	25SP	G16_029	FROM->TO	KEYSTONE (KEYSTONE T1) 345/115/13.8KV TRANSFORMER CKT 1	336.0	336.0	0.38635	102.3864	GERALD GENTLEMAN STATION - KEYSTONE 345KV CKT 1
FDNS	09ALL	3	25SP	G16_029	FROM->TO	KEYSTONE (KEYSTONE T1) 345/115/13.8KV TRANSFORMER CKT 1	336.0	336.0	0.38635	101.6716	GERALD GENTLEMAN STATION - KEYSTONE 345KV CKT 1
FDNS	09ALL	3	20SP	G16_029	FROM->TO	KEYSTONE (KEYSTONE T1) 345/115/13.8KV TRANSFORMER CKT 1	336.0	336.0	0.38620	101.0537	GERALD GENTLEMAN STATION - KEYSTONE 345KV CKT 1
FDNS	09ALL	3	20SP	G16_029	FROM->TO	KEYSTONE (KEYSTONE T1) 345/115/13.8KV TRANSFORMER CKT 1	336.0	336.0	0.38620	100.4563	GERALD GENTLEMAN STATION - KEYSTONE 345KV CKT 1
FDNS	07ALL	0	20WP	G16_037	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.40385	100.5565	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	07ALL	0	16WP	G16_037	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.41546	99.6	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	01ALL	0	16WP	G16_045	FROM->TO	CIMARRON - DRAPER LAKE 345KV CKT 1	717.0	717.0	0.14159	104.877	BASE CASE
FDNSLock-Blown up	03ALL	0	16WP	G16_046		Non-Converged Contingency	726.6	726.6	0.19931	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	03ALL	0	16WP	G16_046		Non-Converged Contingency	726.6	726.6	0.19931	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	03ALL	0	16WP	G16_046		Non-Converged Contingency	1793.0	1793.0	0.18741	-	G13-010T 345.00 - G16-049-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	16WP	G16_046		Non-Converged Contingency	1793.0	1793.0	0.18741	-	G13-010T 345.00 - POST ROCK 345KV CKT 1
FDNSLock-Blown up	03ALL	0	17G	G16_046		Non-Converged Contingency	726.6	726.6	0.20034	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	03ALL	0	17G	G16_046		Non-Converged Contingency	1505.0	1793.0	0.18223	-	G13-010T 345.00 - G16-049-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	17G	G16_046		Non-Converged Contingency	1505.0	1793.0	0.18223	-	G13-010T 345.00 - POST ROCK 345KV CKT 1
FDNSLock-Blown up	03ALL	0	17G	G16_046		Non-Converged Contingency	956.09	1051.7	0.11369	-	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1
FDNSLock-Blown up	03ALL	0	17SP	G16_046		Non-Converged Contingency	726.6	726.6	0.19876	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	03ALL	0	17SP	G16_046		Non-Converged Contingency	1505.0	1793.0	0.18625	-	G13-010T 345.00 - G16-049-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	17SP	G16_046		Non-Converged Contingency	1505.0	1793.0	0.18625	-	G13-010T 345.00 - POST ROCK 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20L	G16_046		Non-Converged Contingency	726.6	726.6	0.21147	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20L	G16_046		Non-Converged Contingency	726.6	726.6	0.21147	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20L	G16_046		Non-Converged Contingency	0.0	0.0	0.19995	-	P12:345:SPS:J07.1.FINN.HITCH
FDNSLock-Blown up	03ALL	0	20L	G16_046		Non-Converged Contingency	1505.0	1793.0	0.17419	-	G13-010T 345.00 - G16-049-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20L	G16_046		Non-Converged Contingency	1505.0	1793.0	0.17419	-	G13-010T 345.00 - POST ROCK 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20L	G16_046		Non-Converged Contingency	956.09	1051.7	0.10373	-	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20L	G16_046		Non-Converged Contingency	956.09	1051.7	0.10373	-	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20SP	G16_046		Non-Converged Contingency	726.6	726.6	0.20237	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20SP	G16_046		Non-Converged Contingency	1505.0	1793.0	0.18365	-	G13-010T 345.00 - G16-049-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20SP	G16_046		Non-Converged Contingency	1505.0	1793.0	0.18365	-	G13-010T 345.00 - POST ROCK 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20SP	G16_046		Non-Converged Contingency	956.09	1051.7	0.11613	-	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20WP	G16_046		Non-Converged Contingency	726.6	726.6	0.20358	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20WP	G16_046		Non-Converged Contingency	1793.0	1793.0	0.18411	-	G13-010T 345.00 - G16-049-TAP 345.00 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNSLock-Blown up	03ALL	0	20WP	G16_046		Non-Converged Contingency	1793.0	1793.0	0.18411	-	G13-010T 345.00 - POST ROCK 345KV CKT 1
FDNSLock-Blown up	03ALL	0	25SP	G16_046		Non-Converged Contingency	726.6	726.6	0.20034	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	03ALL	0	25SP	G16_046		Non-Converged Contingency	1505.0	1793.0	0.18455	-	G13-010T 345.00 - G16-049-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	25SP	G16_046		Non-Converged Contingency	1505.0	1793.0	0.18455	-	G13-010T 345.00 - POST ROCK 345KV CKT 1
FDNSLock-Blown up	03ALL	0	25SP	G16_046		Non-Converged Contingency	956.09	1051.7	0.11404	-	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	25SP	G16_046		Non-Converged Contingency	956.09	1051.7	0.10231	-	FINNEY SWITCHING STATION - WALKTAP7 345.00 345KV CKT 1
FDNS	03ALL	0	20SP	G16_046	TO->FROM	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1	328.0	398.0	0.05296	104.3921	BASE CASE
FDNS	03ALL	0	17G	G16_046	TO->FROM	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1	328.0	398.0	0.05435	104.1876	BASE CASE
FDNS	03ALL	0	17SP	G16_046	TO->FROM	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1	328.0	398.0	0.05402	103.2944	BASE CASE
FDNS	03ALL	2	17G	G16_046	TO->FROM	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1	328.0	398.0	0.04909	99.7	BASE CASE
FDNS	03ALL	2	20SP	G16_046	TO->FROM	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1	328.0	398.0	0.04757	99.5	BASE CASE
FDNS	08NR	0	20L	G16_048	TO->FROM	CLEAVELAND - CLEVLND 4 138.00 138KV CKT Z1	305.0	371.0	0.03535	123.6455	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08NR	0	20L	G16_048	TO->FROM	CLEAVELAND - CLEVLND 4 138.00 138KV CKT Z1	305.0	371.0	0.03535	123.6455	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08NR	0	17G	G16_048	TO->FROM	CLEAVELAND - CLEVLND 4 138.00 138KV CKT Z1	305.0	371.0	0.04443	107.2155	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08NR	0	17G	G16_048	TO->FROM	CLEAVELAND - CLEVLND 4 138.00 138KV CKT Z1	305.0	371.0	0.04443	107.2155	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08NR	0	20L	G16_048	FROM->TO	CLEVELAND (CLVAUTO1) 345/138/13.8KV TRANSFORMER CKT 1	395.0	494.0	0.03535	99.8	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08NR	0	20L	G16_048	FROM->TO	CLEVELAND (CLVAUTO1) 345/138/13.8KV TRANSFORMER CKT 1	395.0	494.0	0.03535	99.8	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08ALL	0	16WP	G16_048	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.03430	118.7439	BASE CASE
FDNS	08ALL	0	17G	G16_048	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.03333	117.1711	BASE CASE
FDNS	08ALL	0	17SP	G16_048	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.03481	110.6898	BASE CASE
FDNS	08NR	0	17G	G16_048	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.03247	99.3	G15-015T 138.00 - MDFRDTP4 138.00 138KV CKT 1
FDNS	08NR	0	17G	G16_048	TO->FROM	KINZE - MCELROY 138KV CKT 1	194.0	222.0	0.10910	102.4282	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08NR	0	20L	G16_048	FROM->TO	OSAGE - WEBB CITY TAP 138KV CKT 1	152.0	180.0	0.06004	119.8299	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08NR	0	20L	G16_048	FROM->TO	OSAGE - WEBB CITY TAP 138KV CKT 1	152.0	180.0	0.06004	116.1965	917X
FDNS	08NR	0	20L	G16_048	FROM->TO	OSAGE - WEBB CITY TAP 138KV CKT 1	152.0	180.0	0.06004	111.5581	G15066_T 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	0	20L	G16_048	FROM->TO	OSAGE - WEBB CITY TAP 138KV CKT 1	152.0	180.0	0.04923	100	BASE CASE
FDNS	08NR	2	20L	G16_048	TO->FROM	CLEAVELAND - CLEVLND 4 138.00 138KV CKT Z1	305.0	371.0	0.03538	123.6281	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08NR	2	20L	G16_048	TO->FROM	CLEAVELAND - CLEVLND 4 138.00 138KV CKT Z1	305.0	371.0	0.03538	123.6281	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08NR	2	17G	G16_048	TO->FROM	CLEAVELAND - CLEVLND 4 138.00 138KV CKT Z1	305.0	371.0	0.04446	107.2052	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08NR	2	17G	G16_048	TO->FROM	CLEAVELAND - CLEVLND 4 138.00 138KV CKT Z1	305.0	371.0	0.04446	107.2052	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08NR	2	20L	G16_048	FROM->TO	CLEVELAND (CLVAUTO1) 345/138/13.8KV TRANSFORMER CKT 1	395.0	494.0	0.03538	99.8	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08NR	2	20L	G16_048	FROM->TO	CLEVELAND (CLVAUTO1) 345/138/13.8KV TRANSFORMER CKT 1	395.0	494.0	0.03538	99.8	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08NR	2	17G	G16_048	TO->FROM	KINZE - MCELROY 138KV CKT 1	194.0	222.0	0.10897	102.5249	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08NR	2	20L	G16_048	FROM->TO	OSAGE - WEBB CITY TAP 138KV CKT 1	152.0	180.0	0.05975	120.29	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08NR	2	20L	G16_048	FROM->TO	OSAGE - WEBB CITY TAP 138KV CKT 1	152.0	180.0	0.05975	116.6701	917X
FDNS	08NR	2	20L	G16_048	FROM->TO	OSAGE - WEBB CITY TAP 138KV CKT 1	152.0	180.0	0.05975	112.0308	G15066_T 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	2	20L	G16_048	FROM->TO	OSAGE - WEBB CITY TAP 138KV CKT 1	152.0	180.0	0.04890	100.6804	BASE CASE
FDNS	08NR	3	20L	G16_048	TO->FROM	CLEAVELAND - CLEVLND 4 138.00 138KV CKT Z1	305.0	371.0	0.03447	122.8373	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08NR	3	20L	G16_048	TO->FROM	CLEAVELAND - CLEVLND 4 138.00 138KV CKT Z1	305.0	371.0	0.03447	122.8373	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08NR	3	17G	G16_048	TO->FROM	CLEAVELAND - CLEVLND 4 138.00 138KV CKT Z1	305.0	371.0	0.04345	106.5898	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08NR	3	17G	G16_048	TO->FROM	CLEAVELAND - CLEVLND 4 138.00 138KV CKT Z1	305.0	371.0	0.04345	106.5898	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08NR	3	20L	G16_048	FROM->TO	CLEVELAND (CLVAUTO1) 345/138/13.8KV TRANSFORMER CKT 1	395.0	494.0	0.03447	99.2	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08NR	3	20L	G16_048	FROM->TO	CLEVELAND (CLVAUTO1) 345/138/13.8KV TRANSFORMER CKT 1	395.0	494.0	0.03447	99.2	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08NR	3	20L	G16_048	FROM->TO	FAIRFAX TAP - SHIDLER 138KV CKT 1	181.0	211.0	0.06350	102.1664	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08NR	3	20L	G16_048	TO->FROM	FAIRFAX TAP - WEBB CITY TAP 138KV CKT 1	189.0	211.0	0.06350	102.1702	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08NR	3	17G	G16_048	TO->FROM	KINZE - MCELROY 138KV CKT 1	194.0	222.0	0.10810	101.3635	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08NR	4	20L	G16_048	TO->FROM	CLEAVELAND - CLEVLND 4 138.00 138KV CKT Z1	305.0	371.0	0.03446	122.8237	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08NR	4	20L	G16_048	TO->FROM	CLEAVELAND - CLEVLND 4 138.00 138KV CKT Z1	305.0	371.0	0.03446	122.8237	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08NR	4	17G	G16_048	TO->FROM	CLEAVELAND - CLEVLND 4 138.00 138KV CKT Z1	305.0	371.0	0.04342	106.5649	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08NR	4	17G	G16_048	TO->FROM	CLEAVELAND - CLEVLND 4 138.00 138KV CKT Z1	305.0	371.0	0.04342	106.5649	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08NR	4	20L	G16_048	FROM->TO	CLEVELAND (CLVAUTO1) 345/138/13.8KV TRANSFORMER CKT 1	395.0	494.0	0.03446	99.2	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08NR	4	20L	G16_048	FROM->TO	CLEVELAND (CLVAUTO1) 345/138/13.8KV TRANSFORMER CKT 1	395.0	494.0	0.03446	99.2	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08NR	4	20L	G16_048	FROM->TO	FAIRFAX TAP - SHIDLER 138KV CKT 1	181.0	211.0	0.06349	102.155	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08NR	4	20L	G16_048	TO->FROM	FAIRFAX TAP - WEBB CITY TAP 138KV CKT 1	189.0	211.0	0.06349	102.1587	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	16WP	G16_049		Non-Converged Contingency	1793.0	1793.0	0.46508	-	G13-010T 345.00 - G16-049-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	16WP	G16_049		Non-Converged Contingency	1793.0	1793.0	0.46508	-	G13-010T 345.00 - POST ROCK 345KV CKT 1
FDNSLock-Blown up	03ALL	0	16WP	G16_049		Non-Converged Contingency	726.6	726.6	0.15640	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	03ALL	0	16WP	G16_049		Non-Converged Contingency	726.6	726.6	0.15640	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	03ALL	0	17G	G16_049		Non-Converged Contingency	1505.0	1793.0	0.45988	-	G13-010T 345.00 - G16-049-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	17G	G16_049		Non-Converged Contingency	1505.0	1793.0	0.45988	-	G13-010T 345.00 - POST ROCK 345KV CKT 1
FDNSLock-Blown up	03ALL	0	17G	G16_049		Non-Converged Contingency	726.6	726.6	0.15743	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	03ALL	0	17G	G16_049		Non-Converged Contingency	956.09	1051.7	0.12014	-	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1
FDNSLock-Blown up	03ALL	0	17SP	G16_049		Non-Converged Contingency	1505.0	1793.0	0.46392	-	G13-010T 345.00 - G16-049-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	17SP	G16_049		Non-Converged Contingency	1505.0	1793.0	0.46392	-	G13-010T 345.00 - POST ROCK 345KV CKT 1
FDNSLock-Blown up	03ALL	0	17SP	G16_049		Non-Converged Contingency	726.6	726.6	0.15586	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20L	G16_049		Non-Converged Contingency	1505.0	1793.0	0.45260	-	G13-010T 345.00 - G16-049-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20L	G16_049		Non-Converged Contingency	1505.0	1793.0	0.45260	-	G13-010T 345.00 - POST ROCK 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20L	G16_049		Non-Converged Contingency	0.0	0.0	0.21062	-	P12:345:SPS:J07.1.FINN.HITCH
FDNSLock-Blown up	03ALL	0	20L	G16_049		Non-Converged Contingency	726.6	726.6	0.16850	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20L	G16_049		Non-Converged Contingency	726.6	726.6	0.16850	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20L	G16_049		Non-Converged Contingency	956.09	1051.7	0.10918	-	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20L	G16_049		Non-Converged Contingency	956.09	1051.7	0.10918	-	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20SP	G16_049		Non-Converged Contingency	1505.0	1793.0	0.46206	-	G13-010T 345.00 - G16-049-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20SP	G16_049		Non-Converged Contingency	1505.0	1793.0	0.46206	-	G13-010T 345.00 - POST ROCK 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20SP	G16_049		Non-Converged Contingency	726.6	726.6	0.15940	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20SP	G16_049		Non-Converged Contingency	956.09	1051.7	0.12158	-	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20WP	G16_049		Non-Converged Contingency	1793.0	1793.0	0.46253	-	G13-010T 345.00 - G16-049-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20WP	G16_049		Non-Converged Contingency	1793.0	1793.0	0.46253	-	G13-010T 345.00 - POST ROCK 345KV CKT 1
FDNSLock-Blown up	03ALL	0	20WP	G16_049		Non-Converged Contingency	726.6	726.6	0.16061	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	03ALL	0	25SP	G16_049		Non-Converged Contingency	1505.0	1793.0	0.46296	-	G13-010T 345.00 - G16-049-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	25SP	G16_049		Non-Converged Contingency	1505.0	1793.0	0.46296	-	G13-010T 345.00 - POST ROCK 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNSLock-Blown up	03ALL	0	25SP	G16_049		Non-Converged Contingency	726.6	726.6	0.15737	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	03ALL	0	25SP	G16_049		Non-Converged Contingency	956.09	1051.7	0.11949	-	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	03ALL	0	25SP	G16_049		Non-Converged Contingency	956.09	1051.7	0.10752	-	FINNEY SWITCHING STATION - WALKTAP7 345.00 345KV CKT 1
FDNS	03ALL	0	20SP	G16_049	TO->FROM	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1	328.0	398.0	0.13211	104.3921	BASE CASE
FDNS	03ALL	0	17G	G16_049	TO->FROM	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1	328.0	398.0	0.13344	104.1876	BASE CASE
FDNS	03ALL	0	17SP	G16_049	TO->FROM	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1	328.0	398.0	0.13314	103.2944	BASE CASE
FDNS	03ALL	0	20SP	G16_049	FROM->TO	POST ROCK (POSTROCK T1) 345/230/13.8KV TRANSFORMER CKT 1	600.0	600.0	0.32758	102.0037	AXTELL - G16-050-TAP 345.00 345KV CKT 1
FDNS	03ALL	0	17SP	G16_049	FROM->TO	POST ROCK (POSTROCK T1) 345/230/13.8KV TRANSFORMER CKT 1	600.0	600.0	0.32922	101.5552	AXTELL - G16-050-TAP 345.00 345KV CKT 1
FDNS	03ALL	0	17G	G16_049	FROM->TO	POST ROCK (POSTROCK T1) 345/230/13.8KV TRANSFORMER CKT 1	600.0	600.0	0.32776	101.1838	AXTELL - G16-050-TAP 345.00 345KV CKT 1
FDNS	03ALL	0	20SP	G16_049	FROM->TO	POST ROCK (POSTROCK T1) 345/230/13.8KV TRANSFORMER CKT 1	600.0	600.0	0.32758	100.5312	AXTELL - G16-050-TAP 345.00 345KV CKT 1
FDNS	03ALL	0	17SP	G16_049	FROM->TO	POST ROCK (POSTROCK T1) 345/230/13.8KV TRANSFORMER CKT 1	600.0	600.0	0.32922	100.0666	AXTELL - G16-050-TAP 345.00 345KV CKT 1
FDNS	03ALL	0	17G	G16_049	FROM->TO	POST ROCK (POSTROCK T1) 345/230/13.8KV TRANSFORMER CKT 1	600.0	600.0	0.32776	99.8	AXTELL - G16-050-TAP 345.00 345KV CKT 1
FDNS	03ALL	2	17G	G16_049	TO->FROM	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1	328.0	398.0	0.12999	99.7	BASE CASE
FDNS	03ALL	2	20SP	G16_049	TO->FROM	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1	328.0	398.0	0.12859	99.5	BASE CASE
FDNSLock-Blown up	09ALL	0	16WP	G16_050		Non-Converged Contingency	0.0	0.0	0.13348	-	FTTHOMPSON-GRANDPRAIRIE-TLINE-REACTOR-CKT1
FDNSLock-Blown up	09ALL	0	16WP	G16_050		Non-Converged Contingency	720.0	720.0	0.06674	-	FTTHOM2-LNX3345.00 - GRPRAR2-LNX3345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	0	17G	G16_050		Non-Converged Contingency	0.0	0.0	0.12329	-	FTTHOMPSON-GRANDPRAIRIE-TLINE-REACTOR-CKT1
FDNSLock-Blown up	09ALL	0	17G	G16_050		Non-Converged Contingency	720.0	720.0	0.06165	-	FT THOMPSON - FTTHOM2-LNX3345.00 345KV CKT Z
FDNSLock-Blown up	09ALL	0	17G	G16_050		Non-Converged Contingency	720.0	720.0	0.06165	-	FTTHOM2-LNX3345.00 - GRPRAR2-LNX3345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	0	17SP	G16_050		Non-Converged Contingency	0.0	0.0	0.12234	-	FTTHOMPSON-GRANDPRAIRIE-TLINE-REACTOR-CKT1
FDNSLock-Blown up	09ALL	0	17SP	G16_050		Non-Converged Contingency	720.0	720.0	0.06117	-	FTTHOM2-LNX3345.00 - GRPRAR2-LNX3345.00 345KV CKT 1
FDNS	16ALL	0	25SP	G16_052	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.09231	104.97	BASE CASE
FDNS	16ALL	0	17SP	G16_052	FROM->TO	ELLENDALE - OAKES 230KV CKT 1	319.0	351.0	0.04371	100.3304	BASE CASE
FDNS	16ALL	0	25SP	G16_053	TO->FROM	BUFFALO - JAMESTOWN 345KV CKT 1	705.0	705.0	0.09231	104.97	BASE CASE
FDNS	16ALL	0	17SP	G16_053	FROM->TO	ELLENDALE - OAKES 230KV CKT 1	319.0	351.0	0.04371	100.3304	BASE CASE
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	1022.0	1124.0	0.22837	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	1022.0	1124.0	0.22837	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	560.0	644.0	0.21270	-	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	560.0	644.0	0.21270	-	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	616.0	700.0	0.21270	-	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	616.0	700.0	0.21270	-	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	1792.0	1972.0	0.19703	-	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	956.0	956.0	0.19479	-	CIMARRON - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	1195.0	1195.0	0.19479	-	GRACEMONT - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	1792.0	1972.0	0.18988	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	1792.0	1972.0	0.18988	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	1792.0	1792.0	0.18501	-	BORDER 7345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	560.0	560.0	0.18273	-	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	1330.0	1940.0	0.17039	-	CHISHOLM7 345.00 - G16-037-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	1330.0	1940.0	0.17039	-	G16-037-TAP 345.00 - GRACEMONT 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	987.2	1082.8	0.14844	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	987.2	1082.8	0.14844	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	987.16	1082.77	0.12833	-	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	956.09	1051.7	0.12833	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	956.09	1051.7	0.12833	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	0.0	0.0	0.10829	-	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	329.05	360.92	0.09655	-	AMARILLO SOUTH INTERCHANGE - G15031_T 230.00 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	557.0	557.0	0.09428	-	NEWHART 230 - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	1420.0	1775.0	0.09072	-	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	1420.0	1775.0	0.09072	-	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	557.0	557.0	0.08928	-	BUSHLAND INTERCHANGE - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	557.0	557.0	0.08928	-	BUSHLAND INTERCHANGE - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	0.0	0.0	0.08392	-	P12:230:AEPW-SPS:SWEETWT6:WHEELER 6
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	329.05	360.92	0.08212	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	329.05	360.92	0.08212	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	329.0	360.9	0.07524	-	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	329.0	360.9	0.07524	-	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	439.0	439.0	0.06633	-	CHISHOLM6 230.00 - ELK CITY 230KV 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	450.0	450.0	0.06633	-	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	450.0	450.0	0.06633	-	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	1793.0	1793.0	0.06322	-	G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	1716.0	1793.0	0.06322	-	G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	556.92	556.92	0.05380	-	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	556.92	556.92	0.05380	-	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	427.05	427.05	0.04649	-	JONES STATION - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	427.05	427.05	0.04649	-	JONES STATION - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	556.53	611.5	0.04632	-	NEWHART 230 - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	329.05	360.92	0.04476	-	MOORE COUNTY INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	329.05	360.92	0.04476	-	MOORE COUNTY INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	439.0	439.0	0.04196	-	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	557.0	557.0	0.04196	-	STATELINE INTERCHANGE - STLN-DEMARC6 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	500.0	723.0	0.04196	-	STLN-DEMARC6 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	329.05	360.92	0.03711	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	329.05	360.92	0.03711	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	557.0	557.0	0.03585	-	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_056		Non-Converged Contingency	557.0	557.0	0.03585	-	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	478.0	502.0	0.71196	-	CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	478.0	502.0	0.71196	-	CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	497.0	547.0	0.29805	-	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	956.0	1042.0	0.22290	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	956.0	1042.0	0.22290	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	560.0	644.0	0.20788	-	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	560.0	644.0	0.20788	-	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	560.0	644.0	0.20788	-	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	560.0	644.0	0.20788	-	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	1792.0	1972.0	0.19286	-	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	956.0	956.0	0.19075	-	CIMARRON - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	1195.0	1195.0	0.19075	-	GRACEMONT - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	1792.0	1972.0	0.18534	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	1792.0	1972.0	0.18534	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	1792.0	1792.0	0.17894	-	BORDER 7345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	560.0	560.0	0.17782	-	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	1330.0	1940.0	0.16595	-	CHISHOLM7 345.00 - G16-037-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	1330.0	1940.0	0.16595	-	G16-037-TAP 345.00 - GRACEMONT 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	956.1	1051.7	0.13914	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	956.1	1051.7	0.13914	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	1398.0	1549.0	0.13275	-	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	1493.0	1493.0	0.13275	-	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	956.09	1051.7	0.11854	-	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	956.09	1051.7	0.11854	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	956.09	1051.7	0.11854	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	0.0	0.0	0.10238	-	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	318.7	350.57	0.09642	-	AMARILLO SOUTH INTERCHANGE - G15031_T 230.00 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	318.7	350.57	0.09642	-	G15031_T 230.00 - SWISHER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	1792.0	1792.0	0.09587	-	BORDER 7345.00 - CHISHOLM7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	1792.0	1792.0	0.09587	-	BORDER 7345.00 - CHISHOLM7 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	478.0	502.0	0.09299	-	NEWHART 230 - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	1420.0	1775.0	0.09002	-	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	1420.0	1775.0	0.09002	-	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	478.0	502.0	0.08750	-	BUSHLAND INTERCHANGE - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	478.0	502.0	0.08750	-	BUSHLAND INTERCHANGE - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	318.7	350.57	0.08017	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	318.7	350.57	0.08017	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	0.0	0.0	0.07659	-	P12:230:AEPW-SPS:SWEETWT6:WHEELER 6
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	318.7	350.6	0.07375	-	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	318.7	350.6	0.07375	-	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	1532.0	1793.0	0.06984	-	G1524G1525 345.00 - THISTLE7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	1532.0	1793.0	0.06984	-	G1524G1525 345.00 - THISTLE7 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	439.0	439.0	0.06408	-	CHISHOLM6 230.00 - ELK CITY 230KV 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	450.0	450.0	0.06408	-	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	450.0	450.0	0.06408	-	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	1793.0	1793.0	0.05990	-	G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	1716.0	1793.0	0.05990	-	G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	717.1	717.1	0.05632	-	HOLCOMB - SETAB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	717.1	717.1	0.05632	-	HOLCOMB - SETAB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	501.95	501.95	0.05034	-	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	501.95	501.95	0.05034	-	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	1413.0	1517.0	0.04774	-	BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	478.05	547.36	0.04425	-	NEWHART 230 - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	318.7	350.57	0.04215	-	MOORE COUNTY INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	318.7	350.57	0.04215	-	MOORE COUNTY INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	497.6	547.4	0.04083	-	JONES STATION - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	497.6	547.4	0.04083	-	JONES STATION - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	439.0	439.0	0.03830	-	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	502.0	502.0	0.03830	-	STATELINE INTERCHANGE - STLN-DEMARC6 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	500.0	723.0	0.03830	-	STLN-DEMARC6 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	318.7	350.57	0.03415	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	318.7	350.57	0.03415	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	502.0	502.0	0.03276	-	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_056		Non-Converged Contingency	502.0	502.0	0.03276	-	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17SP	G16_056		Non-Converged Contingency	956.0	1042.0	0.22263	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17SP	G16_056		Non-Converged Contingency	1792.0	1972.0	0.18418	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17SP	G16_056		Non-Converged Contingency	1792.0	1972.0	0.18418	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	478.0	502.0	0.46644	-	CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	478.0	502.0	0.46644	-	CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	478.0	478.0	0.39031	-	CARLISLE INTERCHANGE - WOLFFORTH INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	497.0	547.0	0.24947	-	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	0.0	0.0	0.20141	-	P12:345:SPS:J07.1.FINN.HITCH
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	956.0	1042.0	0.18400	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	956.0	1042.0	0.18400	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	956.0	1042.0	0.18400	-	OKLAUNION 345KV SWITCHED SHUNT
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	560.0	644.0	0.17395	-	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	560.0	644.0	0.17395	-	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	560.0	644.0	0.17395	-	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	560.0	644.0	0.17395	-	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	1792.0	1972.0	0.16742	-	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	1792.0	1792.0	0.16540	-	BORDER 7345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	956.0	956.0	0.16408	-	CIMARRON - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	1195.0	1195.0	0.16408	-	GRACEMONT - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	1792.0	1972.0	0.15826	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	1792.0	1972.0	0.15826	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	560.0	560.0	0.14910	-	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	497.6	547.4	0.13536	-	JONES STATION - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	497.6	547.4	0.13536	-	JONES STATION - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	1584.0	2098.0	0.12991	-	CHISHOLM7 345.00 - G16-037-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	1584.0	2098.0	0.12991	-	G16-037-TAP 345.00 - GRACEMONT 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	956.1	1051.7	0.12319	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	956.1	1051.7	0.12319	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	956.09	1051.7	0.10679	-	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	956.09	1051.7	0.10679	-	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	1398.0	1549.0	0.10611	-	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	1493.0	1493.0	0.10611	-	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	497.0	547.0	0.10037	-	CRAWFISH_DR2230.00 - SWISHER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	956.09	1051.7	0.09462	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	956.09	1051.7	0.09462	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	956.09	1051.7	0.09462	-	FINNEY SWITCHING STATION - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	956.09	1051.7	0.09462	-	FINNEY SWITCHING STATION - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	0.0	0.0	0.08916	-	P12:138:WFEC:MSL03
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	478.0	502.0	0.08569	-	AMARILLO SOUTH INTERCHANGE - G15031_T 230.00 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	478.0	502.0	0.08569	-	G15031_T 230.00 - SWISHER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	478.0	502.0	0.08389	-	NEWHART 230 - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	0.0	0.0	0.08178	-	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	478.0	502.0	0.07943	-	BUSHLAND INTERCHANGE - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	478.0	502.0	0.07943	-	BUSHLAND INTERCHANGE - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	478.0	502.0	0.07943	-	BUSHLAND INTERCHANGE 230KV SWITCHED SHUNT
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	1792.0	1792.0	0.07556	-	BORDER 7345.00 - CHISHOLM7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	1792.0	1792.0	0.07556	-	BORDER 7345.00 - CHISHOLM7 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	318.7	350.57	0.07282	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	318.7	350.57	0.07282	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	1561.0	1793.0	0.07104	-	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	1561.0	1793.0	0.07104	-	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	1561.0	1793.0	0.07104	-	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	1561.0	1793.0	0.07104	-	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	318.7	350.6	0.06888	-	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	318.7	350.6	0.06888	-	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	560.0	560.0	0.06159	-	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	560.0	560.0	0.06159	-	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	560.0	560.0	0.06159	-	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	0.0	0.0	0.06057	-	P12:230:AEPW-SPS:SWEETWT6:WHEELER 6
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	1420.0	1775.0	0.05523	-	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	1420.0	1775.0	0.05523	-	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	1420.0	1775.0	0.05523	-	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	1420.0	1775.0	0.05523	-	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	1532.0	1793.0	0.05399	-	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	0.0	0.0	0.05242	-	P12:115:SPS:W40.1.WCANYON.DFSMTH
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	0.0	0.0	0.05213	-	P12:115:SPS:T66.1.RNDALL.HAPPY
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	0.0	0.0	0.05213	-	P12:115:SPS:T67.1.HAPPY.KRESS
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	1792.0	1792.0	0.05182	-	BVRCNTY7 345.00 - OPTIMA 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	1792.0	1792.0	0.05182	-	BVRCNTY7 345.00 - OPTIMA 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	1793.0	1793.0	0.05182	-	G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	1716.0	1793.0	0.05182	-	G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	1793.0	1793.0	0.05182	-	G16-003-TAP 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	1716.0	1793.0	0.05182	-	G16-003-TAP 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	439.0	439.0	0.05149	-	CHISHOLM6 230.00 - ELK CITY 230KV 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	450.0	450.0	0.05149	-	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	450.0	450.0	0.05149	-	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	785.0	785.0	0.05087	-	MINGO - RED WILLOW 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	785.0	785.0	0.05087	-	MINGO - RED WILLOW 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	762.5	762.5	0.04996	-	MINGO - SETAB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	762.5	762.5	0.04996	-	MINGO - SETAB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	717.1	717.1	0.04968	-	HOLCOMB - SETAB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	717.1	717.1	0.04968	-	HOLCOMB - SETAB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	1195.0	1195.0	0.04940	-	JOHNSON COUNTY - SUNNYSIDE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	0.0	0.0	0.04844	-	P12:138:WFEC:MSL14
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	1195.0	1195.0	0.04803	-	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	478.05	501.55	0.04525	-	AMARILLO SOUTH INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	478.05	501.55	0.04525	-	AMARILLO SOUTH INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	501.95	501.95	0.04455	-	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	501.95	501.95	0.04455	-	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	0.0	0.0	0.04448	-	P12:115:SPS:T59.1.CARGIL.CURRY
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	0.0	0.0	0.04374	-	917X
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	1505.0	1793.0	0.04362	-	G13-010T 345.00 - POST ROCK 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	1505.0	1793.0	0.04362	-	G16-049-TAP 345.00 - SPEARVILLE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	478.05	547.36	0.04340	-	NEWHART 230 - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	1504.0	1792.0	0.04259	-	AXTELL - G16-050-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	1504.0	1792.0	0.04259	-	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	1141.0	1195.0	0.03879	-	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	1141.0	1195.0	0.03879	-	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	318.7	350.57	0.03741	-	MOORE COUNTY INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	318.7	350.57	0.03741	-	MOORE COUNTY INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	726.6	726.6	0.03655	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	726.6	726.6	0.03655	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	1413.0	1517.0	0.03655	-	BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	1413.0	1517.0	0.03655	-	BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	0.0	0.0	0.03382	-	P12:115:SPS:T04.1.DFSMTH.CASTRO
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	0.0	0.0	0.03085	-	P12:138:AEPW:REDROCKRD4:WTH_JCT4
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	421.0	439.0	0.03028	-	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	348.58	381.24	0.03028	-	STATELINE INTERCHANGE - STLN-DEMARC6 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_056		Non-Converged Contingency	500.0	723.0	0.03028	-	STLN-DEMARC6 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20SP	G16_056		Non-Converged Contingency	956.0	1042.0	0.22028	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_056		Non-Converged Contingency	1022.0	1124.0	0.21513	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_056		Non-Converged Contingency	1792.0	1972.0	0.20017	-	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_056		Non-Converged Contingency	1792.0	1792.0	0.18762	-	BORDER 7345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_056		Non-Converged Contingency	1792.0	1972.0	0.18185	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_056		Non-Converged Contingency	1792.0	1972.0	0.18185	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20WP	G16_056		Non-Converged Contingency	1195.0	1195.0	0.17662	-	GRACEMONT - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_056		Non-Converged Contingency	1584.0	2098.0	0.15478	-	CHISHOLM7 345.00 - G16-037-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_056		Non-Converged Contingency	1584.0	2098.0	0.15478	-	G16-037-TAP 345.00 - GRACEMONT 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_056		Non-Converged Contingency	987.2	1082.8	0.15028	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_056		Non-Converged Contingency	987.16	1082.77	0.12744	-	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_056		Non-Converged Contingency	956.09	1051.7	0.11328	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_056		Non-Converged Contingency	987.16	1082.77	0.11328	-	FINNEY SWITCHING STATION - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_056		Non-Converged Contingency	557.0	557.0	0.09543	-	NEWHART 230 - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_056		Non-Converged Contingency	478.0	502.0	0.09403	-	AMARILLO SOUTH INTERCHANGE - G15031_T 230.00 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_056		Non-Converged Contingency	557.0	557.0	0.09398	-	BUSHLAND INTERCHANGE - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_056		Non-Converged Contingency	329.05	360.92	0.08612	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_056		Non-Converged Contingency	329.0	360.9	0.08220	-	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_056		Non-Converged Contingency	421.0	439.0	0.04125	-	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_056		Non-Converged Contingency	1792.0	1792.0	0.03880	-	TUCO INTERCHANGE - YOAKUM_345 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_056		Non-Converged Contingency	329.05	360.92	0.03636	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	2	16WP	G16_056		Non-Converged Contingency	1022.0	1124.0	0.22829	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20L	G16_056		Non-Converged Contingency	956.0	1042.0	0.18449	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20L	G16_056		Non-Converged Contingency	956.0	1042.0	0.18449	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20L	G16_056		Non-Converged Contingency	1792.0	1972.0	0.15927	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20L	G16_056		Non-Converged Contingency	1792.0	1972.0	0.15927	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	2	20L	G16_056		Non-Converged Contingency	956.1	1051.7	0.12399	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20L	G16_056		Non-Converged Contingency	956.1	1051.7	0.12399	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20WP	G16_056		Non-Converged Contingency	1022.0	1124.0	0.21504	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20WP	G16_056		Non-Converged Contingency	1022.0	1124.0	0.21504	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20WP	G16_056		Non-Converged Contingency	1792.0	1972.0	0.18253	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20WP	G16_056		Non-Converged Contingency	1792.0	1972.0	0.18253	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	3	17G	G16_056		Non-Converged Contingency	956.0	1042.0	0.22298	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	3	20L	G16_056		Non-Converged Contingency	956.0	1042.0	0.18479	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	3	20L	G16_056		Non-Converged Contingency	956.0	1042.0	0.18479	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	3	20L	G16_056		Non-Converged Contingency	1792.0	1972.0	0.15936	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	3	20L	G16_056		Non-Converged Contingency	1792.0	1972.0	0.15936	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	3	20WP	G16_056		Non-Converged Contingency	1022.0	1124.0	0.21574	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	3	20WP	G16_056		Non-Converged Contingency	1022.0	1124.0	0.21574	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	0	20WP	G16_056	FROM->TO	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1	329.05	360.92	0.08612	101.1848	BASE CASE
FDNS	00	0	25SP	G16_056	FROM->TO	CARLISLE INTERCHANGE (WH XHS70711) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.23968	108.1977	CARLISLE INTERCHANGE - WOLFFORTH INTERCHANGE 230KV CKT 1
FDNS	00	0	25SP	G16_056	FROM->TO	CARLISLE INTERCHANGE (WH XHS70711) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.23968	104.5637	CARLISLE INTERCHANGE - WOLFFORTH INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20WP	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23956	119.3308	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	0	16WP	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.26190	118.0707	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	0	20WP	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23956	114.0226	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	0	16WP	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.26190	113.137	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	0	17SP	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25817	111.5106	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	0	17SP	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25817	106.2194	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	0	20SP	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24615	102.8346	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	0	17SP	G16_056	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.33666	160.0401	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	0	20SP	G16_056	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.33686	159.952	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	0	20SP	G16_056	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.33686	154.1703	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	0	17SP	G16_056	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.33666	153.9968	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	0	20WP	G16_056	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.24107	103.5915	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	20WP	G16_056	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.24107	103.5915	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	20WP	G16_056	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.24107	103.5915	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	0	20WP	G16_056	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.24107	103.5915	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	0	20WP	G16_056	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.24107	99	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	20WP	G16_056	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.24107	99	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	20WP	G16_056	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.24107	99	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	0	20WP	G16_056	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.24107	99	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	0	20SP	G16_056	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.43580	187.3884	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	0	17SP	G16_056	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.43143	185.0941	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	0	20WP	G16_056	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	552.0	608.0	0.34652	100.1549	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	20WP	G16_056	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	552.0	608.0	0.34652	100.1549	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	20WP	G16_056	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	552.0	608.0	0.34652	100.1549	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	0	20WP	G16_056	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	552.0	608.0	0.34652	100.1549	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	0	17SP	G16_056	TO->FROM	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1	318.7	350.6	0.08712	114.5202	BASE CASE
FDNS	06ALL	0	20SP	G16_056	TO->FROM	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1	318.7	350.6	0.08461	108.9563	BASE CASE
FDNS	06ALL	0	17G	G16_056	TO->FROM	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1	318.7	350.57	0.03415	100.3944	BASE CASE
FDNS	06ALL	2	17G	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25671	116.7163	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	2	16WP	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.26224	115.1362	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	2	20WP	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23996	114.0499	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	2	17G	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25671	111.498	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	2	20L	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.21701	110.6646	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	06ALL	2	17SP	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25821	110.352	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	2	16WP	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.26224	109.7596	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	2	20WP	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23996	108.768	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	2	20L	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.21701	105.663	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	2	17SP	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25821	104.9863	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	2	20SP	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24617	101.7908	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	2	16WP	G16_056	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.27566	111.1535	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	16WP	G16_056	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.27566	111.1535	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	16WP	G16_056	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.27566	111.1535	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	16WP	G16_056	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.27566	111.1535	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	16WP	G16_056	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.27566	109.6686	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	16WP	G16_056	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.27566	109.6686	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	16WP	G16_056	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.27566	109.6686	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	16WP	G16_056	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.27566	109.6686	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17G	G16_056	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.26873	105.2982	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17G	G16_056	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.26873	105.2982	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17G	G16_056	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.26873	105.2982	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17G	G16_056	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.26873	105.2982	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17G	G16_056	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.26873	103.5752	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17G	G16_056	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.26873	103.5752	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17G	G16_056	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.26873	103.5752	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17G	G16_056	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.26873	103.5752	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	20WP	G16_056	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.23961	99.2	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	20WP	G16_056	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.23961	99.2	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	20WP	G16_056	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.23961	99.2	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	20WP	G16_056	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.23961	99.2	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	20L	G16_056	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.32422	100.9609	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	20L	G16_056	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.32422	100.9609	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	20L	G16_056	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.32422	100.9609	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	20L	G16_056	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.32422	100.9609	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17G	G16_056	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.39146	100.5203	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17G	G16_056	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.39146	100.5203	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17G	G16_056	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.39146	100.5203	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17G	G16_056	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.39146	100.5203	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17SP	G16_056	TO->FROM	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1	318.7	350.6	0.08713	111.1037	BASE CASE
FDNS	06ALL	2	20SP	G16_056	TO->FROM	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1	318.7	350.6	0.08457	105.6192	BASE CASE
FDNS	06ALL	2	16WP	G16_056	FROM->TO	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	560.0	644.0	0.32048	101.527	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	16WP	G16_056	FROM->TO	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	560.0	644.0	0.32048	101.527	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	16WP	G16_056	FROM->TO	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	560.0	644.0	0.32048	99.4	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	16WP	G16_056	FROM->TO	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	560.0	644.0	0.32048	99.4	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	3	17G	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25702	118.6959	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	3	16WP	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.26283	117.0897	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	3	20WP	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24058	115.2141	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	3	17G	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25702	113.4916	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	3	20L	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.21757	111.7529	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	3	17SP	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.26037	111.7525	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	3	16WP	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.26283	111.7148	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	3	20WP	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24058	110.0424	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	3	20L	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.21757	106.7271	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	3	17SP	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.26037	106.4339	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	3	20SP	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24664	102.7473	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	4	17G	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24516	116.0714	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	4	16WP	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25085	114.334	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	4	20WP	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.22783	112.0627	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	4	17G	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24516	110.887	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	4	16WP	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25085	109.0011	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	4	20L	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.20707	108.4948	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	4	17SP	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24808	108.3281	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	4	20WP	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.22783	106.6907	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	4	20L	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.20707	103.5292	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	4	17SP	G16_056	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24808	102.9885	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	01ALL	0	16WP	G16_057	FROM->TO	CIMARRON - DRAPER LAKE 345KV CKT 1	717.0	717.0	0.14159	104.877	BASE CASE
FDNS	08ALL	0	20L	G16_060	FROM->TO	CANEYRV7 345.00 - NEOSHO 345KV CKT 1	766.0	923.0	0.10061	99	BASE CASE
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.84973	167.0358	MIDLTNT4 138.00 - PECKHAM TAP 138KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.84973	165.1735	NEWKIRK4 - PECKHAM TAP 138KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.84973	163.401	NEWKIRK4 - NWKRKAT4 138.00 138KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.84973	160.1141	P12:138:OKGE:3TERM7
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.84973	160.0799	KILDARE4 - NWKRKAT4 138.00 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.84936	157.2293	MIDLTNT4 138.00 - PECKHAM TAP 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.84936	155.7347	NEWKIRK4 - PECKHAM TAP 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.84881	154.5247	MIDLTNT4 138.00 - PECKHAM TAP 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.84936	153.3463	NEWKIRK4 - NWKRKAT4 138.00 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.84881	152.9599	NEWKIRK4 - PECKHAM TAP 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.84937	150.7689	P12:138:OKGE:3TERM7
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.84936	150.7519	KILDARE4 - NWKRKAT4 138.00 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.84881	150.0335	NEWKIRK4 - NWKRKAT4 138.00 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.84882	146.721	P12:138:OKGE:3TERM7
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.84881	146.7104	KILDARE4 - NWKRKAT4 138.00 138KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69379	142.5369	G15052_T 345.00 - ROSE HILL 345KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69797	141.5306	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69246	141.5231	G15052_T 345.00 - ROSE HILL 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.65163	140.5354	MIDLTNT4 138.00 - PECKHAM TAP 138KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.65163	139.8877	NEWKIRK4 - PECKHAM TAP 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69667	139.8574	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.65163	138.7971	NEWKIRK4 - NWKRKAT4 138.00 138KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.73591	138.7115	KILDARE4 - WHITE EAGLE 138KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.65180	138.147	P12:138:OKGE:3TERM7
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.65163	137.6728	KILDARE4 - NWKRKAT4 138.00 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69470	136.4118	G15052_T 345.00 - ROSE HILL 345KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.73527	134.1502	KILDARE4 - WHITE EAGLE 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.73588	133.6337	SUMNER 4 - TIMBJCT4 138KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.73683	133.5723	SUMNER 4 - TIMBJCT4 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69882	132.6064	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69379	132.0522	G15052_T 345.00 - OPENSKY7 345.00 345KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69246	131.7553	G15052_T 345.00 - OPENSKY7 345.00 345KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.71234	131.3426	CRESWELL - SUMNER COUNTY NO. 4 ROME 69KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.71234	131.013	CITY OF WELLINGTON - SUMNER COUNTY NO. 4 ROME 69KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.71234	130.8317	P12:069:WERE:BELL-CRSW_69::
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.73563	130.3979	TIMBER JUNCTION - UDALL 69KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.73563	130.2298	P12:069:WERE:TIMJ-WEAV_69::
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.71148	129.7614	CRESWELL - SUMNER COUNTY NO. 4 ROME 69KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.71148	129.4636	CITY OF WELLINGTON - SUMNER COUNTY NO. 4 ROME 69KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.73563	129.4111	RICHLAND - UDALL 69KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.71109	129.3433	P12:069:WERE:BELL-CRSW_69::
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.73591	129.2997	KILDARE4 - WHITE EAGLE 138KV CKT 1
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.65198	129.0573	MIDLTNT4 138.00 - PECKHAM TAP 138KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.73683	129.0083	TIMBJCT4 (TIMJ TX-1) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70970	128.8868	G15-015T 138.00 - MDFRDTP4 138.00 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.73456	128.5162	TIMBER JUNCTION - UDALL 69KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.73456	128.2685	P12:069:WERE:TIMJ-WEAV_69::
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.73563	128.11	RICHLAND - ROSE HILL JUNCTION 69KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.71109	128.0791	CITY OF WELLINGTON - SUMNER COUNTY NO. 3 MILLER 69KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.71234	128.0659	CITY OF WELLINGTON - SUMNER COUNTY NO. 3 MILLER 69KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.73750	127.7896	SUMNER 4 - TIMBJCT4 138KV CKT 1
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.65198	127.5939	NEWKIRK4 - PECKHAM TAP 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.73456	127.2602	RICHLAND - UDALL 69KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.65131	127.0612	MIDLTNT4 138.00 - PECKHAM TAP 138KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70970	126.8657	MDFRDTP4 138.00 - RENFROW4 138.00 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70864	126.759	G15-015T 138.00 - MDFRDTP4 138.00 138KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.73563	126.5895	ROSE HILL JUNCTION - WEAVER 69KV CKT 1
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.65198	126.5167	NEWKIRK4 - NWKRKAT4 138.00 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69470	126.1923	G15052_T 345.00 - OPENSKY7 345.00 345KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.73456	125.9087	RICHLAND - ROSE HILL JUNCTION 69KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.65131	125.8072	NEWKIRK4 - PECKHAM TAP 138KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.71234	125.6424	BELL - SUMNER COUNTY NO. 3 MILLER 69KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70157	125.1943	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	08ALL	0	25SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.65128	125.0641	MIDLTNT4 138.00 - PECKHAM TAP 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70864	124.8838	MDFRDTP4 138.00 - RENFROW4 138.00 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.71109	124.5394	BELL - SUMNER COUNTY NO. 3 MILLER 69KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70148	124.3562	P12:138:OKGE:3TERM2
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70146	124.3139	MORISNT4 138.00 - STILLWATER 138KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.71234	124.2577	BELL - PECK 69KV CKT 1
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.65209	124.1544	P12:138:OKGE:3TERM7
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.71234	124.1332	P12:069:WERE:BELL-MURR_69::
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.73456	124.0903	ROSE HILL JUNCTION - WEAVER 69KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70306	124.0394	P12:138:AEPW-OGE:SHIDLER4:OSAGE 4
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70306	123.9807	OSAGE - WEBB CITY TAP 138KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.65131	123.9043	NEWKIRK4 - NWKRKAT4 138.00 138KV CKT 1
FDNS	08ALL	0	25SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.65128	123.8981	NEWKIRK4 - PECKHAM TAP 138KV CKT 1
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.65198	123.7751	KILDARE4 - NWKRKAT4 138.00 138KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70153	123.4738	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70153	123.4738	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70061	123.3818	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70157	123.3315	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.73623	123.3166	TIMBER JUNCTION - UDALL 69KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70137	123.256	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.73750	123.0327	TIMBJCT4 (TIMJ TX-1) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.71280	123.0252	CITY OF WELLINGTON - SUMNER COUNTY NO. 3 MILLER 69KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.71109	122.9986	BELL - PECK 69KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.73623	122.9578	P12:069:WERE:TIMJ-WEAV_69::
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70306	122.9539	FAIRFAX TAP - SHIDLER 138KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70306	122.9537	FAIRFAX TAP - WEBB CITY TAP 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.71109	122.8708	P12:069:WERE:BELL-MURR_69::
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.57869	122.8218	G15052_T 345.00 - ROSE HILL 345KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.71234	122.6976	GILL ENERGY CENTER WEST - PECK 69KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.68730	122.6934	EL PASO - ROSE HILL 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70049	122.5622	P12:138:OKGE:3TERM2
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70047	122.5082	MORISNT4 138.00 - STILLWATER 138KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70137	122.3422	917X
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70206	122.3319	P12:138:AEPW-OGE:SHIDLER4:OSAGE 4
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70206	122.2805	OSAGE - WEBB CITY TAP 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70054	122.2162	CLEVELAND - TULSA NORTH 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70054	122.2162	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70137	122.1183	G15066_T 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	0	25SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.65128	122.0033	NEWKIRK4 - NWKRKAT4 138.00 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70038	121.8683	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70141	121.7609	SHIDLER - WEST PAWHUSKA 138KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69379	121.7152	OPENSKY7 345.00 - RANCHRD7 345.00 345KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70141	121.7062	PAWHUSKA TAP - WEST PAWHUSKA 138KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70136	121.6831	4REMNGTON 138.00 - FAIRFAX 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70061	121.6535	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.68634	121.5935	EL PASO - ROSE HILL 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69246	121.5741	OPENSKY7 345.00 - RANCHRD7 345.00 345KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.65142	121.5298	P12:138:OKGE:3TERM7
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70141	121.4948	DOMES - PAWHUSKA TAP 138KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70141	121.4857	P12:138:AEPW:MOUNDRD4:SHIDLER4
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70141	121.3874	DOMES - MOUND ROAD 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.73623	121.3632	RICHLAND - UDALL 69KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.71109	121.2723	GILL ENERGY CENTER WEST - PECK 69KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70206	121.2673	FAIRFAX TAP - SHIDLER 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70206	121.2671	FAIRFAX TAP - WEBB CITY TAP 138KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.65131	121.2194	KILDARE4 - NWKRKAT4 138.00 138KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70109	121.1636	RENFROW4 138.00 - RENFROW4 138.00 138KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70109	121.1346	RENFROW4 138.00 - WAKITAS4 138.00 138KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70107	121.0527	MORISNT4 138.00 - SOONER 138KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70099	120.9814	STILLWATER - UNVRSTY4 138.00 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70038	120.9581	917X
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70099	120.9297	MCELROY - UNVRSTY4 138.00 138KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70102	120.9023	P12:138:WFEC:MSL15
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70102	120.9022	WAKITA4 138.00 - WAKITAS4 138.00 138KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70015	120.8585	DELAWARE - NORTHEAST STATION 345KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70015	120.8585	DELAWARE - NORTHEAST STATION 345KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70079	120.8085	P12:069:WERE:ARKA-OAK_69::
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70038	120.769	G15066_T 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70099	120.7428	KINZE - MCELROY 138KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70099	120.7272	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70099	120.7161	P12:138:OKGE:3TERM47
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70102	120.7134	SANDY_CN_138138.00 - WAKITA4 138.00 138KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70099	120.6811	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.71334	120.5877	CRESWELL - SUMNER COUNTY NO. 4 ROME 69KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.71280	120.4592	P12:069:WERE:BELL-CRSW_69::
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70041	120.404	SHIDLER - WEST PAWHUSKA 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70041	120.3636	PAWHUSKA TAP - WEST PAWHUSKA 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.71334	120.1627	CITY OF WELLINGTON - SUMNER COUNTY NO. 4 ROME 69KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70041	120.0939	DOMES - PAWHUSKA TAP 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70041	119.9786	DOMES - MOUND ROAD 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70041	119.966	P12:138:AEPW:MOUNDRD4:SHIDLER4
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70039	119.8272	4REMNGTON 138.00 - FAIRFAX 138KV CKT 1
FDNS	08ALL	0	25SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.65139	119.8091	P12:138:OKGE:3TERM7
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69667	119.7682	RENFROW7 345.00 - VIOLA 7 345.00 345KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70011	119.6948	RENFROW4 138.00 - RENFROW4 138.00 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70011	119.5709	RENFROW4 138.00 - WAKITAS4 138.00 138KV CKT 1
FDNS	08ALL	0	25SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.65128	119.5215	KILDARE4 - NWKRKAT4 138.00 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70008	119.4509	MORISNT4 138.00 - SOONER 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.73623	119.3787	RICHLAND - ROSE HILL JUNCTION 69KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70279	119.3405	SOONER (SOONER5) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69909	119.3274	DELAWARE - NORTHEAST STATION 345KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69909	119.3274	DELAWARE - NORTHEAST STATION 345KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70005	119.3169	P12:138:WFEC:MSL15
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70005	119.3167	WAKITA4 138.00 - WAKITAS4 138.00 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70000	119.2795	STILLWATER - UNVRSTY4 138.00 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70000	119.2337	MCELROY - UNVRSTY4 138.00 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69982	119.1541	P12:069:WERE:ARKA-CRSW_69::
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.71037	119.1378	G15-015T 138.00 - MDFRDTP4 138.00 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70005	119.1336	SANDY_CN_138138.00 - WAKITA4 138.00 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69982	119.0805	P12:069:WERE:ARKA-OAK_69::
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70002	119.0577	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70002	119.0255	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70130	119.0127	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.71280	118.8463	BELL - SUMNER COUNTY NO. 3 MILLER 69KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70073	118.7439	BASE CASE
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.57473	118.7002	G15052_T 345.00 - ROSE HILL 345KV CKT 1
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.57850	118.3941	G15052_T 345.00 - ROSE HILL 345KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.60208	118.1254	KILDARE4 - WHITE EAGLE 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69975	117.1711	BASE CASE
FDNS	08ALL	0	25SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.57872	116.8486	G15052_T 345.00 - ROSE HILL 345KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70438	116.8247	DMNCRKT4 - MILLER 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.73623	116.8063	ROSE HILL JUNCTION - WEAVER 69KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70049	116.772	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70438	116.7068	MILLER - SOONER 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.71037	116.6869	MDFRDTP4 138.00 - RENFROW4 138.00 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.71280	116.6867	BELL - PECK 69KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70208	116.5957	P12:138:OKGE:3TERM2

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70217	116.589	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70205	116.5292	MORISNT4 138.00 - STILLWATER 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.71280	116.5074	P12:069:WERE:BELL-MURR_69::
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70323	116.4934	OSAGE - SOONER PUMP TAP 138KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70022	116.4316	BLACKBERRY - NEOSHO 345KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70323	116.4175	SOONER - SOONER PUMP TAP 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70362	116.2239	P12:138:AEPW-OGE:SHIDLER4:OSAGE 4
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70362	116.1711	OSAGE - WEBB CITY TAP 138KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58487	116.1338	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69470	116.0268	OPENSKY7 345.00 - RANCHRD7 345.00 345KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69837	116.0207	BOEING - STEARMAN 138KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.71119	115.877	WEAVER (WEAV TX-2) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69990	115.5698	SUMNER 4 - VIOLA 4 138.00 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70192	115.4434	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70073	115.4083	4OSAGEWIND 138.00 - 4REMNGTON 138.00 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70208	115.3884	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70208	115.3884	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69741	115.2578	BOEING - CANAL 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70362	115.1374	FAIRFAX TAP - SHIDLER 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70362	115.1372	FAIRFAX TAP - WEBB CITY TAP 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.68801	115.0478	EL PASO - ROSE HILL 138KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69751	114.9676	LATHAMS7 345.00 - ROSE HILL 345KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.71432	114.9322	CHIKASKIA - KILDARE4 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69925	114.9153	BLACKBERRY - NEOSHO 345KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70217	114.7352	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58835	114.7256	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70349	114.6215	DMNCRKT4 - WHITE EAGLE 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70192	114.4925	917X
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70349	114.4654	DMNCRKT4 - MILLER 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70349	114.353	MILLER - SOONER 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69741	114.332	BOEING - STEARMAN 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70130	114.3099	GEN532722 1-EVANS ENERGY CENTER UNIT 2
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70192	114.2848	G15066_T 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70233	114.2161	OSAGE - SOONER PUMP TAP 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.71280	114.1868	GILL ENERGY CENTER WEST - PECK 69KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70233	114.1438	SOONER - SOONER PUMP TAP 138KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69291	114.0208	59TH ST - GILL ENERGY CENTER SOUTH 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70198	113.9336	SHIDLER - WEST PAWHUSKA 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70198	113.8743	PAWHUSKA TAP - WEST PAWHUSKA 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69975	113.8717	4OSAGEWIND 138.00 - 4REMNGTON 138.00 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69975	113.871	4OSAGEWIND 138.00 138/34.5KV TRANSFORMER CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70130	113.7289	GEN532651 1-JEFFREY ENERGY CENTER UNIT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70130	113.7212	GEN532652 1-JEFFREY ENERGY CENTER UNIT 2
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70130	113.7208	GEN532653 1-JEFFREY ENERGY CENTER UNIT 3
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69291	113.7178	59TH ST - EL PASO 138KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69291	113.6757	P12:138:WERE:ELPA-MURR_138::
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70137	113.5832	P12:069:WERE:ARKA-CRSW_69::
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70130	113.5465	GEN542955 1-LACYGNE UNIT #1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70198	113.5323	DOMES - PAWHUSKA TAP 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69656	113.4765	LATHAMS7 345.00 - ROSE HILL 345KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70130	113.4676	GEN542962 2-IATAN UNIT #2
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58825	113.4501	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70194	113.438	4REMNGTON 138.00 - FAIRFAX 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.71326	113.3762	CHIKASKIA - KILDARE4 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70198	113.3705	P12:138:AEPW:MOUNDRD4:SHIDLER4
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70198	113.351	DOMES - MOUND ROAD 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70166	113.2813	RENFROW4 138.00 - RENFROW4 138.00 138KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70970	113.2582	CHIKASKIA - COYOTE 4 138.00 138KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70970	113.2506	COYOTE 4 138.00 - G15-015T 138.00 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70166	113.2192	MORISNT4 138.00 - SOONER 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69797	113.1794	BENTON - WICHITA 345KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70130	113.1678	GEN542956 2-LACYGNE UNIT #2
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70166	113.1581	RENFROW4 138.00 - WAKITAS4 138.00 138KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70375	113.0562	P13:069-138:WERE:WEAV_TX-2::
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70130	113.0376	GEN542957 1-IATAN UNIT #1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70158	113.0093	STILLWATER - UNVRSTY4 138.00 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70130	112.9771	GEN562902 1-G15052_3 0.6900
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70137	112.9715	P12:069:WERE:ARKA-OAK_69::
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70158	112.9314	MCELROY - UNVRSTY4 138.00 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70029	112.927	45TH ST4 138.00 - EVANS ENERGY CENTER SOUTH 138KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.57869	112.917	G15052_T 345.00 - OPENSKY7 345.00 345KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70159	112.8898	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70160	112.8838	P12:138:WFEC:MSL15
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70160	112.8702	WAKITA4 138.00 - WAKITAS4 138.00 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70079	112.8443	DELAWARE - NORTHEAST STATION 345KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70079	112.8443	DELAWARE - NORTHEAST STATION 345KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70140	112.8423	GRDA1 - GREC TAP5 345.00 345KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70270	112.8282	BUTLER COUNTY NO. 10 BENTON - WEAVER 69KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70270	112.7846	P12:069:WERE:MOBI-WEAV_69::
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70130	112.7698	GEN635024 4-WALTER SCOTT UNIT 4
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70130	112.7149	GEN532663 1-LAWRENCE ENERGY CENTER UNIT 5

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70160	112.6822	SANDY_CN_138138.00 - WAKITA4 138.00 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70158	112.6466	KINZE - MCELROY 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70130	112.6457	GEN532720 1-CANEYWF1 0.6900
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70270	112.641	BUTLER COUNTY NO. 10 BENTON - MOBIL 69KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69878	112.5526	ROSE HILL (ROSE TX-1) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70592	112.228	RENFROW7 345.00 (BANK 1) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69196	112.2216	59TH ST - GILL ENERGY CENTER SOUTH 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69196	111.8728	59TH ST - EL PASO 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69196	111.8333	P12:138:WERE:ELPA-MURR_138::
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69751	111.7262	CANEYRV7 345.00 - LATHAMS7 345.00 345KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70864	111.1577	CHIKASKIA - COYOTE 4 138.00 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70864	111.1498	COYOTE 4 138.00 - G15-015T 138.00 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70130	110.6898	BASE CASE
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70267	110.3925	P13:069-138:WERE:WEAV_TX-2::
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.60335	110.3419	KILDARE4 - WHITE EAGLE 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69656	110.2784	CANEYRV7 345.00 - LATHAMS7 345.00 345KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.60306	109.9875	KILDARE4 - WHITE EAGLE 138KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69863	109.2832	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.60208	109.2025	SUMNER 4 - TIMBJCT4 138KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58146	108.8828	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70130	108.8031	GEN335831 1-RIVERBEND UNIT#1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70130	108.7942	P12:138:AEPW:CORNVIL4:DUNCAN-4
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58448	108.7196	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70130	108.7169	P12:345:GRDA:CHOUTEAU-SPORTSMANACRES
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70130	108.7146	GEN562992 1-G15063_3 0.6900
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70137	108.6784	WOODRING (WOODRNG2) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70383	108.6334	SUMNER 4 - VIOLA 4 138.00 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70130	108.6084	GEN337910 1-ARKANSAS NUCLEAR ONE UNIT #1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70130	108.5743	GEN336153 1-WATERFORD UNIT#3
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.57473	108.5468	G15052_T 345.00 - OPENSKY7 345.00 345KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70130	108.5302	GEN562882 1-G15047_3 0.6900
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69751	108.5212	CANEYRV7 345.00 - NEOSHO 345KV CKT 1
FDNS	08ALL	0	25SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58837	108.4708	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69794	108.4252	EL PASO - SIXTY-FOURTH (64TH) 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69774	108.3427	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70130	108.2841	GEN562429 1-G13-029 0.6900
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70130	108.2388	GEN337911 1-ARKANSAS NUCLEAR ONE UNIT #2
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.57850	108.2208	G15052_T 345.00 - OPENSKY7 345.00 345KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70130	108.1968	GEN336821 1-GRAND GULF UNIT
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69327	108.1334	59TH ST - GILL ENERGY CENTER SOUTH 138KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58236	108.093	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70130	108.026	GEN533561 1-CITY OF WINFIELD
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69891	107.9781	BOEING - STEARMAN 138KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.59899	107.8447	SUMNER 4 - TIMBJCT4 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70130	107.7696	GEN514806 1-SOONER UNIT 2
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70488	107.7531	DMNCRKT4 - WHITE EAGLE 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70130	107.7203	GEN301382 1-1OSAGEWINDG10.6900
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69327	107.6219	59TH ST - EL PASO 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69327	107.5812	P12:138:WERE:ELPA-MURR_138::
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69819	107.5647	LATHAMS7 345.00 - ROSE HILL 345KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70130	107.5167	GEN515483 1-BLKWLWD1 0.6900
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70488	107.5109	DMNCRKT4 - MILLER 138KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58433	107.4588	G15-015T 138.00 - MDFRDTP4 138.00 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70130	107.4054	4OSAGEWIND 138.00 - 4REMNGTON 138.00 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70488	107.3488	MILLER - SOONER 138KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.59816	107.2816	TIMBER JUNCTION - UDALL 69KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70375	107.2719	OSAGE - SOONER PUMP TAP 138KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.59816	107.1845	P12:069:WERE:TIMJ-WEAV_69::
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70375	107.1622	SOONER - SOONER PUMP TAP 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70130	107.1601	GEN562611 1-G14_064_3 0.6900
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69656	107.1431	CANEYRV7 345.00 - NEOSHO 345KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69863	107.1251	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.59816	107.0492	RICHLAND - UDALL 69KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58401	107.0315	HUNTERS7 345.00 - WOODRING 345KV CKT 1
FDNS	08ALL	0	25SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.57872	107.0225	G15052_T 345.00 - OPENSKY7 345.00 345KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.71494	106.9329	CHIKASKIA - KILDARE4 138KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58447	106.8468	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.59816	106.6764	RICHLAND - ROSE HILL JUNCTION 69KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58433	106.6124	MDFRDTP4 138.00 - RENFROW4 138.00 138KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.60147	106.235	TIMBER JUNCTION - UDALL 69KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.59816	106.2344	ROSE HILL JUNCTION - WEAVER 69KV CKT 1
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.60201	106.2289	SUMNER 4 - TIMBJCT4 138KV CKT 1
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69774	106.2163	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58615	106.1933	CRESWELL - SUMNER COUNTY NO. 4 ROME 69KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58236	106.1778	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58615	106.1006	CITY OF WELLINGTON - SUMNER COUNTY NO. 4 ROME 69KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58615	106.0706	P12:069:WERE:BELL-CRSW_69::
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.60208	105.9783	TIMBJCT4 (TIMJ TX-1) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70389	105.8235	SUMNER 4 - VIOLA 4 138.00 138KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.60147	105.8208	P12:069:WERE:TIMJ-WEAV_69::
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58201	105.8169	GILL ENERGY CENTER SOUTH - VIOLA 4 138.00 138KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	08ALL	0	25SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.60308	105.7832	KILDARE4 - WHITE EAGLE 138KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58170	105.7018	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58170	105.7018	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.57950	105.6567	SOONER (SOONER5) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58306	105.5894	CLEARWATER - VIOLA 4 138.00 138KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58227	105.4857	P12:138:AEPW-OGE:SHIDLER4:OSAGE 4
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58227	105.4641	OSAGE - WEBB CITY TAP 138KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58267	105.4409	P12:138:WERE:MURR-MKEC_138P::
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.60147	105.4311	RICHLAND - UDALL 69KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58167	105.3599	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58623	105.2272	CLEARWATER - VIOLA 4 138.00 138KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58152	105.2249	P12:138:OKGE:3TERM2
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58153	105.1986	MORISNT4 138.00 - STILLWATER 138KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58521	105.1966	GILL ENERGY CENTER SOUTH - VIOLA 4 138.00 138KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58926	105.1825	CITY OF WELLINGTON - SUMNER COUNTY NO. 3 MILLER 69KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.71172	105.1815	WEAVER (WEAV TX-2) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	08ALL	0	25SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.60212	105.0319	SUMNER 4 - TIMBJCT4 138KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.59899	105.0295	TIMBJCT4 (TIMJ TX-1) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58227	104.915	FAIRFAX TAP - SHIDLER 138KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58227	104.9148	FAIRFAX TAP - WEBB CITY TAP 138KV CKT 1
FDNSLock	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58167	104.6114	917X
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58585	104.5032	P12:138:WERE:MURR-MKEC_138P::
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58558	104.4602	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58615	104.4429	CITY OF WELLINGTON - SUMNER COUNTY NO. 3 MILLER 69KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69819	104.3894	CANEYRV7 345.00 - LATHAMS7 345.00 345KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58167	104.1699	G15066_T 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58794	104.0567	G15-015T 138.00 - MDFRDTP4 138.00 138KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58072	104.0546	CLEARWATER - GILL ENERGY CENTER WEST 138KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.60147	104.0042	RICHLAND - ROSE HILL JUNCTION 69KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58960	103.8483	CRESWELL - SUMNER COUNTY NO. 4 ROME 69KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58926	103.7816	P12:069:WERE:BELL-CRSW_69::
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69925	103.7025	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.57729	103.6945	BENTON - WICHITA 345KV CKT 1
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58512	103.6695	GILL ENERGY CENTER SOUTH - VIOLA 4 138.00 138KV CKT 1
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58557	103.6105	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58401	103.5725	HUNTERS7 345.00 - RENFROW7 345.00 345KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58165	103.555	SHIDLER - WEST PAWHUSKA 138KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58960	103.55	CITY OF WELLINGTON - SUMNER COUNTY NO. 4 ROME 69KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.71037	103.5429	CHIKASKIA - COYOTE 4 138.00 138KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58165	103.5391	PAWHUSKA TAP - WEST PAWHUSKA 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.71037	103.5348	COYOTE 4 138.00 - G15-015T 138.00 138KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58165	103.3809	DOMES - PAWHUSKA TAP 138KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58165	103.3409	DOMES - MOUND ROAD 138KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58146	103.3277	GEN562902 1-G15052_3 0.6900
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58165	103.3046	P12:138:AEPW:MOUNDRD4:SHIDLER4
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.60152	103.251	TIMBER JUNCTION - UDALL 69KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58615	103.2108	BELL - SUMNER COUNTY NO. 3 MILLER 69KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.57869	103.1789	OPENSKY7 345.00 - RANCHRD7 345.00 345KV CKT 1
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58942	103.1416	CRESWELL - SUMNER COUNTY NO. 4 ROME 69KV CKT 1
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58617	103.1154	CLEARWATER - VIOLA 4 138.00 138KV CKT 1
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.60201	103.0224	TIMBJCT4 (TIMJ TX-1) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58792	103.0083	G15-015T 138.00 - MDFRDTP4 138.00 138KV CKT 1
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.60152	102.9963	P12:069:WERE:TIMJ-WEAV_69::
FDNS	08ALL	0	25SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58449	102.9664	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58937	102.9456	P12:069:WERE:BELL-CRSW_69::
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70130	102.9417	GEN562691 1-G15_015_3 0.6900
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58942	102.9245	CITY OF WELLINGTON - SUMNER COUNTY NO. 4 ROME 69KV CKT 1
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.60152	102.9125	RICHLAND - UDALL 69KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58615	102.8489	BELL - PECK 69KV CKT 1
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58578	102.8457	P12:138:WERE:MURR-MKEC_138P::
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58615	102.8372	P12:069:WERE:BELL-MURR_69::
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58146	102.8057	GEN532720 1-CANEYWF1 0.6900
FDNS	08ALL	0	17G	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69246	102.7828	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58177	102.7279	RENFROW4 138.00 - RENFROW4 138.00 138KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.57049	102.7012	EL PASO - ROSE HILL 138KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58171	102.6907	4REMNGTON 138.00 - FAIRFAX 138KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58146	102.6526	GEN532653 1-JEFFREY ENERGY CENTER UNIT 3
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58177	102.6164	RENFROW4 138.00 - WAKITAS4 138.00 138KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58502	102.5698	P12:138:OKGE:3TERM2
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58387	102.5241	CLEARWATER - GILL ENERGY CENTER WEST 138KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58501	102.5235	MORISNT4 138.00 - STILLWATER 138KV CKT 1
FDNS	08ALL	0	16WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69379	102.4422	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58615	102.4406	GILL ENERGY CENTER WEST - PECK 69KV CKT 1
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58170	102.4326	P12:138:WFEC:MSL15
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58558	102.4218	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	08ALL	0	25SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70385	102.3194	SUMNER 4 - VIOLA 4 138.00 138KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58926	102.2537	BELL - SUMNER COUNTY NO. 3 MILLER 69KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58694	102.1533	HUNTERS7 345.00 - WOODRING 345KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.60147	102.1161	ROSE HILL JUNCTION - WEAVER 69KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58497	102.0557	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58794	102.0079	MDFRDTP4 138.00 - RENFROW4 138.00 138KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58587	101.9822	P12:138:AEPW-OGE:SHIDLER4:OSAGE 4
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58587	101.9562	OSAGE - WEBB CITY TAP 138KV CKT 1
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.60152	101.9481	RICHLAND - ROSE HILL JUNCTION 69KV CKT 1
FDNS	08ALL	0	25SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.60212	101.8724	TIMBJCT4 (TIMJ TX-1) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58506	101.8354	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58506	101.8354	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08ALL	0	25SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.60148	101.7777	TIMBER JUNCTION - UDALL 69KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70432	101.7463	P13:069-138:WERE:WEAV_TX-2::
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70130	101.7373	GEN514805 1-SOONER UNIT 1
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58699	101.6274	HUNTERS7 345.00 - WOODRING 345KV CKT 1
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58378	101.6137	CLEARWATER - GILL ENERGY CENTER WEST 138KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69925	101.5852	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58557	101.5488	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58497	101.4667	917X
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58937	101.3398	CITY OF WELLINGTON - SUMNER COUNTY NO. 3 MILLER 69KV CKT 1
FDNS	08ALL	0	25SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.60148	101.3324	P12:069:WERE:TIMJ-WEAV_69::
FDNS	08ALL	0	25SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58559	101.2558	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69819	101.2368	CANEYRV7 345.00 - NEOSHO 345KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58346	101.1631	P12:138:WERE:GORD-MAIZ_138::
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58346	101.1629	MAIZE - MAIZEW 4 138.00 138KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58346	101.1626	EVANS ENERGY CENTER NORTH - MAIZEW 4 138.00 138KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58587	101.1571	FAIRFAX TAP - SHIDLER 138KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58587	101.157	FAIRFAX TAP - WEBB CITY TAP 138KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58497	101.0588	G15066_T 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58499	101.0412	P12:138:OKGE:3TERM2
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58792	101.0232	MDFRDTP4 138.00 - RENFROW4 138.00 138KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58447	101.0127	GEN542955 1-LACYGNE UNIT #1
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58499	101.0127	MORISNT4 138.00 - STILLWATER 138KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58447	101.0023	GEN562902 1-G15052_3 0.6900
FDNS	08ALL	0	25SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58624	100.9322	CLEARWATER - VIOLA 4 138.00 138KV CKT 1
FDNS	08ALL	0	25SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.60148	100.93	RICHLAND - UDALL 69KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58043	100.9033	BENTON - WICHITA 345KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58926	100.8614	BELL - PECK 69KV CKT 1
FDNS	08ALL	0	25SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58926	100.8581	CITY OF WELLINGTON - SUMNER COUNTY NO. 3 MILLER 69KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58346	100.8352	CHISHOLM - MAIZEE 4 138.00 138KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58346	100.8352	P12:138:WERE:CHIS-MAIZ_138::
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58346	100.8341	MAIZE - MAIZEE 4 138.00 138KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58926	100.795	P12:069:WERE:BELL-MURR_69::
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.60152	100.7916	ROSE HILL JUNCTION - WEAVER 69KV CKT 1
FDNS	08ALL	0	17SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.70660	100.7066	RENFROW7 345.00 (BANK 1) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58447	100.6263	GEN542956 2-LACYGNE UNIT #2
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58447	100.5286	GEN542962 2-IATAN UNIT #2
FDNS	08ALL	0	20L	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58146	100.4759	BASE CASE
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58482	100.4611	RENFROW4 138.00 - RENFROW4 138.00 138KV CKT 1
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58497	100.4472	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08ALL	0	25SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58795	100.4383	G15-015T 138.00 - MDFRDTP4 138.00 138KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58489	100.4378	SHIDLER - WEST PAWHUSKA 138KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58165	100.4333	ROSE HILL (ROSE TX-5) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	08ALL	0	25SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58523	100.4332	GILL ENERGY CENTER SOUTH - VIOLA 4 138.00 138KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58165	100.4261	ROSE HILL (ROSE TX-3) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58587	100.42	P12:138:AEPW-OGE:SHIDLER4:OSAGE 4
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58507	100.3931	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58507	100.3931	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58489	100.3921	PAWHUSKA TAP - WEST PAWHUSKA 138KV CKT 1
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58587	100.3871	OSAGE - WEBB CITY TAP 138KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58447	100.3855	GEN532720 1-CANEYWF1 0.6900
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58168	100.3837	ROSE HILL (ROSE TX-1) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58482	100.3323	RENFROW4 138.00 - WAKITAS4 138.00 138KV CKT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58447	100.3026	GEN532651 1-JEFFREY ENERGY CENTER UNIT 1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58447	100.2988	GEN532652 1-JEFFREY ENERGY CENTER UNIT 2
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58447	100.2986	GEN532653 1-JEFFREY ENERGY CENTER UNIT 3
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58450	100.2383	P12:069:WERE:ARKA-CRSW_69::
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58447	100.2103	GEN532722 1-EVANS ENERGY CENTER UNIT 2
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58447	100.1395	GEN542957 1-IATAN UNIT #1
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58489	100.1248	DOMES - PAWHUSKA TAP 138KV CKT 1
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.57041	100.1127	EL PASO - ROSE HILL 138KV CKT 1
FDNS	08ALL	0	25SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58586	100.0978	P12:138:WERE:MURR-MKEC_138P::
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58475	100.0763	P12:138:WFEC:MSL15
FDNS	08ALL	0	20SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58484	100	4REMNGTON 138.00 - FAIRFAX 138KV CKT 1
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58497	99.8	917X
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58937	99.6	BELL - SUMNER COUNTY NO. 3 MILLER 69KV CKT 1
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58587	99.5	FAIRFAX TAP - SHIDLER 138KV CKT 1
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58587	99.5	FAIRFAX TAP - WEBB CITY TAP 138KV CKT 1
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58497	99.5	G15066_T 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58448	99.5	GEN562902 1-G15052_3 0.6900
FDNS	08ALL	0	25SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.60148	99.4	RICHLAND - ROSE HILL JUNCTION 69KV CKT 1
FDNS	08ALL	0	20WP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58448	99.3	GEN542955 1-LACYGNE UNIT #1
FDNS	08ALL	0	25SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.57049	99.3	EL PASO - ROSE HILL 138KV CKT 1
FDNS	08ALL	0	25SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58962	99.2	CRESWELL - SUMNER COUNTY NO. 4 ROME 69KV CKT 1
FDNS	08ALL	0	25SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58559	99.2	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	08ALL	0	25SP	G16_060	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.58926	99.1	P12:069:WERE:BELL-CRSW_69::

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	08ALL	0	20L	G16_061	FROM->TO	CANEYRV7 345.00 - NEOSHO 345KV CKT 1	766.0	923.0	0.02957	99	BASE CASE
FDNS	08ALL	0	25SP	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.30582	118.6056	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	16WP	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.29972	113.3276	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	16WP	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.29972	113.1929	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	25SP	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.30644	112.7256	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	20L	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.28037	111.3592	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	20L	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.28037	111.2652	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	17G	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.30213	110.0227	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	17G	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.30213	109.8806	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	16WP	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.30528	109.6338	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	08ALL	0	17SP	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.30327	109.0726	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	20L	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.26849	108.8578	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08ALL	0	17G	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.30546	107.6871	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	08ALL	0	20WP	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.30483	105.432	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	20WP	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.30483	105.288	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	20L	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.26849	104.9775	G15066_T 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	0	16WP	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.28975	104.7527	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNSLock	08ALL	0	20L	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.26849	103.5781	917X
FDNS	08ALL	0	17SP	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.30386	103.2788	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	17G	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.29153	102.7902	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08ALL	0	20L	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.25914	102.5234	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08ALL	0	20L	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.25914	102.5234	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08ALL	0	25SP	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.29454	102.2366	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08ALL	0	17SP	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.30924	101.9749	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	08ALL	0	20SP	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.30662	101.4732	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	16WP	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.28975	101.22	G15066_T 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	0	16WP	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.28975	99.6	917X
FDNS	08ALL	0	17G	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.29153	99.3	G15066_T 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	0	20WP	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.29353	99.2	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08ALL	0	16WP	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.27790	99.1	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08ALL	0	16WP	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.27790	99.1	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08ALL	0	25SP	G16_061	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.30582	117.2181	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	16WP	G16_061	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.29972	110.6515	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	16WP	G16_061	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.29972	110.4779	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	25SP	G16_061	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.30644	109.9144	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	20L	G16_061	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.28037	108.289	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	20L	G16_061	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.28037	108.1586	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	17G	G16_061	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.30213	106.5951	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	17G	G16_061	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.30213	106.4127	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	16WP	G16_061	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.30528	106.0416	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	08ALL	0	17SP	G16_061	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.30327	105.4297	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	20L	G16_061	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.26849	104.9951	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08ALL	0	17G	G16_061	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.30546	103.6691	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	08ALL	0	20WP	G16_061	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.30483	100.8863	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	20WP	G16_061	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.30483	100.6993	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	20L	G16_061	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.26849	100.2146	G15066_T 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	0	16WP	G16_061	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.28975	99.9	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08ALL	0	25SP	G16_061	TO->FROM	NORTHWEST - SPRING CREEK 345KV CKT 1	1039.0	1195.0	0.19966	100.6786	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	08ALL	2	25SP	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.30582	118.6256	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	16WP	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.29972	113.3453	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	16WP	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.29972	113.2104	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	25SP	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.30644	112.7451	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	20L	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.28033	111.3691	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	20L	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.28033	111.2763	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	17G	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.30213	110.0831	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	17G	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.30213	109.9406	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	16WP	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.30528	109.6349	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	08ALL	2	17SP	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.30328	109.0943	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	20L	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.26847	108.8587	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08ALL	2	17G	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.30546	107.6815	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	08ALL	2	20WP	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.30483	105.4474	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	20WP	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.30483	105.3108	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	20L	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.26847	104.9754	G15066_T 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	2	16WP	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.28976	104.7569	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNSLock	08ALL	2	20L	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.26847	103.5686	917X
FDNS	08ALL	2	17SP	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.30386	103.301	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	17G	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.29154	102.7913	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08ALL	2	20L	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.25912	102.5171	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08ALL	2	20L	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.25912	102.5171	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08ALL	2	25SP	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.29455	102.2455	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08ALL	2	17SP	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.30925	101.9349	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	08ALL	2	20SP	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.30662	101.4949	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	16WP	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.28976	101.2242	G15066_T 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	2	16WP	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.28976	99.6	917X
FDNS	08ALL	2	17G	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.29154	99.3	G15066_T 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	2	20WP	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.29354	99.2	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08ALL	2	16WP	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.27791	99.1	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08ALL	2	16WP	G16_061	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.27791	99.1	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08ALL	2	25SP	G16_061	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.30582	117.2428	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	16WP	G16_061	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.29972	110.6732	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	16WP	G16_061	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.29972	110.4995	NORTHWEST - SPRING CREEK 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	08ALL	2	25SP	G16_061	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.30644	109.9386	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	20L	G16_061	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.28033	108.3003	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	20L	G16_061	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.28033	108.1716	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	17G	G16_061	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.30213	106.6706	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	17G	G16_061	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.30213	106.4869	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	16WP	G16_061	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.30528	106.0426	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	08ALL	2	17SP	G16_061	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.30328	105.4565	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	20L	G16_061	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.26847	104.996	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08ALL	2	17G	G16_061	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.30546	103.6618	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	08ALL	2	20WP	G16_061	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.30483	100.9052	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	20WP	G16_061	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.30483	100.7276	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	20L	G16_061	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.26847	100.2117	G15066_T 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	2	16WP	G16_061	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.28976	99.9	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	1022.0	1124.0	0.19912	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	1022.0	1124.0	0.19912	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	987.2	1082.8	0.18631	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	987.2	1082.8	0.18631	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	552.14	607.52	0.18422	-	TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	552.14	607.52	0.18422	-	TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	956.0	956.0	0.17893	-	CIMARRON - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	1195.0	1195.0	0.17893	-	GRACEMONT - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	556.53	611.5	0.17439	-	NEWHART 230 - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	560.0	644.0	0.17279	-	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	560.0	644.0	0.17279	-	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	616.0	700.0	0.17279	-	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	616.0	700.0	0.17279	-	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	560.0	560.0	0.16911	-	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	1330.0	1940.0	0.16512	-	CHISHOLM7 345.00 - G16-037-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	1330.0	1940.0	0.16512	-	G16-037-TAP 345.00 - GRACEMONT 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	1792.0	1972.0	0.15779	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	1792.0	1972.0	0.15779	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	557.0	557.0	0.15757	-	BUSHLAND INTERCHANGE - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	557.0	557.0	0.15757	-	BUSHLAND INTERCHANGE - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	427.05	427.05	0.15687	-	JONES STATION - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	427.05	427.05	0.15687	-	JONES STATION - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	1792.0	1792.0	0.15370	-	BORDER 7345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	1792.0	1972.0	0.14647	-	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	987.16	1082.77	0.14414	-	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	956.09	1051.7	0.14414	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	956.09	1051.7	0.14414	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	329.0	360.9	0.14136	-	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	329.0	360.9	0.14136	-	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	329.05	360.92	0.13965	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	329.05	360.92	0.13965	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	0.0	0.0	0.13764	-	P12:230:AEPW-SPS:SWEETWT6:WHEELER 6
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	0.0	0.0	0.13439	-	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	557.0	557.0	0.11627	-	NEWHART 230 - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	1420.0	1775.0	0.10051	-	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	1420.0	1775.0	0.10051	-	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	1793.0	1793.0	0.08700	-	G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	1716.0	1793.0	0.08700	-	G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	329.05	360.92	0.08553	-	AMARILLO SOUTH INTERCHANGE - G15031_T 230.00 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	439.0	439.0	0.06882	-	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	557.0	557.0	0.06882	-	STATELINE INTERCHANGE - STLN-DEMARC6 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	500.0	723.0	0.06882	-	STLN-DEMARC6 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	556.92	556.92	0.06722	-	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	556.92	556.92	0.06722	-	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	439.0	439.0	0.06557	-	CHISHOLM6 230.00 - ELK CITY 230KV 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	450.0	450.0	0.06557	-	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	450.0	450.0	0.06557	-	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	329.05	360.92	0.05854	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	329.05	360.92	0.05854	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	557.0	557.0	0.05851	-	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	557.0	557.0	0.05851	-	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	329.05	360.92	0.05682	-	MOORE COUNTY INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_062		Non-Converged Contingency	329.05	360.92	0.05682	-	MOORE COUNTY INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	0.0	0.0	0.69897	-	P12:345:SPS:J15.1.XRDS.TOLK
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	414.0	414.0	0.25231	-	AMOCO SWITCHING STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	414.0	414.0	0.25231	-	AMOCO SWITCHING STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	717.0	926.0	0.23299	-	CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	560.0	560.0	0.23299	-	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	560.0	560.0	0.23299	-	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	956.0	1042.0	0.19365	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	956.0	1042.0	0.19365	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	478.05	546.96	0.18151	-	TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	478.05	546.96	0.18151	-	TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	956.1	1051.7	0.17702	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	956.1	1051.7	0.17702	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	956.0	956.0	0.17489	-	CIMARRON - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	1195.0	1195.0	0.17489	-	GRACEMONT - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	478.05	547.36	0.17232	-	NEWHART 230 - PLANT X STATION 230KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	560.0	644.0	0.16798	-	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	560.0	644.0	0.16798	-	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	560.0	644.0	0.16798	-	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	560.0	644.0	0.16798	-	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	560.0	560.0	0.16420	-	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	1330.0	1940.0	0.16069	-	CHISHOLM7 345.00 - G16-037-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	1330.0	1940.0	0.16069	-	G16-037-TAP 345.00 - GRACEMONT 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	478.0	502.0	0.15579	-	BUSHLAND INTERCHANGE - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	478.0	502.0	0.15579	-	BUSHLAND INTERCHANGE - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	1792.0	1972.0	0.15325	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	1792.0	1972.0	0.15325	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	497.0	547.0	0.15178	-	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	497.6	547.4	0.15120	-	JONES STATION - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	497.6	547.4	0.15120	-	JONES STATION - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	1792.0	1792.0	0.14764	-	BORDER 7345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	1792.0	1972.0	0.14230	-	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	318.7	350.6	0.13987	-	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	318.7	350.6	0.13987	-	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	318.7	350.57	0.13770	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	318.7	350.57	0.13770	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	956.09	1051.7	0.13435	-	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	956.09	1051.7	0.13435	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	956.09	1051.7	0.13435	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	0.0	0.0	0.13032	-	P12:230:AEPW-SPS:SWEETWT6:WHEELER 6
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	0.0	0.0	0.12849	-	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	1398.0	1549.0	0.12343	-	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	1493.0	1493.0	0.12343	-	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	478.0	502.0	0.11499	-	NEWHART 230 - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	1420.0	1775.0	0.09981	-	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	1420.0	1775.0	0.09981	-	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	318.7	350.57	0.08541	-	AMARILLO SOUTH INTERCHANGE - G15031_T 230.00 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	318.7	350.57	0.08541	-	G15031_T 230.00 - SWISHER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	1793.0	1793.0	0.08368	-	G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	1716.0	1793.0	0.08368	-	G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	1792.0	1792.0	0.07943	-	BORDER 7345.00 - CHISHOLM7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	1792.0	1792.0	0.07943	-	BORDER 7345.00 - CHISHOLM7 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	1532.0	1793.0	0.07407	-	G1524G1525 345.00 - THISTLE7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	1532.0	1793.0	0.07407	-	G1524G1525 345.00 - THISTLE7 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	478.0	502.0	0.06732	-	CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	478.0	502.0	0.06732	-	CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	478.0	502.0	0.06732	-	CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	439.0	439.0	0.06516	-	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	502.0	502.0	0.06516	-	STATELINE INTERCHANGE - STLN-DEMARC6 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	500.0	723.0	0.06516	-	STLN-DEMARC6 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	501.95	501.95	0.06376	-	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	501.95	501.95	0.06376	-	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	439.0	439.0	0.06333	-	CHISHOLM6 230.00 - ELK CITY 230KV 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	450.0	450.0	0.06333	-	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	450.0	450.0	0.06333	-	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	717.1	717.1	0.06100	-	HOLCOMB - SETAB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	717.1	717.1	0.06100	-	HOLCOMB - SETAB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	1413.0	1517.0	0.05788	-	BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	318.7	350.57	0.05558	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	318.7	350.57	0.05558	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	502.0	502.0	0.05542	-	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	502.0	502.0	0.05542	-	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	318.7	350.57	0.05420	-	MOORE COUNTY INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_062		Non-Converged Contingency	318.7	350.57	0.05420	-	MOORE COUNTY INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17SP	G16_062		Non-Converged Contingency	956.0	1042.0	0.20025	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17SP	G16_062		Non-Converged Contingency	1792.0	1972.0	0.15966	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17SP	G16_062		Non-Converged Contingency	1792.0	1972.0	0.15966	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1792.0	1792.0	0.34829	-	HOBBS - YOAKUM_345 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1792.0	1792.0	0.32612	-	TUCO INTERCHANGE - YOAKUM_345 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	560.0	644.0	0.28488	-	HOBBS (UPDATE DATA) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1792.0	1972.0	0.24970	-	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	318.7	350.57	0.21019	-	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	0.0	0.0	0.20979	-	P12:345:SPS:J07.1.FINN.HITCH
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	956.0	1042.0	0.17619	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	956.0	1042.0	0.17619	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	956.0	1042.0	0.17619	-	OKLAUNION 345KV SWITCHED SHUNT
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	956.0	956.0	0.15937	-	CIMARRON - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1195.0	1195.0	0.15937	-	GRACEMONT - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1792.0	1792.0	0.15682	-	BORDER 7345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1792.0	1972.0	0.14913	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1792.0	1972.0	0.14913	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	414.0	414.0	0.14644	-	AMOCO SWITCHING STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	414.0	414.0	0.14644	-	AMOCO SWITCHING STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	717.0	926.0	0.13890	-	CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	560.0	560.0	0.13890	-	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	560.0	560.0	0.13890	-	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	956.1	1051.7	0.13397	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	956.1	1051.7	0.13397	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1584.0	2098.0	0.12792	-	CHISHOLM7 345.00 - G16-037-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1584.0	2098.0	0.12792	-	G16-037-TAP 345.00 - GRACEMONT 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	956.09	1051.7	0.11122	-	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	956.09	1051.7	0.11122	-	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	478.0	502.0	0.10529	-	BUSHLAND INTERCHANGE - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	478.0	502.0	0.10529	-	BUSHLAND INTERCHANGE - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	478.0	502.0	0.10529	-	BUSHLAND INTERCHANGE 230KV SWITCHED SHUNT
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1398.0	1549.0	0.10354	-	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1493.0	1493.0	0.10354	-	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	956.09	1051.7	0.09856	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	956.09	1051.7	0.09856	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	956.09	1051.7	0.09856	-	FINNEY SWITCHING STATION - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	956.09	1051.7	0.09856	-	FINNEY SWITCHING STATION - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	478.05	547.36	0.09724	-	NEWHART 230 - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	318.7	350.57	0.09437	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	318.7	350.57	0.09437	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	318.7	350.6	0.09381	-	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	318.7	350.6	0.09381	-	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	497.0	547.0	0.09258	-	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	478.0	502.0	0.08892	-	NEWHART 230 - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	0.0	0.0	0.08877	-	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	0.0	0.0	0.08858	-	P12:115:SPS:T59.1.CARGIL.CURRY
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	0.0	0.0	0.08756	-	P12:138:WFEC:MSL03
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	0.0	0.0	0.08334	-	P12:115:LCEC:W56.1.HOBBG.LE-LVN
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	478.0	502.0	0.07675	-	AMARILLO SOUTH INTERCHANGE - G15031_T 230.00 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	478.0	502.0	0.07675	-	G15031_T 230.00 - SWISHER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	0.0	0.0	0.07524	-	P12:230:AEPW-SPS:SWEETWT6:WHEELER 6
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	442.0	752.0	0.07516	-	PLANT X STATION - TOLK STATION WEST 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	442.0	752.0	0.07516	-	PLANT X STATION - TOLK STATION WEST 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	442.0	752.0	0.07402	-	PLANT X STATION - TOLK STATION EAST 230KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	442.0	752.0	0.07402	-	PLANT X STATION - TOLK STATION EAST 230KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	0.0	0.0	0.07342	-	P12:115:SPS:W40.1.WCANYON.DFSMTH
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1561.0	1793.0	0.07105	-	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1561.0	1793.0	0.07105	-	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1561.0	1793.0	0.07105	-	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1561.0	1793.0	0.07105	-	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1792.0	1792.0	0.07073	-	BORDER 7345.00 - CHISHOLM7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1792.0	1792.0	0.07073	-	BORDER 7345.00 - CHISHOLM7 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	560.0	560.0	0.06698	-	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	560.0	560.0	0.06698	-	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	560.0	560.0	0.06698	-	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	478.0	502.0	0.06421	-	CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	478.0	502.0	0.06421	-	CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	0.0	0.0	0.06276	-	P12:345:SPS:J15.1.XRDS.TOLK
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	478.05	546.96	0.06017	-	TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	478.05	546.96	0.06017	-	TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1792.0	1792.0	0.05854	-	BVRCNTY7 345.00 - OPTIMA 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1792.0	1792.0	0.05854	-	BVRCNTY7 345.00 - OPTIMA 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1793.0	1793.0	0.05854	-	G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1716.0	1793.0	0.05854	-	G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1793.0	1793.0	0.05854	-	G16-003-TAP 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1716.0	1793.0	0.05854	-	G16-003-TAP 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1420.0	1775.0	0.05718	-	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1420.0	1775.0	0.05718	-	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1420.0	1775.0	0.05718	-	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1420.0	1775.0	0.05718	-	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1532.0	1793.0	0.05493	-	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	0.0	0.0	0.05240	-	P12:115:SPS:T14.1.MADDOX.WBENDR
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	785.0	785.0	0.05195	-	MINGO - RED WILLOW 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	785.0	785.0	0.05195	-	MINGO - RED WILLOW 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	762.5	762.5	0.05116	-	MINGO - SETAB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	762.5	762.5	0.05116	-	MINGO - SETAB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	439.0	439.0	0.05115	-	CHISHOLM6 230.00 - ELK CITY 230KV 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	450.0	450.0	0.05115	-	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	450.0	450.0	0.05115	-	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	717.1	717.1	0.05090	-	HOLCOMB - SETAB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	717.1	717.1	0.05090	-	HOLCOMB - SETAB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	560.0	644.0	0.04989	-	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	560.0	644.0	0.04989	-	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	560.0	644.0	0.04989	-	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	560.0	644.0	0.04989	-	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	560.0	560.0	0.04856	-	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	501.95	501.95	0.04835	-	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	501.95	501.95	0.04835	-	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1195.0	1195.0	0.04827	-	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1195.0	1195.0	0.04814	-	JOHNSON COUNTY - SUNNYSIDE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	0.0	0.0	0.04742	-	P12:138:WFEC:MSL14
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	0.0	0.0	0.04637	-	P12:115:SPS:T66.1.RNDALL.HAPPY
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	0.0	0.0	0.04637	-	P12:115:SPS:T67.1.HAPPY.KRESS
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	497.6	547.4	0.04522	-	JONES STATION - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	497.6	547.4	0.04522	-	JONES STATION - TUCO INTERCHANGE 230KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1505.0	1793.0	0.04430	-	G13-010T 345.00 - POST ROCK 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1505.0	1793.0	0.04430	-	G16-049-TAP 345.00 - SPEARVILLE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	497.0	547.0	0.04401	-	CRAWFISH_DR2230.00 - SWISHER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	0.0	0.0	0.04399	-	917X
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	478.05	501.55	0.04305	-	AMARILLO SOUTH INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	478.05	501.55	0.04305	-	AMARILLO SOUTH INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1504.0	1792.0	0.04299	-	AXTELL - G16-050-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1504.0	1792.0	0.04299	-	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	318.7	350.57	0.04090	-	MOORE COUNTY INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	318.7	350.57	0.04090	-	MOORE COUNTY INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	726.6	726.6	0.03928	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	726.6	726.6	0.03928	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1413.0	1517.0	0.03928	-	BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1413.0	1517.0	0.03928	-	BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1141.0	1195.0	0.03882	-	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	1141.0	1195.0	0.03882	-	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	421.0	439.0	0.03762	-	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	348.58	381.24	0.03762	-	STATELINE INTERCHANGE - STLN-DEMARC6 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	500.0	723.0	0.03762	-	STLN-DEMARC6 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	318.7	350.57	0.03276	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	318.7	350.57	0.03276	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	318.7	350.57	0.03209	-	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	318.7	350.57	0.03209	-	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	0.0	0.0	0.03128	-	P12:230:SPS:K43.1.PRNGLE.HARR_E
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	0.0	0.0	0.03075	-	P12:115:SPS:W08.1.HITCH.LASLEY
FDNSLock-Blown up	06ALL	0	20L	G16_062		Non-Converged Contingency	0.0	0.0	0.03052	-	P12:138:AEPW:REDROCKRD4:WTH_JCT4
FDNSLock-Blown up	06ALL	0	20SP	G16_062		Non-Converged Contingency	956.0	1042.0	0.21247	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_062		Non-Converged Contingency	1792.0	1792.0	0.36138	-	TUCO INTERCHANGE - YOAKUM_345 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_062		Non-Converged Contingency	1792.0	1972.0	0.28246	-	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_062		Non-Converged Contingency	1022.0	1124.0	0.20732	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_062		Non-Converged Contingency	1792.0	1792.0	0.17905	-	BORDER 7345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_062		Non-Converged Contingency	1792.0	1972.0	0.17273	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_062		Non-Converged Contingency	1792.0	1972.0	0.17273	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20WP	G16_062		Non-Converged Contingency	1195.0	1195.0	0.17190	-	GRACEMONT - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_062		Non-Converged Contingency	987.2	1082.8	0.16106	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_062		Non-Converged Contingency	1584.0	2098.0	0.15278	-	CHISHOLM7 345.00 - G16-037-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_062		Non-Converged Contingency	1584.0	2098.0	0.15278	-	G16-037-TAP 345.00 - GRACEMONT 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_062		Non-Converged Contingency	987.16	1082.77	0.13187	-	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_062		Non-Converged Contingency	557.0	557.0	0.11983	-	BUSHLAND INTERCHANGE - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_062		Non-Converged Contingency	956.09	1051.7	0.11722	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_062		Non-Converged Contingency	987.16	1082.77	0.11722	-	FINNEY SWITCHING STATION - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_062		Non-Converged Contingency	329.05	360.92	0.10766	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_062		Non-Converged Contingency	329.0	360.9	0.10713	-	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_062		Non-Converged Contingency	557.0	557.0	0.10045	-	NEWHART 230 - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_062		Non-Converged Contingency	478.0	502.0	0.08509	-	AMARILLO SOUTH INTERCHANGE - G15031_T 230.00 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_062		Non-Converged Contingency	421.0	439.0	0.04858	-	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_062		Non-Converged Contingency	329.05	360.92	0.04219	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	2	16WP	G16_062		Non-Converged Contingency	1022.0	1124.0	0.19914	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20L	G16_062		Non-Converged Contingency	956.0	1042.0	0.17572	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20L	G16_062		Non-Converged Contingency	956.0	1042.0	0.17572	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20L	G16_062		Non-Converged Contingency	1792.0	1972.0	0.15052	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20L	G16_062		Non-Converged Contingency	1792.0	1972.0	0.15052	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	2	20L	G16_062		Non-Converged Contingency	956.1	1051.7	0.13487	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20L	G16_062		Non-Converged Contingency	956.1	1051.7	0.13487	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20WP	G16_062		Non-Converged Contingency	1022.0	1124.0	0.20627	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20WP	G16_062		Non-Converged Contingency	1022.0	1124.0	0.20627	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20WP	G16_062		Non-Converged Contingency	1792.0	1972.0	0.17379	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20WP	G16_062		Non-Converged Contingency	1792.0	1972.0	0.17379	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	3	17G	G16_062		Non-Converged Contingency	956.0	1042.0	0.21659	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	3	20L	G16_062		Non-Converged Contingency	956.0	1042.0	0.18135	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	3	20L	G16_062		Non-Converged Contingency	956.0	1042.0	0.18135	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	3	20L	G16_062		Non-Converged Contingency	1792.0	1972.0	0.15667	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	3	20L	G16_062		Non-Converged Contingency	1792.0	1972.0	0.15667	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	3	20WP	G16_062		Non-Converged Contingency	1022.0	1124.0	0.21230	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	3	20WP	G16_062		Non-Converged Contingency	1022.0	1124.0	0.21230	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	0	25SP	G16_062	FROM->TO	ANDREWS 3115.00 - National Enrichment Plant Sub 115KV CKT 1	525.0	525.0	1.00000	103.7801	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20SP	G16_062	FROM->TO	ANDREWS 3115.00 - National Enrichment Plant Sub 115KV CKT 1	525.0	525.0	1.00000	102.5287	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	157.1727	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	157.1524	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	157.1007	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	157.0137	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20275	134.0213	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20275	134.0213	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20275	132.236	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20275	132.236	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	122.0845	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20274	121.2972	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20274	121.2972	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	121.158	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20274	120.0455	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20274	120.0455	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	06ALL	0	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20283	110.0365	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20283	110.0365	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20283	108.4003	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20283	108.4003	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	17SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	105.3573	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	105.3573	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	16WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	105.0736	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	16WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	105.0736	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.9162	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	17G	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.8823	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.8823	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.7777	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	20L	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.6918	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.5473	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	20L	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.5435	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.0267	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.0267	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	16WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.8896	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	16WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.8896	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.8187	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	17G	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.8039	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.8039	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.7598	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	20L	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.7251	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.6705	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	20L	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.6421	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	00	0	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20276	101.629	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00	0	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20276	101.629	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00	0	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20276	100.3724	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00	0	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20276	100.3724	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	156.4035	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	156.3826	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	156.3318	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	156.2446	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20245	133.8307	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	0	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20245	132.0459	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	0	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	121.4865	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20244	121.122	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	0	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	120.5653	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20244	119.8715	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	0	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20253	109.881	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	0	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20253	108.2447	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	0	17SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.8412	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.8412	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	16WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.5589	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	16WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.5589	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.4023	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	17G	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.3686	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.3686	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.2645	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	20L	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.179	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.0353	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	20L	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.0314	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.518	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.518	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	16WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.3815	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	16WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.3815	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.3109	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	17G	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.2962	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.2962	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.2523	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	20L	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.2178	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.1634	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	20L	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.1352	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	00	0	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20245	101.4848	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00	0	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20245	100.2289	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	0	20WP	G16_062	FROM->TO	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1	329.05	360.92	0.10766	101.1848	BASE CASE
FDNS	06ALL	0	20WP	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23359	119.3308	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	0	16WP	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24144	118.0707	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	0	20WP	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23359	114.0226	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	0	16WP	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24144	113.137	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	0	17SP	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24247	111.5106	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	0	17SP	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24247	106.2194	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	0	20SP	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24018	102.8346	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	0	17SP	G16_062	TO->FROM	COCHRAN INTERCHANGE - G15-014T 115.00 115KV CKT 1	120.9	120.9	0.04434	107.0929	BASE CASE
FDNS	06ALL	0	17G	G16_062	TO->FROM	COCHRAN INTERCHANGE - G15-014T 115.00 115KV CKT 1	120.9	120.9	0.04277	102.1826	BASE CASE
FDNS	06ALL	0	17SP	G16_062	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.29410	160.0401	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	0	20SP	G16_062	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.30455	159.952	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	0	20SP	G16_062	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.30455	154.1703	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	0	17SP	G16_062	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.29410	153.9968	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	0	20SP	G16_062	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.34611	187.3884	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	06ALL	0	17SP	G16_062	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.28877	185.0941	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	0	17SP	G16_062	FROM->TO	CURRY COUNTY INTERCHANGE - DEAF SMITH REC-#20 115KV CKT 1	96.0	96.0	0.03389	100.9705	BASE CASE
FDNS	06ALL	0	17SP	G16_062	TO->FROM	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1	318.7	350.6	0.13748	114.5202	BASE CASE
FDNS	06ALL	0	20SP	G16_062	TO->FROM	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1	318.7	350.6	0.10954	108.9563	BASE CASE
FDNS	06ALL	0	25SP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51155	192.3608	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20SP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51161	192.2685	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.64334	169.9194	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.64334	169.9194	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17SP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.64457	160.3051	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17SP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.64457	160.3051	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	16WP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	103.0	114.0	0.64320	155.835	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	16WP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	103.0	114.0	0.64320	155.835	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20WP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	103.0	114.0	0.51180	124.0658	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20L	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51317	114.3105	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	20L	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51317	113.6863	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	25SP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51155	100.9979	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	20SP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51161	99.3	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	0	25SP	G16_062	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.51155	137.953	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20SP	G16_062	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.51161	135.6755	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_062	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.64334	118.7644	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_062	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.64334	118.7644	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17SP	G16_062	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.64457	114.3749	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17SP	G16_062	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.64457	114.3749	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	16WP	G16_062	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	165.0	177.0	0.64320	109.4244	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	16WP	G16_062	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	165.0	177.0	0.64320	109.4244	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20SP	G16_062	FROM->TO	DRINKARD TAP - WEST HOBBS SWITCHING STATION 115KV CKT 1	159.0	160.0	0.51161	111.4781	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	25SP	G16_062	FROM->TO	DRINKARD TAP - WEST HOBBS SWITCHING STATION 115KV CKT 1	159.0	160.0	0.51155	106.4978	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_062	FROM->TO	DRINKARD TAP - WEST HOBBS SWITCHING STATION 115KV CKT 1	159.0	160.0	0.64334	102.369	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_062	FROM->TO	DRINKARD TAP - WEST HOBBS SWITCHING STATION 115KV CKT 1	159.0	160.0	0.64334	102.369	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	25SP	G16_062	FROM->TO	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	422.0	422.0	1.00000	123.2716	ANDRWSXFMR12
FDNS	06ALL	0	25SP	G16_062	FROM->TO	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	422.0	422.0	1.00000	123.2559	ANDREWS 3115.00 - National Enrichment Plant Sub 115KV CKT 1
FDNS	06ALL	0	20SP	G16_062	FROM->TO	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	422.0	422.0	1.00000	123.1476	ANDRWSXFMR12
FDNS	06ALL	0	20SP	G16_062	FROM->TO	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	422.0	422.0	1.00000	123.1322	ANDREWS 3115.00 - National Enrichment Plant Sub 115KV CKT 1
FDNS	06ALL	0	17SP	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.44770	111.8672	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	17SP	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.44770	111.8672	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	17SP	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.44770	111.8642	CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1
FDNS	06ALL	0	17SP	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.44626	111.692	P12:345:SPS:J15.1.XRDS.TOLK
FDNS	06ALL	0	16WP	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	329.05	360.92	0.44698	109.7159	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	16WP	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	329.05	360.92	0.44698	109.7159	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	16WP	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	329.05	360.92	0.44698	109.7131	CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1
FDNS	06ALL	0	16WP	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	329.05	360.92	0.44537	109.4636	P12:345:SPS:J15.1.XRDS.TOLK
FDNS	06ALL	0	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.39115	109.4577	OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1
FDNS	06ALL	0	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.39115	109.4577	OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1
FDNS	06ALL	0	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.39640	108.5593	JOHNSON DRAW - TAYLOR SWITCHING STATION 115KV CKT 1
FDNS	06ALL	0	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.39640	108.5593	JOHNSON DRAW - TAYLOR SWITCHING STATION 115KV CKT 1
FDNS	06ALL	0	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37661	107.5654	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1
FDNS	06ALL	0	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.42929	106.6391	CUNNINGHAM STATION - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.42929	106.6391	CUNNINGHAM STATION - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.35757	105.4188	BASE CASE
FDNS	06ALL	0	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37977	103.0935	LEA COUNTY REC-LOVINGTON INTERCHANGE - LEA COUNTY REC-WAITS INTERCHANGE 115KV CKT 1
FDNS	06ALL	0	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37977	103.0935	LEA COUNTY REC-LOVINGTON INTERCHANGE - LEA COUNTY REC-WAITS INTERCHANGE 115KV CKT 1
FDNS	06ALL	0	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37467	102.9124	P12:115:SPS:T98.1.HIGG.HOBBG
FDNS	06ALL	0	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37467	102.8398	HOBBS INTERCHANGE - NEW_NHOBBS 3115.00 115KV CKT 1
FDNS	06ALL	0	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.35962	102.4212	P12:115:SPS:T14.1.MADDOX.WBENDR
FDNS	06ALL	0	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37467	102.2252	Higg Switch Station - NEW_NHOBBS 3115.00 115KV CKT 1
FDNS	06ALL	0	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37661	101.9536	HOBBS INTERCHANGE - LE-WEST_SUB3115.00 115KV CKT 1
FDNS	06ALL	0	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37120	101.9085	CUNNINGHAM STATION - POTASH JUNCTION INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37120	101.9085	CUNNINGHAM STATION - POTASH JUNCTION INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.38197	101.6173	JOHNSON DRAW - OXY_WSEM_TP3115.00 115KV CKT 1
FDNS	06ALL	0	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37661	101.5991	P12:115:LCEC:W56.1.HOBBG.LE-LVN
FDNS	06ALL	0	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.38197	101.3053	P12:115:SPS:W35.1.GAINES.JNSDRW
FDNS	06ALL	0	20SP	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.31143	101.1406	HOBBS (UPDATE DATA) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37977	101.1376	ALLRED TAP - LEA COUNTY REC-WAITS INTERCHANGE 115KV CKT 1
FDNS	06ALL	0	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.38197	100.637	GAINES COUNTY INTERCHANGE - OXY_WSEM_TP3115.00 115KV CKT 1
FDNS	06ALL	0	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.39734	100.6363	CUNNINGHAM STATION - EDDY COUNTY INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.39734	100.6363	CUNNINGHAM STATION - EDDY COUNTY INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.36309	100.5383	P12:115:SPS:T13.1.TAYLOR.WHOBBS
FDNS	06ALL	0	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.38231	100.1799	ANDRWSXFMR12
FDNS	06ALL	0	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.38231	100.1506	ANDREWS 3115.00 - National Enrichment Plant Sub 115KV CKT 1
FDNS	06ALL	0	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37977	100.1002	P12:115:SPS:V80.1.DC_STH.LE-WAIT
FDNS	06ALL	0	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.35757	99.9	GEN527163 1-MUSTANG GEN #3 22 KV
FDNS	06ALL	0	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.38732	99.8	Higg Switch Station - XTO_RUSSEL 3115.00 115KV CKT 1
FDNS	06ALL	0	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37214	99.4	P12:115:SPS:T84.1.WHOBBS.NEF
FDNS	06ALL	0	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.35859	99.4	P12:115:SPS:T97.1.TAYLOR.HOBBG
FDNS	06ALL	0	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.38732	99.2	P12:115:SPS:T89.1.DC_N.HIGG
FDNS	06ALL	0	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.35976	99.2	P12:115:SPS:V98.1.CUNN.LE-SNANDR
FDNS	06ALL	0	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.35757	99.1	GEN527164 1-MUSTANG GEN #4 22 KV
FDNS	06ALL	0	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.35756	99.1	P12:115:SPS:V84.1.LEA_NA.MALJMR
FDNS	06ALL	0	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.36179	99	DENVER CITY INTERCHANGE N. - EL PASO SUB 115KV CKT 1
FDNS	06ALL	0	17G	G16_062	TO->FROM	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1	318.7	350.57	0.05558	100.3944	BASE CASE
FDNS	06ALL	0	20SP	G16_062	TO->FROM	JAL SUB - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.24933	102.5845	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	06ALL	0	25SP	G16_062	TO->FROM	JAL SUB - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.24935	102.4747	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_062	TO->FROM	JOHNSON DRAW - TAYLOR SWITCHING STATION 115KV CKT 1	159.0	160.0	0.21410	135.4951	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17SP	G16_062	TO->FROM	JOHNSON DRAW - TAYLOR SWITCHING STATION 115KV CKT 1	159.0	160.0	0.21586	121.147	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	16WP	G16_062	TO->FROM	JOHNSON DRAW - TAYLOR SWITCHING STATION 115KV CKT 1	165.0	177.0	0.21497	107.1889	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20SP	G16_062	FROM->TO	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1	143.4	179.3	0.04334	104.4352	BASE CASE
FDNS	06ALL	0	17SP	G16_062	FROM->TO	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1	143.4	179.3	0.06917	103.7113	BASE CASE
FDNS	06ALL	0	17G	G16_062	FROM->TO	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1	143.4	179.3	0.06869	102.645	BASE CASE
FDNS	06ALL	0	25SP	G16_062	FROM->TO	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1	143.4	179.3	0.04341	100.3701	BASE CASE
FDNS	06ALL	0	17G	G16_062	FROM->TO	National Enrichment Plant Sub - TARGA 3115.00 115KV CKT 1	120.0	120.0	0.35666	110.6932	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_062	FROM->TO	National Enrichment Plant Sub - TARGA 3115.00 115KV CKT 1	120.0	120.0	0.35666	110.6932	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_062	TO->FROM	National Enrichment Plant Tap - TARGA 3115.00 115KV CKT 1	120.0	120.0	0.35666	100.5592	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_062	TO->FROM	National Enrichment Plant Tap - TARGA 3115.00 115KV CKT 1	120.0	120.0	0.35666	100.5592	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	25SP	G16_062	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.24935	109.2401	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	20SP	G16_062	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.24933	108.1383	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17SP	G16_062	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.35543	102.4665	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17SP	G16_062	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.35543	102.4665	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_062	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.35666	100.5136	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	17G	G16_062	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.35666	100.5136	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	25SP	G16_062	FROM->TO	ANDREWS 3115.00 - National Enrichment Plant Sub 115KV CKT 1	525.0	525.0	1.00000	103.7795	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20SP	G16_062	FROM->TO	ANDREWS 3115.00 - National Enrichment Plant Sub 115KV CKT 1	525.0	525.0	1.00000	102.5271	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	157.1724	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	157.1542	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	157.0998	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	157.0142	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20277	134.0116	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20277	134.0116	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20277	132.2253	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20277	132.2253	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	122.0762	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20276	121.2656	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20276	121.2656	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	121.1564	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20276	120.0109	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20276	120.0109	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20284	109.9451	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20284	109.9451	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20284	108.2989	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20284	108.2989	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	105.3576	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	105.3576	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	16WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	105.0763	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	16WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	105.0763	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.9085	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.8861	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.8861	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.7784	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	2	20L	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.7045	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	2	20L	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.5557	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.5495	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	2	17SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.0269	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.0269	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	16WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.8909	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	16WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.8909	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.8153	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.8056	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.8056	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.7601	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	2	20L	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.7302	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	2	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.6713	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	2	20L	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.6468	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	156.4032	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	156.3845	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	156.331	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	156.2451	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20246	133.8209	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20246	132.0352	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	121.4783	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20245	121.0904	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	120.5637	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20245	119.837	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20254	109.7896	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20254	108.1434	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.8415	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.8415	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	16WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.5616	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	16WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.5616	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.3947	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.3723	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.3723	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.2652	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	2	20L	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.1916	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	06ALL	2	20L	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.0436	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.0375	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	2	17SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.5181	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.5181	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	16WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.3827	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	16WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.3827	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.3075	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.2979	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.2979	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.2526	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	2	20L	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.2228	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	2	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.1642	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	2	20L	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.1398	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23627	116.7163	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	2	16WP	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24180	115.1362	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	2	20WP	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23373	114.0499	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	2	17G	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23627	111.498	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	2	20L	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.21077	110.6646	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	2	17SP	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24252	110.352	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	2	16WP	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24180	109.7596	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	2	20WP	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23373	108.768	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	2	20L	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.21077	105.663	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	2	17SP	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24252	104.9863	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	2	20SP	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23994	101.7908	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	2	16WP	G16_062	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.24482	111.1535	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	16WP	G16_062	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.24482	111.1535	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	16WP	G16_062	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.24482	111.1535	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	16WP	G16_062	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.24482	111.1535	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	16WP	G16_062	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.24482	109.6686	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	16WP	G16_062	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.24482	109.6686	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	16WP	G16_062	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.24482	109.6686	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	16WP	G16_062	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.24482	109.6686	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17G	G16_062	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.23790	105.2982	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.23790	105.2982	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.23790	105.2982	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17G	G16_062	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.23790	105.2982	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17G	G16_062	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.23790	103.5752	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.23790	103.5752	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.23790	103.5752	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17G	G16_062	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.23790	103.5752	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17G	G16_062	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.22747	100.5203	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17G	G16_062	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.22747	100.5203	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17G	G16_062	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.22747	100.5203	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17G	G16_062	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.22747	100.5203	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17SP	G16_062	TO->FROM	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1	318.7	350.6	0.13750	111.1037	BASE CASE
FDNS	06ALL	2	20SP	G16_062	TO->FROM	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1	318.7	350.6	0.10972	105.6192	BASE CASE
FDNS	06ALL	2	25SP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51157	192.3525	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20SP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51163	192.265	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.64334	169.8804	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.64334	169.8804	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17SP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.64457	160.3283	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17SP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.64457	160.3283	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	16WP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	103.0	114.0	0.64320	155.8356	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	16WP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	103.0	114.0	0.64320	155.8356	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20WP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	103.0	114.0	0.51183	124.1579	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20L	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51322	114.2645	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	2	20L	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51322	113.6389	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	25SP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51157	100.9911	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	2	20SP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51163	99.3	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	2	25SP	G16_062	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.51157	137.9474	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20SP	G16_062	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.51163	135.673	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_062	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.64334	118.7402	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_062	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.64334	118.7402	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17SP	G16_062	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.64457	114.3898	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17SP	G16_062	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.64457	114.3898	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	16WP	G16_062	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	165.0	177.0	0.64320	109.425	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	16WP	G16_062	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	165.0	177.0	0.64320	109.425	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20SP	G16_062	FROM->TO	DRINKARD TAP - WEST HOBBS SWITCHING STATION 115KV CKT 1	159.0	160.0	0.51163	111.4757	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	25SP	G16_062	FROM->TO	DRINKARD TAP - WEST HOBBS SWITCHING STATION 115KV CKT 1	159.0	160.0	0.51157	106.4919	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	DRINKARD TAP - WEST HOBBS SWITCHING STATION 115KV CKT 1	159.0	160.0	0.64334	102.3466	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	DRINKARD TAP - WEST HOBBS SWITCHING STATION 115KV CKT 1	159.0	160.0	0.64334	102.3466	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	25SP	G16_062	FROM->TO	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	422.0	422.0	1.00000	123.2777	ANDRWSXFMR12
FDNS	06ALL	2	25SP	G16_062	FROM->TO	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	422.0	422.0	1.00000	123.262	ANDREWS 3115.00 - National Enrichment Plant Sub 115KV CKT 1
FDNS	06ALL	2	20SP	G16_062	FROM->TO	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	422.0	422.0	1.00000	123.148	ANDRWSXFMR12
FDNS	06ALL	2	20SP	G16_062	FROM->TO	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	422.0	422.0	1.00000	123.1325	ANDREWS 3115.00 - National Enrichment Plant Sub 115KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.44201	134.1501	P12:345:SPS:J15.1.XRDS.TOLK
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.44363	133.6393	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.44363	133.6393	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.44363	133.637	CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1
FDNS	06ALL	2	17SP	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.44770	111.935	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17SP	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.44770	111.935	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	06ALL	2	17SP	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.44770	111.932	CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1
FDNS	06ALL	2	17SP	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.44626	111.7389	P12:345:SPS:J15.1.XRDS.TOLK
FDNS	06ALL	2	16WP	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	329.05	360.92	0.44699	109.7832	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	16WP	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	329.05	360.92	0.44699	109.7832	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	16WP	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	329.05	360.92	0.44699	109.7805	CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1
FDNS	06ALL	2	16WP	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	329.05	360.92	0.44538	109.486	P12:345:SPS:J15.1.XRDS.TOLK
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.39117	108.9702	OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.39117	108.9702	OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.39643	108.0899	JOHNSON DRAW - TAYLOR SWITCHING STATION 115KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.39643	108.0899	JOHNSON DRAW - TAYLOR SWITCHING STATION 115KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37664	107.122	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.42930	106.5003	CUNNINGHAM STATION - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.42930	106.5003	CUNNINGHAM STATION - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.35760	105.1382	BASE CASE
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37980	102.7358	LEA COUNTY REC-LOVINGTON INTERCHANGE - LEA COUNTY REC-WAITS INTERCHANGE 115KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37980	102.7358	LEA COUNTY REC-LOVINGTON INTERCHANGE - LEA COUNTY REC-WAITS INTERCHANGE 115KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37470	102.5753	P12:115:SPS:T98.1.HIGG.HOBBG
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37470	102.4853	HOBBS INTERCHANGE - NEW_NHOBBS 3115.00 115KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.35964	102.1115	P12:115:SPS:T14.1.MADDOX.WBENDR
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37470	101.8682	Higg Switch Station - NEW_NHOBBS 3115.00 115KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37122	101.7134	CUNNINGHAM STATION - POTASH JUNCTION INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37122	101.7134	CUNNINGHAM STATION - POTASH JUNCTION INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37664	101.6091	HOBBS INTERCHANGE - LE-WEST_SUB3115.00 115KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.38201	101.2774	JOHNSON DRAW - OXY_WSEM_TP3115.00 115KV CKT 1
FDNS	06ALL	2	20SP	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.31133	101.2637	HOBBS (UPDATE DATA) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37664	101.1904	P12:115:LCEC:W56.1.HOBBG.LE-LVN
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.38201	100.9821	P12:115:SPS:W35.1.GAINES.JNSDRW
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37980	100.7971	ALLRED TAP - LEA COUNTY REC-WAITS INTERCHANGE 115KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.39735	100.4406	CUNNINGHAM STATION - EDDY COUNTY INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.39735	100.4406	CUNNINGHAM STATION - EDDY COUNTY INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.38201	100.3422	GAINES COUNTY INTERCHANGE - OXY_WSEM_TP3115.00 115KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.36312	100.2502	P12:115:SPS:T13.1.TAYLOR.WHOBBS
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.38234	99.9	ANDREWS 3115.00 - National Enrichment Plant Sub 115KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.38234	99.9	ANDRWSXFMR12
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37980	99.8	P12:115:SPS:V80.1.DC_STH.LE-WAIT
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.38736	99.5	Higg Switch Station - XTO_RUSSEL 3115.00 115KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.36417	99.4	TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.36417	99.4	TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.37217	99.1	P12:115:SPS:T84.1.WHOBBS.NEF
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.35862	99.1	P12:115:SPS:T97.1.TAYLOR.HOBBG
FDNS	06ALL	2	17G	G16_062	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.38736	99	P12:115:SPS:T89.1.DC_N.HIGG
FDNS	06ALL	2	20SP	G16_062	TO->FROM	JAL SUB - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.24932	102.5793	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	25SP	G16_062	TO->FROM	JAL SUB - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.24933	102.4786	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_062	TO->FROM	JOHNSON DRAW - TAYLOR SWITCHING STATION 115KV CKT 1	159.0	160.0	0.21413	134.6963	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17SP	G16_062	TO->FROM	JOHNSON DRAW - TAYLOR SWITCHING STATION 115KV CKT 1	159.0	160.0	0.21587	121.2897	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	16WP	G16_062	TO->FROM	JOHNSON DRAW - TAYLOR SWITCHING STATION 115KV CKT 1	165.0	177.0	0.21500	107.1035	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20SP	G16_062	FROM->TO	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1	143.4	179.3	0.04341	104.3304	BASE CASE
FDNS	06ALL	2	17SP	G16_062	FROM->TO	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1	143.4	179.3	0.06918	103.7639	BASE CASE
FDNS	06ALL	2	17G	G16_062	FROM->TO	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1	143.4	179.3	0.06870	102.3415	BASE CASE
FDNS	06ALL	2	25SP	G16_062	FROM->TO	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1	143.4	179.3	0.04348	100.3319	BASE CASE
FDNS	06ALL	2	17G	G16_062	FROM->TO	National Enrichment Plant Sub - TARGA 3115.00 115KV CKT 1	120.0	120.0	0.35666	110.7208	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	National Enrichment Plant Sub - TARGA 3115.00 115KV CKT 1	120.0	120.0	0.35666	110.7208	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_062	TO->FROM	National Enrichment Plant Tap - TARGA 3115.00 115KV CKT 1	120.0	120.0	0.35666	100.5862	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_062	TO->FROM	National Enrichment Plant Tap - TARGA 3115.00 115KV CKT 1	120.0	120.0	0.35666	100.5862	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	25SP	G16_062	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.24933	109.244	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	20SP	G16_062	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.24932	108.1333	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17SP	G16_062	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.35543	102.4458	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17SP	G16_062	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.35543	102.4458	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.35666	100.5406	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	17G	G16_062	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.35666	100.5406	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	2	16WP	G16_062	FROM->TO	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	560.0	644.0	0.26027	101.527	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	16WP	G16_062	FROM->TO	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	560.0	644.0	0.26027	101.527	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	16WP	G16_062	FROM->TO	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	560.0	644.0	0.26027	99.4	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	16WP	G16_062	FROM->TO	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	560.0	644.0	0.26027	99.4	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	3	25SP	G16_062	FROM->TO	ANDREWS 3115.00 - National Enrichment Plant Sub 115KV CKT 1	525.0	525.0	1.00000	103.7788	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20SP	G16_062	FROM->TO	ANDREWS 3115.00 - National Enrichment Plant Sub 115KV CKT 1	525.0	525.0	1.00000	102.5357	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	157.172	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	157.1436	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	157.1047	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	157.0151	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20280	134.0273	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	3	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20280	134.0273	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	3	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20280	132.2392	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	3	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20280	132.2392	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	3	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	122.0869	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20279	121.2685	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	3	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20279	121.2685	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	3	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	121.1585	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20279	120.0075	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	3	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20279	120.0075	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	3	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20287	109.9318	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	06ALL	3	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20287	109.9318	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	3	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20287	108.2733	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	3	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20287	108.2733	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	3	17SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	105.3724	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	17SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	105.3724	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	16WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	105.0922	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	16WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	105.0922	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.9187	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	3	17G	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.9082	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.7795	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	3	20L	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.7134	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	3	20L	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.5643	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.5535	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	3	17SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.0343	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	17SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.0343	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	16WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.8983	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	16WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.8983	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.8198	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	3	17G	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.8152	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.7605	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	3	20L	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.7337	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	3	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.6727	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	3	20L	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.65	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	156.4028	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	156.3739	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	156.3359	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	156.246	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20249	133.8367	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	3	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20249	132.0491	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	3	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	121.4889	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20248	121.0934	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	3	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	120.5658	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20248	119.8335	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	3	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20257	109.7764	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	3	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20257	108.1177	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	3	17SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.8562	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	17SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.8562	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	16WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.5774	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	16WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.5774	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.4048	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	3	17G	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.3943	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.2663	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	3	20L	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.2005	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	3	20L	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.0521	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.0414	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	3	17SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.5255	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	17SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.5255	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	16WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.3901	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	16WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.3901	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.312	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	3	17G	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.3074	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.253	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	3	20L	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.2263	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	3	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.1657	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	3	20L	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.143	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	17G	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25285	118.6959	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	3	16WP	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25866	117.0897	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	3	20WP	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23833	115.2141	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	3	17G	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25285	113.4916	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	3	20L	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.21532	111.7529	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	3	17SP	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25806	111.7525	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	3	16WP	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25866	111.7148	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	3	20WP	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23833	110.0424	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	3	20L	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.21532	106.7271	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	3	17SP	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25806	106.4339	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	3	20SP	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24439	102.7473	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	3	25SP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51128	192.1086	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20SP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51135	191.7576	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	17G	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.64311	168.7586	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	17SP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.64427	159.2516	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	17SP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.64427	159.2516	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	16WP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	103.0	114.0	0.64299	154.4739	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	16WP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	103.0	114.0	0.64299	154.4739	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20WP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	103.0	114.0	0.51156	123.4055	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20L	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51299	113.536	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	3	20L	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51299	112.9085	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	25SP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51128	100.7507	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	3	25SP	G16_062	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.51128	137.7886	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20SP	G16_062	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.51135	135.3464	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	17G	G16_062	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.64311	118.0255	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	17SP	G16_062	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.64427	113.6963	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	06ALL	3	17SP	G16_062	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.64427	113.6963	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	16WP	G16_062	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	165.0	177.0	0.64299	108.5525	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	16WP	G16_062	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	165.0	177.0	0.64299	108.5525	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20SP	G16_062	FROM->TO	DRINKARD TAP - WEST HOBBS SWITCHING STATION 115KV CKT 1	159.0	160.0	0.51135	111.1445	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	25SP	G16_062	FROM->TO	DRINKARD TAP - WEST HOBBS SWITCHING STATION 115KV CKT 1	159.0	160.0	0.51128	106.3313	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	17G	G16_062	FROM->TO	DRINKARD TAP - WEST HOBBS SWITCHING STATION 115KV CKT 1	159.0	160.0	0.64311	101.6446	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	25SP	G16_062	FROM->TO	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	422.0	422.0	1.00000	123.281	ANDRWSXFMR12
FDNS	06ALL	3	25SP	G16_062	FROM->TO	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	422.0	422.0	1.00000	123.2652	ANDREWS 3115.00 - National Enrichment Plant Sub 115KV CKT 1
FDNS	06ALL	3	20SP	G16_062	FROM->TO	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	422.0	422.0	1.00000	123.148	ANDRWSXFMR12
FDNS	06ALL	3	20SP	G16_062	FROM->TO	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	422.0	422.0	1.00000	123.1325	ANDREWS 3115.00 - National Enrichment Plant Sub 115KV CKT 1
FDNS	06ALL	3	20SP	G16_062	TO->FROM	JAL SUB - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.24925	102.5096	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	25SP	G16_062	TO->FROM	JAL SUB - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.24927	102.4236	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20SP	G16_062	FROM->TO	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1	143.4	179.3	0.04242	102.4287	BASE CASE
FDNS	06ALL	3	25SP	G16_062	FROM->TO	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1	143.4	179.3	0.04246	99.7	BASE CASE
FDNS	06ALL	3	17G	G16_062	FROM->TO	National Enrichment Plant Sub - TARGA 3115.00 115KV CKT 1	120.0	120.0	0.35689	111.6597	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	17G	G16_062	TO->FROM	National Enrichment Plant Tap - TARGA 3115.00 115KV CKT 1	120.0	120.0	0.35689	101.5116	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	25SP	G16_062	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.24927	109.1883	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	20SP	G16_062	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.24925	108.0599	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	17SP	G16_062	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.35573	103.414	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	17SP	G16_062	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.35573	103.414	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	3	17G	G16_062	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.35689	101.4665	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	25SP	G16_062	FROM->TO	ANDREWS 3115.00 - National Enrichment Plant Sub 115KV CKT 1	525.0	525.0	1.00000	103.7785	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20SP	G16_062	FROM->TO	ANDREWS 3115.00 - National Enrichment Plant Sub 115KV CKT 1	525.0	525.0	1.00000	102.5347	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	157.1718	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	157.1449	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	157.1042	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	157.0155	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20279	134.018	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	4	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20279	134.018	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	4	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20279	132.2294	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	4	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20279	132.2294	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	4	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	122.0893	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20278	121.2316	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	4	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20278	121.2316	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	4	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	121.159	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20278	119.9689	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	4	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20278	119.9689	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	4	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20286	109.9014	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	4	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20286	109.9014	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	4	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20286	108.2375	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	4	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.20286	108.2375	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	4	17SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	105.3702	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	17SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	105.3702	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	16WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	105.0926	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	16WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	105.0926	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.921	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	4	17G	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.9082	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.7799	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	4	20L	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.7156	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	4	20L	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.5664	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.5547	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	4	17SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.0332	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	17SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	104.0332	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	16WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.8985	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	16WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.8985	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.8208	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	4	17G	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.8152	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.7607	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	4	20L	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.7346	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	4	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.6731	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	4	20L	G16_062	FROM->TO	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2	168.0	168.0	0.50123	103.6508	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	156.4026	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	156.3751	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	156.3353	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	156.2463	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20248	133.8274	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	4	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20248	132.0393	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	4	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	121.4913	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20247	121.0566	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	4	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	120.5662	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20247	119.795	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	4	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20256	109.7458	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	4	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.20256	108.082	ANDREWS 6230.00 (FROM BORDEN) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	4	17SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.8541	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	17SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.8541	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	16WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.5778	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	16WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.5778	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.4071	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	4	17G	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.3943	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.2667	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	4	20L	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.2027	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	06ALL	4	20L	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.0542	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	104.0426	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	4	17SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.5244	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	17SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.5244	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	16WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.3903	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	16WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.3903	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20WP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.313	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	4	17G	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.3074	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	25SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.2532	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	4	20L	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.2272	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	4	20SP	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.166	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	4	20L	G16_062	FROM->TO	ANDREWS 6230.00 (FROM MIDLAND) 230/115/13.2KV TRANSFORMER CKT 1	168.0	168.0	0.49877	103.1438	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	17G	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23789	116.0714	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	4	16WP	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24358	114.334	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	4	20WP	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.22254	112.0627	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	4	17G	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23789	110.887	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	4	16WP	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24358	109.0011	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	4	20L	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.20179	108.4948	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	4	17SP	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24286	108.3281	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	4	20WP	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.22254	106.6907	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	4	20L	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.20179	103.5292	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	4	17SP	G16_062	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24286	102.9885	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	4	25SP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51109	191.9056	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20SP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51116	191.3781	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	17G	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.64283	168.2516	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	17SP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.64398	158.5923	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	17SP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.64398	158.5923	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	16WP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	103.0	114.0	0.64270	153.9751	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	16WP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	103.0	114.0	0.64270	153.9751	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20WP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	103.0	114.0	0.51138	123.0742	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20L	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51284	113.2039	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	4	20L	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51284	112.5754	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	25SP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51109	100.5464	ANDREWS 6230.00 - G14_012T 230.00 230KV CKT 1
FDNS	06ALL	4	25SP	G16_062	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.51109	137.6567	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20SP	G16_062	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.51116	135.1015	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	17G	G16_062	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.64283	117.7008	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	17SP	G16_062	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.64398	113.2722	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	17SP	G16_062	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.64398	113.2722	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	16WP	G16_062	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	165.0	177.0	0.64270	108.2325	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	16WP	G16_062	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	165.0	177.0	0.64270	108.2325	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20SP	G16_062	FROM->TO	DRINKARD TAP - WEST HOBBS SWITCHING STATION 115KV CKT 1	159.0	160.0	0.51116	110.8989	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	25SP	G16_062	FROM->TO	DRINKARD TAP - WEST HOBBS SWITCHING STATION 115KV CKT 1	159.0	160.0	0.51109	106.1978	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	17G	G16_062	FROM->TO	DRINKARD TAP - WEST HOBBS SWITCHING STATION 115KV CKT 1	159.0	160.0	0.64283	101.3214	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	25SP	G16_062	FROM->TO	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	422.0	422.0	1.00000	123.2858	ANDRWSXFMR12
FDNS	06ALL	4	25SP	G16_062	FROM->TO	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	422.0	422.0	1.00000	123.27	ANDREWS 3115.00 - National Enrichment Plant Sub 115KV CKT 1
FDNS	06ALL	4	20SP	G16_062	FROM->TO	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	422.0	422.0	1.00000	123.148	ANDRWSXFMR12
FDNS	06ALL	4	20SP	G16_062	FROM->TO	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1	422.0	422.0	1.00000	123.1326	ANDREWS 3115.00 - National Enrichment Plant Sub 115KV CKT 1
FDNS	06ALL	4	20SP	G16_062	TO->FROM	JAL SUB - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.24925	102.4873	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	25SP	G16_062	TO->FROM	JAL SUB - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.24926	102.4146	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20SP	G16_062	FROM->TO	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1	143.4	179.3	0.04181	101.3622	BASE CASE
FDNS	06ALL	4	25SP	G16_062	FROM->TO	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1	143.4	179.3	0.04184	99.2	BASE CASE
FDNS	06ALL	4	17G	G16_062	FROM->TO	National Enrichment Plant Sub - TARGA 3115.00 115KV CKT 1	120.0	120.0	0.35717	112.1017	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	17G	G16_062	TO->FROM	National Enrichment Plant Tap - TARGA 3115.00 115KV CKT 1	120.0	120.0	0.35717	101.9469	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	25SP	G16_062	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.24926	109.1792	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	20SP	G16_062	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.24925	108.0377	G14_012T 230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	17SP	G16_062	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.35602	104.0081	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	17SP	G16_062	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.35602	104.0081	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	4	17G	G16_062	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.35717	101.9021	ANDREWS 6230.00 - HOBBS INTERCHANGE 230KV CKT 1
FDNS	06ALL	5	20SP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51116	177.7923	G14_012T 345.00 - HOBBS 345KV CKT 1
FDNS	06ALL	5	25SP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51109	176.7458	G14_012T 345.00 - HOBBS 345KV CKT 1
FDNS	06ALL	5	17G	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.64283	159.1397	ANDREWS 6345.00 - HOBBS 345KV CKT 1
FDNS	06ALL	5	17SP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.64398	149.2656	ANDREWS 6345.00 - HOBBS 345KV CKT 1
FDNS	06ALL	5	16WP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	103.0	114.0	0.64270	144.785	ANDREWS 6345.00 - HOBBS 345KV CKT 1
FDNS	06ALL	5	20WP	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	103.0	114.0	0.51138	115.1911	G14_012T 345.00 - HOBBS 345KV CKT 1
FDNS	06ALL	5	20L	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51284	106.4971	ANDREWS 6345.00 - G14_012T 345.00 345KV CKT 1
FDNS	06ALL	5	20L	G16_062	FROM->TO	DRINKARD SUB - DRINKARD TAP 115KV CKT 1	93.0	103.0	0.51284	106.001	G14_012T 345.00 - HOBBS 345KV CKT 1
FDNS	06ALL	5	25SP	G16_062	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.51109	127.5618	G14_012T 345.00 - HOBBS 345KV CKT 1
FDNS	06ALL	5	20SP	G16_062	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.51116	125.8809	G14_012T 345.00 - HOBBS 345KV CKT 1
FDNS	06ALL	5	17G	G16_062	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.64283	111.2027	ANDREWS 6345.00 - HOBBS 345KV CKT 1
FDNS	06ALL	5	17SP	G16_062	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	159.0	160.0	0.64398	105.2563	ANDREWS 6345.00 - HOBBS 345KV CKT 1
FDNS	06ALL	5	16WP	G16_062	TO->FROM	DRINKARD SUB - National Enrichment Plant Sub 115KV CKT 1	165.0	177.0	0.64270	101.8209	ANDREWS 6345.00 - HOBBS 345KV CKT 1
FDNS	06ALL	5	20SP	G16_062	FROM->TO	DRINKARD TAP - WEST HOBBS SWITCHING STATION 115KV CKT 1	159.0	160.0	0.51116	104.6471	G14_012T 345.00 - HOBBS 345KV CKT 1
FDNS	06ALL	5	17G	G16_062	FROM->TO	National Enrichment Plant Sub - TARGA 3115.00 115KV CKT 1	120.0	120.0	0.35717	107.2887	ANDREWS 6345.00 - HOBBS 345KV CKT 1
FDNS	06ALL	5	20SP	G16_062	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.24925	103.2859	G14_012T 345.00 - HOBBS 345KV CKT 1
FDNS	06ALL	5	25SP	G16_062	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.24926	103.1697	G14_012T 345.00 - HOBBS 345KV CKT 1
FDNS	06ALL	5	17SP	G16_062	FROM->TO	National Enrichment Plant Tap - TEAGUE SUB 115KV CKT 1	120.0	120.0	0.35602	100.7509	ANDREWS 6345.00 - HOBBS 345KV CKT 1
FDNS	08ALL	0	20L	G16_068	FROM->TO	CANEYRV7 345.00 - NEOSHO 345KV CKT 1	766.0	923.0	0.03050	99	BASE CASE
FDNS	08ALL	0	25SP	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.38623	118.6056	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	16WP	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.37898	113.3276	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	16WP	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.37898	113.1929	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	25SP	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.38685	112.7256	SOONER - SPRING CREEK 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	08ALL	0	20L	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.36071	111.3592	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	20L	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.36071	111.2652	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	17G	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.38139	110.0227	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	17G	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.38139	109.8806	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	16WP	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.43002	109.6338	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	08ALL	0	17SP	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.38257	109.0726	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	20L	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.36891	108.8578	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08ALL	0	17G	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.43019	107.6871	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	08ALL	0	20WP	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.38518	105.432	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	20WP	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.38518	105.288	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	20L	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.36891	104.9775	G15066_T 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	0	16WP	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.39061	104.7527	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNSLock	08ALL	0	20L	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.36891	103.5781	917X
FDNS	08ALL	0	17SP	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.38315	103.2788	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	17G	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.39239	102.7902	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08ALL	0	20L	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.36306	102.5234	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08ALL	0	20L	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.36306	102.5234	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08ALL	0	25SP	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.39502	102.2366	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08ALL	0	17SP	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.43400	101.9749	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	08ALL	0	20SP	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.38696	101.4732	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	16WP	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.39061	101.22	G15066_T 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	0	16WP	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.39061	99.6	917X
FDNS	08ALL	0	17G	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.39239	99.3	G15066_T 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	0	20WP	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.39395	99.2	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08ALL	0	16WP	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.38217	99.1	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08ALL	0	16WP	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.38217	99.1	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08ALL	0	25SP	G16_068	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.38623	117.2181	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	16WP	G16_068	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.37898	110.6515	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	16WP	G16_068	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.37898	110.4779	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	25SP	G16_068	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.38685	109.9144	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	20L	G16_068	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.36071	108.289	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	20L	G16_068	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.36071	108.1586	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	17G	G16_068	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.38139	106.5951	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	17G	G16_068	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.38139	106.4127	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	16WP	G16_068	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.43002	106.0416	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	08ALL	0	17SP	G16_068	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.38257	105.4297	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	20L	G16_068	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.36891	104.9951	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08ALL	0	17G	G16_068	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.43019	103.6691	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	08ALL	0	20WP	G16_068	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.38518	100.8863	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	20WP	G16_068	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.38518	100.6993	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	20L	G16_068	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.36891	100.2146	G15066_T 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	0	16WP	G16_068	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.39061	99.9	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08ALL	2	25SP	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.38622	118.6256	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	16WP	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.37898	113.3453	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	16WP	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.37898	113.2104	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	25SP	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.38684	112.7451	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	20L	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.36067	111.3691	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	20L	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.36067	111.2763	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	17G	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.38139	110.0831	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	17G	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.38139	109.9406	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	16WP	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.43000	109.6349	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	08ALL	2	17SP	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.38257	109.0943	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	20L	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.36887	108.8587	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08ALL	2	17G	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.43017	107.6815	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	08ALL	2	20WP	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.38517	105.4474	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	20WP	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.38517	105.3108	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	20L	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.36887	104.9754	G15066_T 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	2	16WP	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.39061	104.7569	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNSLock	08ALL	2	20L	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.36887	103.5686	917X
FDNS	08ALL	2	17SP	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.38315	103.301	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	17G	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.39239	102.7913	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08ALL	2	20L	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.36302	102.5171	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08ALL	2	20L	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.36302	102.5171	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08ALL	2	25SP	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.39502	102.2455	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08ALL	2	17SP	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.43398	101.9349	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	08ALL	2	20SP	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.38696	101.4949	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	16WP	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.39061	101.2242	G15066_T 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	2	16WP	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.39061	99.6	917X
FDNS	08ALL	2	17G	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.39239	99.3	G15066_T 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	2	20WP	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.39395	99.2	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08ALL	2	16WP	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.38217	99.1	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08ALL	2	16WP	G16_068	FROM->TO	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1	1192.0	1192.0	0.38217	99.1	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08ALL	2	25SP	G16_068	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.38622	117.2428	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	16WP	G16_068	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.37898	110.6732	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	16WP	G16_068	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.37898	110.4995	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	25SP	G16_068	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.38684	109.9386	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	20L	G16_068	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.36067	108.3003	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	20L	G16_068	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.36067	108.1716	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	17G	G16_068	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.38139	106.6706	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	17G	G16_068	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.38139	106.4869	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	16WP	G16_068	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.43000	106.0426	VIOLA 7 345.00 - WICHITA 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	08ALL	2	17SP	G16_068	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.38257	105.4565	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	20L	G16_068	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.36887	104.996	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08ALL	2	17G	G16_068	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.43017	103.6618	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	08ALL	2	20WP	G16_068	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.38517	100.9052	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	20WP	G16_068	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.38517	100.7276	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	2	20L	G16_068	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.36887	100.2117	G15066_T 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	2	16WP	G16_068	TO->FROM	G15063_T 345.00 - WOODRING 345KV CKT 1	956.0	956.0	0.39061	99.9	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	552.14	607.52	0.22120	-	TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	552.14	607.52	0.22120	-	TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	1022.0	1124.0	0.19513	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	1022.0	1124.0	0.19513	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	987.2	1082.8	0.19148	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	987.2	1082.8	0.19148	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	556.53	611.5	0.18663	-	NEWHART 230 - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	956.0	956.0	0.17677	-	CIMARRON - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	1195.0	1195.0	0.17677	-	GRACEMONT - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	557.0	557.0	0.16918	-	BUSHLAND INTERCHANGE - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	557.0	557.0	0.16918	-	BUSHLAND INTERCHANGE - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	560.0	644.0	0.16748	-	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	560.0	644.0	0.16748	-	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	616.0	700.0	0.16748	-	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	616.0	700.0	0.16748	-	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	560.0	560.0	0.16699	-	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	1330.0	1940.0	0.16440	-	CHISHOLM7 345.00 - G16-037-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	1330.0	1940.0	0.16440	-	G16-037-TAP 345.00 - GRACEMONT 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	1792.0	1972.0	0.15341	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	1792.0	1972.0	0.15341	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	329.05	360.92	0.14947	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	329.05	360.92	0.14947	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	1792.0	1792.0	0.14943	-	BORDER 7345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	987.16	1082.77	0.14630	-	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	956.09	1051.7	0.14630	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	956.09	1051.7	0.14630	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	0.0	0.0	0.14497	-	P12:230:AEPW-SPS:SWEETWT6:WHEELER 6
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	329.0	360.9	0.14098	-	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	329.0	360.9	0.14098	-	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	1792.0	1972.0	0.13983	-	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	0.0	0.0	0.13795	-	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	427.05	427.05	0.11996	-	JONES STATION - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	427.05	427.05	0.11996	-	JONES STATION - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	427.05	427.05	0.11996	-	JONES STATION - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	557.0	557.0	0.11742	-	NEWHART 230 - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	1420.0	1775.0	0.10184	-	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	1420.0	1775.0	0.10184	-	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	1793.0	1793.0	0.09025	-	G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	1716.0	1793.0	0.09025	-	G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	329.05	360.92	0.08281	-	AMARILLO SOUTH INTERCHANGE - G15031_T 230.00 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	439.0	439.0	0.07248	-	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	557.0	557.0	0.07248	-	STATELINE INTERCHANGE - STLN-DEMARC6 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	500.0	723.0	0.07248	-	STLN-DEMARC6 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	556.92	556.92	0.06905	-	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	556.92	556.92	0.06905	-	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	439.0	439.0	0.06547	-	CHISHOLM6 230.00 - ELK CITY 230KV 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	450.0	450.0	0.06547	-	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	450.0	450.0	0.06547	-	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	557.0	557.0	0.06160	-	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	557.0	557.0	0.06160	-	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	329.05	360.92	0.06145	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	329.05	360.92	0.06145	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	329.05	360.92	0.05846	-	MOORE COUNTY INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	16WP	G16_069		Non-Converged Contingency	329.05	360.92	0.05846	-	MOORE COUNTY INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	0.0	0.0	0.83438	-	P12:345:SPS:J15.1.XRDS.TOLK
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	717.0	926.0	0.27813	-	CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	560.0	560.0	0.27813	-	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	560.0	560.0	0.27813	-	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	478.05	546.96	0.21849	-	TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	478.05	546.96	0.21849	-	TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	956.0	1042.0	0.18966	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	956.0	1042.0	0.18966	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	478.05	547.36	0.18456	-	NEWHART 230 - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	956.1	1051.7	0.18219	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	956.1	1051.7	0.18219	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	956.0	956.0	0.17273	-	CIMARRON - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	1195.0	1195.0	0.17273	-	GRACEMONT - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	478.0	502.0	0.16741	-	BUSHLAND INTERCHANGE - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	478.0	502.0	0.16741	-	BUSHLAND INTERCHANGE - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	560.0	644.0	0.16266	-	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	560.0	644.0	0.16266	-	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	560.0	644.0	0.16266	-	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	560.0	644.0	0.16266	-	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	560.0	560.0	0.16208	-	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	1330.0	1940.0	0.15997	-	CHISHOLM7 345.00 - G16-037-TAP 345.00 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	1330.0	1940.0	0.15997	-	G16-037-TAP 345.00 - GRACEMONT 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	1792.0	1972.0	0.14887	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	1792.0	1972.0	0.14887	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	318.7	350.57	0.14752	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	318.7	350.57	0.14752	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	1792.0	1792.0	0.14336	-	BORDER 7345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	318.7	350.6	0.13949	-	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	318.7	350.6	0.13949	-	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	414.0	414.0	0.13845	-	AMOCO SWITCHING STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	414.0	414.0	0.13845	-	AMOCO SWITCHING STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	0.0	0.0	0.13764	-	P12:230:AEPW-SPS:SWEETWT6:WHEELER 6
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	956.09	1051.7	0.13650	-	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	956.09	1051.7	0.13650	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	956.09	1051.7	0.13650	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	1792.0	1972.0	0.13566	-	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	497.0	547.0	0.13358	-	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	0.0	0.0	0.13205	-	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	1398.0	1549.0	0.12216	-	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	1493.0	1493.0	0.12216	-	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	478.0	502.0	0.11613	-	NEWHART 230 - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	497.6	547.4	0.11429	-	JONES STATION - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	497.6	547.4	0.11429	-	JONES STATION - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	1420.0	1775.0	0.10115	-	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	1420.0	1775.0	0.10115	-	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	1793.0	1793.0	0.08693	-	G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	1716.0	1793.0	0.08693	-	G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	318.7	350.57	0.08269	-	AMARILLO SOUTH INTERCHANGE - G15031_T 230.00 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	318.7	350.57	0.08269	-	G15031_T 230.00 - SWISHER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	1792.0	1792.0	0.07719	-	BORDER 7345.00 - CHISHOLM7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	1792.0	1792.0	0.07719	-	BORDER 7345.00 - CHISHOLM7 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	1532.0	1793.0	0.07464	-	G1524G1525 345.00 - THISTLE7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	1532.0	1793.0	0.07464	-	G1524G1525 345.00 - THISTLE7 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	439.0	439.0	0.06882	-	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	502.0	502.0	0.06882	-	STATELINE INTERCHANGE - STLN-DEMARC6 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	500.0	723.0	0.06882	-	STLN-DEMARC6 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	501.95	501.95	0.06559	-	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	501.95	501.95	0.06559	-	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	439.0	439.0	0.06323	-	CHISHOLM6 230.00 - ELK CITY 230KV 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	450.0	450.0	0.06323	-	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	450.0	450.0	0.06323	-	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	717.1	717.1	0.06164	-	HOLCOMB - SETAB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	717.1	717.1	0.06164	-	HOLCOMB - SETAB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	1413.0	1517.0	0.05926	-	BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	502.0	502.0	0.05851	-	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	502.0	502.0	0.05851	-	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	318.7	350.57	0.05849	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	318.7	350.57	0.05849	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	318.7	350.57	0.05585	-	MOORE COUNTY INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	318.7	350.57	0.05585	-	MOORE COUNTY INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	478.0	502.0	0.04985	-	CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17G	G16_069		Non-Converged Contingency	478.0	502.0	0.04985	-	CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	17SP	G16_069		Non-Converged Contingency	956.0	1042.0	0.19584	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17SP	G16_069		Non-Converged Contingency	1792.0	1972.0	0.15482	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	17SP	G16_069		Non-Converged Contingency	1792.0	1972.0	0.15482	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	478.0	478.0	0.28462	-	EDDY COUNTY INTERCHANGE - EDDY_NORTH 6230.00 230KV CKT @1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	0.0	0.0	0.23683	-	P12:345:SPS:J15.1.XRDS.TOLK
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	0.0	0.0	0.21923	-	P12:345:SPS:J07.1.FINN.HITCH
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1792.0	1792.0	0.21358	-	TUCO INTERCHANGE - YOAKUM_345 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1792.0	1792.0	0.20997	-	HOBBS - YOAKUM_345 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	717.0	926.0	0.20660	-	CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	560.0	560.0	0.20660	-	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	560.0	560.0	0.20660	-	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1792.0	1972.0	0.20058	-	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	0.0	0.0	0.17430	-	P12:115:SPS:T59.1.CARGIL.CURRY
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	956.0	1042.0	0.16670	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	956.0	1042.0	0.16670	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	956.0	1042.0	0.16670	-	OKLAUNION 345KV SWITCHED SHUNT
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	956.0	956.0	0.15398	-	CIMARRON - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1195.0	1195.0	0.15398	-	GRACEMONT - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1792.0	1792.0	0.14742	-	BORDER 7345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	956.1	1051.7	0.14591	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	956.1	1051.7	0.14591	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1792.0	1972.0	0.13913	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1792.0	1972.0	0.13913	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	442.0	752.0	0.13596	-	PLANT X STATION - TOLK STATION WEST 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	442.0	752.0	0.13596	-	PLANT X STATION - TOLK STATION WEST 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	442.0	752.0	0.13503	-	PLANT X STATION - TOLK STATION EAST 230KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	442.0	752.0	0.13503	-	PLANT X STATION - TOLK STATION EAST 230KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	478.05	546.96	0.12726	-	TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	478.05	546.96	0.12726	-	TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	478.05	547.36	0.12664	-	NEWHART 230 - PLANT X STATION 230KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	478.0	502.0	0.12645	-	BUSHLAND INTERCHANGE - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	478.0	502.0	0.12645	-	BUSHLAND INTERCHANGE - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	478.0	502.0	0.12645	-	BUSHLAND INTERCHANGE 230KV SWITCHED SHUNT
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1584.0	2098.0	0.12601	-	CHISHOLM7 345.00 - G16-037-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1584.0	2098.0	0.12601	-	G16-037-TAP 345.00 - GRACEMONT 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	956.09	1051.7	0.11622	-	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	956.09	1051.7	0.11622	-	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	318.7	350.57	0.11236	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	318.7	350.57	0.11236	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	318.7	350.6	0.10354	-	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	318.7	350.6	0.10354	-	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	956.09	1051.7	0.10301	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	956.09	1051.7	0.10301	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	956.09	1051.7	0.10301	-	FINNEY SWITCHING STATION - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	956.09	1051.7	0.10301	-	FINNEY SWITCHING STATION - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1398.0	1549.0	0.10051	-	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1493.0	1493.0	0.10051	-	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	318.7	350.57	0.09726	-	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	0.0	0.0	0.09692	-	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	478.0	502.0	0.09423	-	NEWHART 230 - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	0.0	0.0	0.09270	-	P12:115:SPS:W40.1.WCANYON.DFSMTH
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	0.0	0.0	0.09210	-	P12:230:AEPW-SPS:SWEETWT6:WHEELER 6
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	560.0	644.0	0.09059	-	HOBBS (UPDATE DATA) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	497.0	547.0	0.08924	-	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	0.0	0.0	0.08576	-	P12:138:WFEC:MSL03
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	560.0	560.0	0.07767	-	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	560.0	644.0	0.07686	-	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	560.0	644.0	0.07686	-	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	560.0	644.0	0.07686	-	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	560.0	644.0	0.07686	-	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	478.0	502.0	0.07389	-	AMARILLO SOUTH INTERCHANGE - G15031_T 230.00 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	478.0	502.0	0.07389	-	G15031_T 230.00 - SWISHER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	560.0	560.0	0.07296	-	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	560.0	560.0	0.07296	-	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	560.0	560.0	0.07296	-	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1561.0	1793.0	0.07110	-	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1561.0	1793.0	0.07110	-	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1561.0	1793.0	0.07110	-	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1561.0	1793.0	0.07110	-	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1792.0	1792.0	0.06608	-	BVRCNTY7 345.00 - OPTIMA 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1792.0	1792.0	0.06608	-	BVRCNTY7 345.00 - OPTIMA 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1793.0	1793.0	0.06608	-	G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1716.0	1793.0	0.06608	-	G11-14T 345.00 - G16-003-TAP 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1793.0	1793.0	0.06608	-	G16-003-TAP 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1716.0	1793.0	0.06608	-	G16-003-TAP 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1792.0	1792.0	0.06542	-	BORDER 7345.00 - CHISHOLM7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1792.0	1792.0	0.06542	-	BORDER 7345.00 - CHISHOLM7 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	414.0	414.0	0.06517	-	AMOCO SWITCHING STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	414.0	414.0	0.06517	-	AMOCO SWITCHING STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1420.0	1775.0	0.05945	-	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1420.0	1775.0	0.05945	-	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1420.0	1775.0	0.05945	-	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1420.0	1775.0	0.05945	-	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	0.0	0.0	0.05631	-	P12:115:SPS:T14.1.MADDOX.WBENDR
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1532.0	1793.0	0.05600	-	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	785.0	785.0	0.05317	-	MINGO - RED WILLOW 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	785.0	785.0	0.05317	-	MINGO - RED WILLOW 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	501.95	501.95	0.05260	-	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	501.95	501.95	0.05260	-	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	762.5	762.5	0.05252	-	MINGO - SETAB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	762.5	762.5	0.05252	-	MINGO - SETAB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	717.1	717.1	0.05228	-	HOLCOMB - SETAB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	717.1	717.1	0.05228	-	HOLCOMB - SETAB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	478.0	502.0	0.05112	-	CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	478.0	502.0	0.05112	-	CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	439.0	439.0	0.05087	-	CHISHOLM6 230.00 - ELK CITY 230KV 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	450.0	450.0	0.05087	-	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	450.0	450.0	0.05087	-	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	478.0	502.0	0.05060	-	SWISHER COUNTY INTERCHANGE 230KV SWITCHED SHUNT
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1195.0	1195.0	0.04856	-	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1195.0	1195.0	0.04665	-	JOHNSON COUNTY - SUNNYSIDE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	0.0	0.0	0.04632	-	P12:138:WFEC:MSL14
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	421.0	439.0	0.04605	-	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	348.58	381.24	0.04605	-	STATELINE INTERCHANGE - STLN-DEMARC6 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	500.0	723.0	0.04605	-	STLN-DEMARC6 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	0.0	0.0	0.04529	-	P12:115:SPS:T66.1.RNDALL.HAPPY
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	0.0	0.0	0.04529	-	P12:115:SPS:T67.1.HAPPY.KRESS
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1505.0	1793.0	0.04506	-	G13-010T 345.00 - POST ROCK 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1505.0	1793.0	0.04506	-	G16-049-TAP 345.00 - SPEARVILLE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	318.7	350.57	0.04467	-	MOORE COUNTY INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	318.7	350.57	0.04467	-	MOORE COUNTY INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	0.0	0.0	0.04429	-	917X
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	96.0	96.0	0.04358	-	CARGILL SUB - DEAF SMITH REC-#24 115KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	96.0	96.0	0.04358	-	CURRY COUNTY INTERCHANGE - DEAF SMITH REC-#20 115KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	96.0	96.0	0.04358	-	DEAF SMITH REC-#20 - PARMER COUNTY SUB 115KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	96.0	96.0	0.04358	-	DEAF SMITH REC-#24 - PARMER COUNTY SUB 115KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	478.05	501.55	0.04352	-	AMARILLO SOUTH INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	478.05	501.55	0.04352	-	AMARILLO SOUTH INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1504.0	1792.0	0.04344	-	AXTELL - G16-050-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1504.0	1792.0	0.04344	-	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	726.6	726.6	0.04236	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	726.6	726.6	0.04236	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1413.0	1517.0	0.04236	-	BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1413.0	1517.0	0.04236	-	BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	0.0	0.0	0.04018	-	P12:115:LCEC:W56.1.HOBBG.LE-LVN
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	318.7	350.57	0.03948	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	318.7	350.57	0.03948	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	318.7	350.57	0.03920	-	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	318.7	350.57	0.03920	-	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1141.0	1195.0	0.03885	-	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	1141.0	1195.0	0.03885	-	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	497.6	547.4	0.03578	-	JONES STATION - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	497.6	547.4	0.03578	-	JONES STATION - TUCO INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	0.0	0.0	0.03380	-	P12:230:SPS:K43.1.PRNGLE.HARR_E
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	0.0	0.0	0.03343	-	P12:115:SPS:W08.1.HITCH.LASLEY
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	276.0	304.0	0.03090	-	CANYON E_TP3115.00 - CANYON WEST SUB 115KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	276.0	304.0	0.03090	-	CANYON WEST SUB - DAWN SUB 115KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	276.0	304.0	0.03090	-	DAWN SUB - Panda Energy Substation Hereford 115KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	276.0	304.0	0.03090	-	DEAF SMITH COUNTY INTERCHANGE - Panda Energy Substation Hereford 115KV CKT 1
FDNSLock-Blown up	06ALL	0	20L	G16_069		Non-Converged Contingency	0.0	0.0	0.03018	-	P12:138:AEPW:REDROCKRD4:WTH_JCT4
FDNSLock-Blown up	06ALL	0	20SP	G16_069		Non-Converged Contingency	956.0	1042.0	0.20299	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_069		Non-Converged Contingency	1792.0	1792.0	0.24884	-	TUCO INTERCHANGE - YOAKUM_345 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_069		Non-Converged Contingency	1792.0	1972.0	0.23334	-	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_069		Non-Converged Contingency	1022.0	1124.0	0.19784	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_069		Non-Converged Contingency	987.2	1082.8	0.17300	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_069		Non-Converged Contingency	1792.0	1792.0	0.16965	-	BORDER 7345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_069		Non-Converged Contingency	1195.0	1195.0	0.16652	-	GRACEMONT - MINCO 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_069		Non-Converged Contingency	1792.0	1972.0	0.16272	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_069		Non-Converged Contingency	1792.0	1972.0	0.16272	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	0	20WP	G16_069		Non-Converged Contingency	1584.0	2098.0	0.15087	-	CHISHOLM7 345.00 - G16-037-TAP 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_069		Non-Converged Contingency	1584.0	2098.0	0.15087	-	G16-037-TAP 345.00 - GRACEMONT 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_069		Non-Converged Contingency	557.0	557.0	0.14099	-	BUSHLAND INTERCHANGE - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_069		Non-Converged Contingency	987.16	1082.77	0.13687	-	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_069		Non-Converged Contingency	329.05	360.92	0.12565	-	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_069		Non-Converged Contingency	956.09	1051.7	0.12166	-	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_069		Non-Converged Contingency	987.16	1082.77	0.12166	-	FINNEY SWITCHING STATION - WALKTAP7 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_069		Non-Converged Contingency	329.0	360.9	0.11686	-	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_069		Non-Converged Contingency	557.0	557.0	0.10576	-	NEWHART 230 - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_069		Non-Converged Contingency	478.0	502.0	0.08223	-	AMARILLO SOUTH INTERCHANGE - G15031_T 230.00 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_069		Non-Converged Contingency	421.0	439.0	0.05701	-	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNSLock-Blown up	06ALL	0	20WP	G16_069		Non-Converged Contingency	329.05	360.92	0.04890	-	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNSLock-Blown up	06ALL	2	16WP	G16_069		Non-Converged Contingency	1022.0	1124.0	0.19516	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20L	G16_069		Non-Converged Contingency	956.0	1042.0	0.16661	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20L	G16_069		Non-Converged Contingency	956.0	1042.0	0.16661	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20L	G16_069		Non-Converged Contingency	956.1	1051.7	0.14679	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20L	G16_069		Non-Converged Contingency	956.1	1051.7	0.14679	-	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20L	G16_069		Non-Converged Contingency	1792.0	1972.0	0.14035	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20L	G16_069		Non-Converged Contingency	1792.0	1972.0	0.14035	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	2	20WP	G16_069		Non-Converged Contingency	1022.0	1124.0	0.19715	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20WP	G16_069		Non-Converged Contingency	1022.0	1124.0	0.19715	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20WP	G16_069		Non-Converged Contingency	1792.0	1972.0	0.16361	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	2	20WP	G16_069		Non-Converged Contingency	1792.0	1972.0	0.16361	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	3	17G	G16_069		Non-Converged Contingency	956.0	1042.0	0.21141	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	3	20L	G16_069		Non-Converged Contingency	956.0	1042.0	0.17612	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	3	20L	G16_069		Non-Converged Contingency	956.0	1042.0	0.17612	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	3	20L	G16_069		Non-Converged Contingency	1792.0	1972.0	0.15090	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNSLock-Blown up	06ALL	3	20L	G16_069		Non-Converged Contingency	1792.0	1972.0	0.15090	-	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNSLock-Blown up	06ALL	3	20WP	G16_069		Non-Converged Contingency	1022.0	1124.0	0.20708	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock-Blown up	06ALL	3	20WP	G16_069		Non-Converged Contingency	1022.0	1124.0	0.20708	-	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	0	20WP	G16_069	FROM->TO	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1	329.05	360.92	0.12565	101.1848	BASE CASE
FDNS	06ALL	0	20WP	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.22673	119.3308	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	0	16WP	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23865	118.0707	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	0	20WP	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.22673	114.0226	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	0	16WP	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23865	113.137	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	0	17SP	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23937	111.5106	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	0	17SP	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23937	106.2194	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	0	20SP	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23332	102.8346	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	0	17SP	G16_069	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.28567	160.0401	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	0	20SP	G16_069	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.29293	159.952	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	0	20SP	G16_069	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.29293	154.1703	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	0	17SP	G16_069	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.28567	153.9968	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	0	20SP	G16_069	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.30266	187.3884	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	06ALL	0	17SP	G16_069	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.26235	185.0941	CRAWFISH_DR 345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	0	17SP	G16_069	FROM->TO	CURRY COUNTY INTERCHANGE - DEAF SMITH REC-#20 115KV CKT 1	96.0	96.0	0.05316	100.9705	BASE CASE
FDNS	06ALL	0	17SP	G16_069	TO->FROM	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1	318.7	350.6	0.13804	114.5202	BASE CASE
FDNS	06ALL	0	20SP	G16_069	TO->FROM	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1	318.7	350.6	0.11927	108.9563	BASE CASE
FDNS	06ALL	0	17SP	G16_069	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.28554	111.8672	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	17SP	G16_069	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.28554	111.8672	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	17SP	G16_069	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.28554	111.8642	CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1
FDNS	06ALL	0	17SP	G16_069	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.28441	111.692	P12:345:SPS:J15.1.XRDS.TOLK
FDNS	06ALL	0	16WP	G16_069	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	329.05	360.92	0.28512	109.7159	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	16WP	G16_069	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	329.05	360.92	0.28512	109.7159	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	16WP	G16_069	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	329.05	360.92	0.28512	109.7131	CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1
FDNS	06ALL	0	16WP	G16_069	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	329.05	360.92	0.28385	109.4636	P12:345:SPS:J15.1.XRDS.TOLK
FDNS	06ALL	0	17G	G16_069	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.28451	109.4577	OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1
FDNS	06ALL	0	17G	G16_069	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.28451	109.4577	OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1
FDNS	06ALL	0	17G	G16_069	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.19815	108.5593	JOHNSON DRAW - TAYLOR SWITCHING STATION 115KV CKT 1
FDNS	06ALL	0	17G	G16_069	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.19815	108.5593	JOHNSON DRAW - TAYLOR SWITCHING STATION 115KV CKT 1
FDNS	06ALL	0	17G	G16_069	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.17903	105.4188	BASE CASE
FDNS	06ALL	0	17G	G16_069	TO->FROM	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1	318.7	350.57	0.05849	100.3944	BASE CASE
FDNS	06ALL	0	17SP	G16_069	FROM->TO	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1	143.4	179.3	0.03719	103.7113	BASE CASE
FDNS	06ALL	0	17G	G16_069	FROM->TO	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1	143.4	179.3	0.03680	102.645	BASE CASE
FDNS	06ALL	2	17G	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23348	116.7163	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	2	16WP	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23901	115.1362	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	2	20WP	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.22696	114.0499	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	2	17G	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23348	111.498	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	2	20L	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.20401	110.6646	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	2	17SP	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23942	110.352	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	2	16WP	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23901	109.7596	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	2	20WP	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.22696	108.768	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	2	20L	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.20401	105.663	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	2	17SP	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23942	104.9863	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	2	20SP	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23318	101.7908	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	2	16WP	G16_069	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.24041	111.1535	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	16WP	G16_069	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.24041	111.1535	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	16WP	G16_069	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.24041	111.1535	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	16WP	G16_069	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.24041	111.1535	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	16WP	G16_069	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.24041	109.6686	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	16WP	G16_069	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.24041	109.6686	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	16WP	G16_069	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.24041	109.6686	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	16WP	G16_069	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.24041	109.6686	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17G	G16_069	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.23349	105.2982	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	16WP	G16_069	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.24041	109.6686	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17G	G16_069	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.23349	105.2982	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17G	G16_069	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.23349	105.2982	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17G	G16_069	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.23349	105.2982	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17G	G16_069	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.23349	105.2982	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17G	G16_069	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.23349	103.5752	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17G	G16_069	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.23349	103.5752	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17G	G16_069	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.23349	103.5752	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17G	G16_069	FROM->TO	CRAWFISH_DR 345.00 (CRAWFISH_DR) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.23349	103.5752	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17G	G16_069	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.20692	100.5203	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17G	G16_069	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.20692	100.5203	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17G	G16_069	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.20692	100.5203	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17G	G16_069	TO->FROM	CRAWFISH_DR2230.00 - TUCO INTERCHANGE 230KV CKT 1	497.0	547.0	0.20692	100.5203	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	17SP	G16_069	TO->FROM	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1	318.7	350.6	0.13806	111.1037	BASE CASE
FDNS	06ALL	2	20SP	G16_069	TO->FROM	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1	318.7	350.6	0.11938	105.6192	BASE CASE
FDNS	06ALL	2	17G	G16_069	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.28049	134.1501	P12:345:SPS:J15.1.XRDS.TOLK
FDNS	06ALL	2	17G	G16_069	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.28177	133.6393	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17G	G16_069	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.28177	133.6393	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17G	G16_069	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.28177	133.637	CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1
FDNS	06ALL	2	17SP	G16_069	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.28554	111.935	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17SP	G16_069	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.28554	111.935	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	17SP	G16_069	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.28554	111.932	CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1
FDNS	06ALL	2	17SP	G16_069	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.28442	111.7389	P12:345:SPS:J15.1.XRDS.TOLK
FDNS	06ALL	2	16WP	G16_069	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	329.05	360.92	0.28512	109.7832	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	16WP	G16_069	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	329.05	360.92	0.28512	109.7832	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	2	16WP	G16_069	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	329.05	360.92	0.28512	109.7805	CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1
FDNS	06ALL	2	16WP	G16_069	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	329.05	360.92	0.28386	109.486	P12:345:SPS:J15.1.XRDS.TOLK
FDNS	06ALL	2	17G	G16_069	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.28453	108.9702	OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1
FDNS	06ALL	2	17G	G16_069	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.28453	108.9702	OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1
FDNS	06ALL	2	17G	G16_069	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.19818	108.0899	JOHNSON DRAW - TAYLOR SWITCHING STATION 115KV CKT 1
FDNS	06ALL	2	17G	G16_069	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.19818	108.0899	JOHNSON DRAW - TAYLOR SWITCHING STATION 115KV CKT 1
FDNS	06ALL	2	17G	G16_069	FROM->TO	G15079_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.17906	105.1382	BASE CASE
FDNS	06ALL	2	17SP	G16_069	FROM->TO	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1	143.4	179.3	0.03719	103.7639	BASE CASE
FDNS	06ALL	2	17G	G16_069	FROM->TO	LE-WEST_SUB3115.00 - LEA COUNTY REC-LOVINGTON INTERCHANGE 115KV CKT 1	143.4	179.3	0.03682	102.3415	BASE CASE
FDNS	06ALL	2	16WP	G16_069	FROM->TO	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	560.0	644.0	0.25226	101.527	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	16WP	G16_069	FROM->TO	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	560.0	644.0	0.25226	101.527	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	16WP	G16_069	FROM->TO	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	560.0	644.0	0.25226	99.4	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	2	16WP	G16_069	FROM->TO	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	560.0	644.0	0.25226	99.4	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	3	17G	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24919	118.6959	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	3	16WP	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25500	117.0897	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	3	20WP	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23447	115.2141	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	3	17G	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24919	113.4916	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	3	20L	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.21146	111.7529	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	06ALL	3	17SP	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25430	111.7525	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	3	16WP	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25500	111.7148	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	3	20WP	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23447	110.0424	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	3	20L	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.21146	106.7271	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	3	17SP	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.25430	106.4339	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	3	20SP	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.24053	102.7473	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	4	17G	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23275	116.0714	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	4	16WP	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23845	114.334	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	4	20WP	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.21724	112.0627	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	4	17G	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23275	110.887	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	4	16WP	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23845	109.0011	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	4	20L	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.19648	108.4948	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	4	17SP	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23760	108.3281	G14-057T 345.00 - SUNNYSIDE 345KV CKT 1
FDNS	06ALL	4	20WP	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.21724	106.6907	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	4	20L	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.19648	103.5292	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	4	17SP	G16_069	TO->FROM	CIMARRON - MINCO 345KV CKT 1	956.0	956.0	0.23760	102.9885	G14-057T 345.00 - LAWTON EASTSIDE 345KV CKT 1
FDNS	06ALL	4	20WP	G16_069	FROM->TO	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.20997	101.5617	CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1
FDNS	06ALL	4	20WP	G16_069	FROM->TO	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.20997	99.3	CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1
FDNS	06ALL	5	20WP	G16_069	FROM->TO	TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1	560.0	560.0	0.20982	100.9072	CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1
FDNS	02ALL	0	20L	G16_070	TO->FROM	ASARCO_TP 3115.00 - HIGHLAND PARK TAP 115KV CKT 1	120.0	154.0	1.00000	101.7136	HUTCHINSON COUNTY INTERCHANGE S. - MARTIN SUB 115KV CKT 1
FDNS	02ALL	0	20L	G16_070	TO->FROM	ASARCO_TP 3115.00 - HIGHLAND PARK TAP 115KV CKT 1	120.0	154.0	1.00000	101.7136	HUTCHINSON COUNTY INTERCHANGE S. - MARTIN SUB 115KV CKT 1
FDNS	02ALL	0	17G	G16_070	TO->FROM	ASARCO_TP 3115.00 - HIGHLAND PARK TAP 115KV CKT 1	120.0	154.0	1.00000	101.1821	HUTCHINSON COUNTY INTERCHANGE S. - MARTIN SUB 115KV CKT 1
FDNS	02ALL	0	17SP	G16_070	TO->FROM	ASARCO_TP 3115.00 - HIGHLAND PARK TAP 115KV CKT 1	120.0	154.0	1.00000	100.1307	HUTCHINSON COUNTY INTERCHANGE S. - MARTIN SUB 115KV CKT 1
FDNS	02ALL	0	17SP	G16_070	TO->FROM	ASARCO_TP 3115.00 - HIGHLAND PARK TAP 115KV CKT 1	120.0	154.0	1.00000	100.1307	HUTCHINSON COUNTY INTERCHANGE S. - MARTIN SUB 115KV CKT 1
FDNS	02ALL	0	25SP	G16_070	TO->FROM	BUSHLAND INTERCHANGE - POTTER COUNTY INTERCHANGE 230KV CKT 1	318.7	350.57	0.03661	114.3733	BASE CASE
FDNS	02ALL	0	17SP	G16_070	TO->FROM	HIGHLAND PARK TAP - PANTEX SOUTH SUB 115KV CKT 1	120.0	154.0	1.00000	108.7758	HUTCHINSON COUNTY INTERCHANGE S. - MARTIN SUB 115KV CKT 1
FDNS	02ALL	0	17SP	G16_070	TO->FROM	HIGHLAND PARK TAP - PANTEX SOUTH SUB 115KV CKT 1	120.0	154.0	1.00000	108.7758	HUTCHINSON COUNTY INTERCHANGE S. - MARTIN SUB 115KV CKT 1
FDNS	02ALL	0	17G	G16_070	TO->FROM	HIGHLAND PARK TAP - PANTEX SOUTH SUB 115KV CKT 1	120.0	154.0	1.00000	108.5724	HUTCHINSON COUNTY INTERCHANGE S. - MARTIN SUB 115KV CKT 1
FDNS	02ALL	0	20L	G16_070	TO->FROM	HIGHLAND PARK TAP - PANTEX SOUTH SUB 115KV CKT 1	120.0	154.0	1.00000	108.3376	HUTCHINSON COUNTY INTERCHANGE S. - MARTIN SUB 115KV CKT 1
FDNS	02ALL	0	20L	G16_070	TO->FROM	HIGHLAND PARK TAP - PANTEX SOUTH SUB 115KV CKT 1	120.0	154.0	1.00000	108.3376	HUTCHINSON COUNTY INTERCHANGE S. - MARTIN SUB 115KV CKT 1
FDNS	02ALL	0	25SP	G16_070	TO->FROM	HIGHLAND PARK TAP - PANTEX SOUTH SUB 115KV CKT 1	120.0	154.0	1.00000	107.728	HUTCHINSON COUNTY INTERCHANGE S. - MARTIN SUB 115KV CKT 1
FDNS	02ALL	0	25SP	G16_070	TO->FROM	HIGHLAND PARK TAP - PANTEX SOUTH SUB 115KV CKT 1	120.0	154.0	1.00000	107.728	HUTCHINSON COUNTY INTERCHANGE S. - MARTIN SUB 115KV CKT 1
FDNS	02ALL	0	20SP	G16_070	TO->FROM	HIGHLAND PARK TAP - PANTEX SOUTH SUB 115KV CKT 1	120.0	154.0	1.00000	107.5287	HUTCHINSON COUNTY INTERCHANGE S. - MARTIN SUB 115KV CKT 1
FDNS	02ALL	0	20SP	G16_070	TO->FROM	HIGHLAND PARK TAP - PANTEX SOUTH SUB 115KV CKT 1	120.0	154.0	1.00000	107.5287	HUTCHINSON COUNTY INTERCHANGE S. - MARTIN SUB 115KV CKT 1
FDNS	02ALL	0	25SP	G16_070	FROM->TO	MARTIN SUB - PANTEX NORTH SUB 115KV CKT 1	159.0	160.0	1.00000	104.4728	HUTCHINSON COUNTY INTERCHANGE S. - MARTIN SUB 115KV CKT 1
FDNS	02ALL	0	25SP	G16_070	FROM->TO	MARTIN SUB - PANTEX NORTH SUB 115KV CKT 1	159.0	160.0	1.00000	104.4728	HUTCHINSON COUNTY INTERCHANGE S. - MARTIN SUB 115KV CKT 1
FDNS	02ALL	0	20SP	G16_070	FROM->TO	MARTIN SUB - PANTEX NORTH SUB 115KV CKT 1	159.0	160.0	1.00000	104.0911	HUTCHINSON COUNTY INTERCHANGE S. - MARTIN SUB 115KV CKT 1
FDNS	02ALL	0	20SP	G16_070	FROM->TO	MARTIN SUB - PANTEX NORTH SUB 115KV CKT 1	159.0	160.0	1.00000	104.0911	HUTCHINSON COUNTY INTERCHANGE S. - MARTIN SUB 115KV CKT 1
FDNS	02ALL	0	25SP	G16_070	FROM->TO	SPSNORTH_STX	1160.0	1160.0	0.33000	102.5864	BASE CASE
FDNS	02ALL	2	25SP	G16_070	FROM->TO	SPSNORTH_STX	1160.0	1160.0	0.33000	102.586	BASE CASE
FDNS	08ALL	0	20L	G16_071	FROM->TO	CANEYRV7 345.00 - NEOSHO 345KV CKT 1	766.0	923.0	0.05764	99	BASE CASE
FDNS	08ALL	0	20L	G16_071	FROM->TO	CHILOCCO4 138.00 - MIDLTNT4 138.00 138KV CKT 1	106.0	130.0	1.00000	184.0574	BASE CASE
FDNS	08ALL	0	17G	G16_071	FROM->TO	CHILOCCO4 138.00 - MIDLTNT4 138.00 138KV CKT 1	106.0	130.0	1.00000	183.2919	BASE CASE
FDNS	08ALL	0	17SP	G16_071	FROM->TO	CHILOCCO4 138.00 - MIDLTNT4 138.00 138KV CKT 1	106.0	130.0	1.00000	183.1522	BASE CASE
FDNS	08ALL	0	20SP	G16_071	FROM->TO	CHILOCCO4 138.00 - MIDLTNT4 138.00 138KV CKT 1	106.0	130.0	1.00000	182.0642	BASE CASE
FDNS	08ALL	0	16WP	G16_071	FROM->TO	CHILOCCO4 138.00 - MIDLTNT4 138.00 138KV CKT 1	106.0	130.0	1.00000	181.9586	BASE CASE
FDNS	08ALL	0	25SP	G16_071	FROM->TO	CHILOCCO4 138.00 - MIDLTNT4 138.00 138KV CKT 1	106.0	130.0	1.00000	181.8063	BASE CASE
FDNS	08ALL	0	20WP	G16_071	FROM->TO	CHILOCCO4 138.00 - MIDLTNT4 138.00 138KV CKT 1	106.0	130.0	1.00000	180.6398	BASE CASE
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69386	167.0358	MIDLTNT4 138.00 - PECKHAM TAP 138KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69386	165.1735	NEWKIRK4 - PECKHAM TAP 138KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69386	163.401	NEWKIRK4 - NWKRKAT4 138.00 138KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69387	160.1141	P12:138:OKGE:3TERM7
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69386	160.0799	KILDARE4 - NWKRKAT4 138.00 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69350	157.2293	MIDLTNT4 138.00 - PECKHAM TAP 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69350	155.7347	NEWKIRK4 - PECKHAM TAP 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69295	154.5247	MIDLTNT4 138.00 - PECKHAM TAP 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69350	153.3463	NEWKIRK4 - NWKRKAT4 138.00 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69295	152.9599	NEWKIRK4 - PECKHAM TAP 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69350	150.7689	P12:138:OKGE:3TERM7
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69350	150.7519	KILDARE4 - NWKRKAT4 138.00 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69295	150.0335	NEWKIRK4 - NWKRKAT4 138.00 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69295	146.721	P12:138:OKGE:3TERM7
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.69295	146.7104	KILDARE4 - NWKRKAT4 138.00 138KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25319	142.5369	G15052_T 345.00 - ROSE HILL 345KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25809	141.5306	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25186	141.5231	G15052_T 345.00 - ROSE HILL 345KV CKT 1
FDNS	08ALL	0	20L	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.43646	140.5354	MIDLTNT4 138.00 - PECKHAM TAP 138KV CKT 1
FDNS	08ALL	0	20L	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.43646	139.8877	NEWKIRK4 - PECKHAM TAP 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25680	139.8574	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	08ALL	0	20L	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.43646	138.7971	NEWKIRK4 - NWKRKAT4 138.00 138KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.35313	138.7115	KILDARE4 - WHITE EAGLE 138KV CKT 1
FDNS	08ALL	0	20L	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.43664	138.147	P12:138:OKGE:3TERM7
FDNS	08ALL	0	20L	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.43646	137.6728	KILDARE4 - NWKRKAT4 138.00 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25404	136.4118	G15052_T 345.00 - ROSE HILL 345KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.35249	134.1502	KILDARE4 - WHITE EAGLE 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25664	133.6337	SUMNER 4 - TIMBJCT4 138KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25760	133.5723	SUMNER 4 - TIMBJCT4 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25889	132.6064	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25319	132.0522	G15052_T 345.00 - OPENSKY7 345.00 345KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25186	131.7553	G15052_T 345.00 - OPENSKY7 345.00 345KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.27865	131.3426	CRESWELL - SUMNER COUNTY NO. 4 ROME 69KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.27865	131.013	CITY OF WELLINGTON - SUMNER COUNTY NO. 4 ROME 69KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.27865	130.8317	P12:069:WERE:BELL-CRSW_69::
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.28653	130.3979	TIMBER JUNCTION - UDALL 69KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.28653	130.2298	P12:069:WERE:TIMJ-WEAV_69::
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.27779	129.7614	CRESWELL - SUMNER COUNTY NO. 4 ROME 69KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.27779	129.4636	CITY OF WELLINGTON - SUMNER COUNTY NO. 4 ROME 69KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.28653	129.4111	RICHLAND - UDALL 69KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.27740	129.3433	P12:069:WERE:BELL-CRSW_69::
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.35310	129.2997	KILDARE4 - WHITE EAGLE 138KV CKT 1
FDNS	08ALL	0	20WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.43681	129.0573	MIDLTNT4 138.00 - PECKHAM TAP 138KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25760	129.0083	TIMBJCT4 (TIMJ TX-1) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.28350	128.8868	G15-015T 138.00 - MDFRDTP4 138.00 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.28545	128.5162	TIMBER JUNCTION - UDALL 69KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.28545	128.2685	P12:069:WERE:TIMJ-WEAV_69::
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.28653	128.11	RICHLAND - ROSE HILL JUNCTION 69KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.27740	128.0791	CITY OF WELLINGTON - SUMNER COUNTY NO. 3 MILLER 69KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.27865	128.0659	CITY OF WELLINGTON - SUMNER COUNTY NO. 3 MILLER 69KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25823	127.7896	SUMNER 4 - TIMBJCT4 138KV CKT 1
FDNS	08ALL	0	20WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.43681	127.5939	NEWKIRK4 - PECKHAM TAP 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.28545	127.2602	RICHLAND - UDALL 69KV CKT 1
FDNS	08ALL	0	20SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.43614	127.0612	MIDLTNT4 138.00 - PECKHAM TAP 138KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.28350	126.8657	MDFRDTP4 138.00 - RENFROW4 138.00 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.28244	126.759	G15-015T 138.00 - MDFRDTP4 138.00 138KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.28653	126.5895	ROSE HILL JUNCTION - WEAVER 69KV CKT 1
FDNS	08ALL	0	20WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.43681	126.5167	NEWKIRK4 - NWKRKAT4 138.00 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25404	126.1923	G15052_T 345.00 - OPENSKY7 345.00 345KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.28545	125.9087	RICHLAND - ROSE HILL JUNCTION 69KV CKT 1
FDNS	08ALL	0	20SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.43614	125.8072	NEWKIRK4 - PECKHAM TAP 138KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.27865	125.6424	BELL - SUMNER COUNTY NO. 3 MILLER 69KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25477	125.1943	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	08ALL	0	25SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.43611	125.0641	MIDLTNT4 138.00 - PECKHAM TAP 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.28244	124.8838	MDFRDTP4 138.00 - RENFROW4 138.00 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.27740	124.5394	BELL - SUMNER COUNTY NO. 3 MILLER 69KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25520	124.3562	P12:138:OKGE:3TERM2
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25514	124.3139	MORISNT4 138.00 - STILLWATER 138KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.27865	124.2577	BELL - PECK 69KV CKT 1
FDNS	08ALL	0	20WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.43693	124.1544	P12:138:OKGE:3TERM7
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.27865	124.1332	P12:069:WERE:BELL-MURR_69::
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.28545	124.0903	ROSE HILL JUNCTION - WEAVER 69KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25958	124.0394	P12:138:AEPW-OGE:SHIDLER4:OSAGE 4
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25958	123.9807	OSAGE - WEBB CITY TAP 138KV CKT 1
FDNS	08ALL	0	20SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.43614	123.9043	NEWKIRK4 - NWKRKAT4 138.00 138KV CKT 1
FDNS	08ALL	0	25SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.43611	123.8981	NEWKIRK4 - PECKHAM TAP 138KV CKT 1
FDNS	08ALL	0	20WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.43681	123.7751	KILDARE4 - NWKRKAT4 138.00 138KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25478	123.4738	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25478	123.4738	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25382	123.3818	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25477	123.3315	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.28709	123.3166	TIMBER JUNCTION - UDALL 69KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25444	123.256	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25823	123.0327	TIMBJCT4 (TIMJ TX-1) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.27906	123.0252	CITY OF WELLINGTON - SUMNER COUNTY NO. 3 MILLER 69KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.27740	122.9986	BELL - PECK 69KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.28709	122.9578	P12:069:WERE:TIMJ-WEAV_69::
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25958	122.9539	FAIRFAX TAP - SHIDLER 138KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25958	122.9537	FAIRFAX TAP - WEBB CITY TAP 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.27740	122.8708	P12:069:WERE:BELL-MURR_69::
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.27865	122.6976	GILL ENERGY CENTER WEST - PECK 69KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.24828	122.6934	EL PASO - ROSE HILL 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25422	122.5622	P12:138:OKGE:3TERM2
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25416	122.5082	MORISNT4 138.00 - STILLWATER 138KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25444	122.3422	917X
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25858	122.3319	P12:138:AEPW-OGE:SHIDLER4:OSAGE 4
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25858	122.2805	OSAGE - WEBB CITY TAP 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25378	122.2162	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25378	122.2162	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25444	122.1183	G15066_T 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	0	25SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.43611	122.0033	NEWKIRK4 - NWKRKAT4 138.00 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25345	121.8683	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25538	121.7609	SHIDLER - WEST PAWHUSKA 138KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25319	121.7152	OPENSKY7 345.00 - RANCHRD7 345.00 345KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25538	121.7062	PAWHUSKA TAP - WEST PAWHUSKA 138KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25525	121.6831	4REMNGTON 138.00 - FAIRFAX 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25382	121.6535	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.24732	121.5935	EL PASO - ROSE HILL 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25186	121.5741	OPENSKY7 345.00 - RANCHRD7 345.00 345KV CKT 1
FDNS	08ALL	0	20SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.43626	121.5298	P12:138:OKGE:3TERM7
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25538	121.4948	DOMES - PAWHUSKA TAP 138KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25538	121.4857	P12:138:AEPW:MOUNDRD4:SHIDLER4
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25538	121.3874	DOMES - MOUND ROAD 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.28709	121.3632	RICHLAND - UDALL 69KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.27740	121.2723	GILL ENERGY CENTER WEST - PECK 69KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25858	121.2673	FAIRFAX TAP - SHIDLER 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25858	121.2671	FAIRFAX TAP - WEBB CITY TAP 138KV CKT 1
FDNS	08ALL	0	20SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.43614	121.2194	KILDARE4 - NWKRKAT4 138.00 138KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25434	121.1636	RENFROW4 138.00 - RENFROW4 138.00 138KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25434	121.1346	RENFROW4 138.00 - WAKITAS4 138.00 138KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25440	121.0527	MORISNT4 138.00 - SOONER 138KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25421	120.9814	STILLWATER - UNVRSTY4 138.00 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25345	120.9581	917X
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25421	120.9297	MCELROY - UNVRSTY4 138.00 138KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25422	120.9023	P12:138:WFEC:MSL15
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25422	120.9022	WAKITA4 138.00 - WAKITAS4 138.00 138KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25354	120.8585	DELAWARE - NORTHEAST STATION 345KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25354	120.8585	DELAWARE - NORTHEAST STATION 345KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25347	120.8085	P12:069:WERE:ARKA-OAK_69::
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25345	120.769	G15066_T 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25421	120.7428	KINZE - MCELROY 138KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25397	120.7272	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25421	120.7161	P12:138:OKGE:3TERM47
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25422	120.7134	SANDY_CN_138138.00 - WAKITA4 138.00 138KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25397	120.6811	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.27960	120.5877	CRESWELL - SUMNER COUNTY NO. 4 ROME 69KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.27906	120.4592	P12:069:WERE:BELL-CRSW_69::
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25439	120.404	SHIDLER - WEST PAWHUSKA 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25439	120.3636	PAWHUSKA TAP - WEST PAWHUSKA 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.27960	120.1627	CITY OF WELLINGTON - SUMNER COUNTY NO. 4 ROME 69KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25439	120.0939	DOMES - PAWHUSKA TAP 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25439	119.9786	DOMES - MOUND ROAD 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25439	119.966	P12:138:AEPW:MOUNDRD4:SHIDLER4
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25428	119.8272	4REMNGTON 138.00 - FAIRFAX 138KV CKT 1
FDNS	08ALL	0	25SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.43623	119.8091	P12:138:OKGE:3TERM7
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25680	119.7682	RENFROW7 345.00 - VIOLA 7 345.00 345KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25336	119.6948	RENFROW4 138.00 - RENFROW4 138.00 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25336	119.5709	RENFROW4 138.00 - WAKITAS4 138.00 138KV CKT 1
FDNS	08ALL	0	25SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.43611	119.5215	KILDARE4 - NWKRKAT4 138.00 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25341	119.4509	MORISNT4 138.00 - SOONER 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.28709	119.3787	RICHLAND - ROSE HILL JUNCTION 69KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.26650	119.3405	SOONER (SOONER5) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25248	119.3274	DELAWARE - NORTHEAST STATION 345KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25248	119.3274	DELAWARE - NORTHEAST STATION 345KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25324	119.3169	P12:138:WFEC:MSL15
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25324	119.3167	WAKITA4 138.00 - WAKITAS4 138.00 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25323	119.2795	STILLWATER - UNVRSTY4 138.00 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25323	119.2337	MCELROY - UNVRSTY4 138.00 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25250	119.1541	P12:069:WERE:ARKA-CRSW_69::
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.28415	119.1378	G15-015T 138.00 - MDFRDTP4 138.00 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25324	119.1336	SANDY_CN_138138.00 - WAKITA4 138.00 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25250	119.0805	P12:069:WERE:ARKA-OAK_69::
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25300	119.0577	SOONER - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25300	119.0255	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25418	119.0127	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.27906	118.8463	BELL - SUMNER COUNTY NO. 3 MILLER 69KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25364	118.7439	BASE CASE
FDNS	08ALL	0	20L	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.24254	118.1254	KILDARE4 - WHITE EAGLE 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25266	117.1711	BASE CASE
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.26412	116.8247	DMNCRKT4 - MILLER 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.28709	116.8063	ROSE HILL JUNCTION - WEAVER 69KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25374	116.772	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.26412	116.7068	MILLER - SOONER 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.28415	116.6869	MDFRDTP4 138.00 - RENFROW4 138.00 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.27906	116.6867	BELL - PECK 69KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25577	116.5957	P12:138:OKGE:3TERM2
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25534	116.589	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25570	116.5292	MORISNT4 138.00 - STILLWATER 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.27906	116.5074	P12:069:WERE:BELL-MURR_69::
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.26087	116.4934	OSAGE - SOONER PUMP TAP 138KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25331	116.4316	BLACKBERRY - NEOSHO 345KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.26087	116.4175	SOONER - SOONER PUMP TAP 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.26011	116.2239	P12:138:AEPW-OGE:SHIDLER4:OSAGE 4
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.26011	116.1711	OSAGE - WEBB CITY TAP 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25404	116.0268	OPENSKY7 345.00 - RANCHRD7 345.00 345KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25283	116.0207	BOEING - STEARMAN 138KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.26434	115.877	WEAVER (WEAV TX-2) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	08ALL	0	20L	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25042	115.5698	SUMNER 4 - VIOLA 4 138.00 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25496	115.4434	CLEVELAND - G15066_T 345.00 345KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25364	115.4083	4OSAGEWIND 138.00 - 4REMNGTON 138.00 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25529	115.3884	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25529	115.3884	CLEVELAND - TULSA NORTH 345KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25187	115.2578	BOEING - CANAL 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.26011	115.1374	FAIRFAX TAP - SHIDLER 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.26011	115.1372	FAIRFAX TAP - WEBB CITY TAP 138KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.24894	115.0478	EL PASO - ROSE HILL 138KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25165	114.9676	LATHAMS7 345.00 - ROSE HILL 345KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.29707	114.9322	CHIKASKIA - KILDARE4 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25234	114.9153	BLACKBERRY - NEOSHO 345KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25534	114.7352	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.26323	114.6215	DMNCRKT4 - WHITE EAGLE 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25496	114.4925	917X
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.26323	114.4654	DMNCRKT4 - MILLER 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.26323	114.353	MILLER - SOONER 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25187	114.332	BOEING - STEARMAN 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25418	114.3099	GEN532722 1-EVANS ENERGY CENTER UNIT 2
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25496	114.2848	G15066_T 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25997	114.2161	OSAGE - SOONER PUMP TAP 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.27906	114.1868	GILL ENERGY CENTER WEST - PECK 69KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25997	114.1438	SOONER - SOONER PUMP TAP 138KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25134	114.0208	59TH ST - GILL ENERGY CENTER SOUTH 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25592	113.9336	SHIDLER - WEST PAWHUSKA 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25592	113.8743	PAWHUSKA TAP - WEST PAWHUSKA 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25266	113.8717	4OSAGEWIND 138.00 - 4REMNGTON 138.00 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25266	113.871	4OSAGEWIND 138.00 138/34.5KV TRANSFORMER CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25418	113.7289	GEN532651 1-JEFFREY ENERGY CENTER UNIT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25418	113.7212	GEN532652 1-JEFFREY ENERGY CENTER UNIT 2
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25418	113.7208	GEN532653 1-JEFFREY ENERGY CENTER UNIT 3
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25134	113.7178	59TH ST - EL PASO 138KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25134	113.6757	P12:138:WERE:ELPA-MURR_138::
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25401	113.5832	P12:069:WERE:ARKA-CRSW_69::
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25418	113.5465	GEN542955 1-LACYGNE UNIT #1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25592	113.5323	DOMES - PAWHUSKA TAP 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25070	113.4765	LATHAMS7 345.00 - ROSE HILL 345KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25418	113.4676	GEN542962 2-IATAN UNIT #2
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25579	113.438	4REMNGTON 138.00 - FAIRFAX 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.29601	113.3762	CHIKASKIA - KILDARE4 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25592	113.3705	P12:138:AEPW:MOUNDRD4:SHIDLER4
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25592	113.351	DOMES - MOUND ROAD 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25488	113.2813	RENFROW4 138.00 - RENFROW4 138.00 138KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.28350	113.2582	CHIKASKIA - COYOTE 4 138.00 138KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.28350	113.2506	COYOTE 4 138.00 - G15-015T 138.00 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25495	113.2192	MORISNT4 138.00 - SOONER 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25284	113.1794	BENTON - WICHITA 345KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25418	113.1678	GEN542956 2-LACYGNE UNIT #2
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25488	113.1581	RENFROW4 138.00 - WAKITAS4 138.00 138KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.26180	113.0562	P13:069-138:WERE:WEAV_TX-2::
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25418	113.0376	GEN542957 1-IATAN UNIT #1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25477	113.0093	STILLWATER - UNVRSTY4 138.00 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25418	112.9771	GEN562902 1-G15052_3 0.6900
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25401	112.9715	P12:069:WERE:ARKA-OAK_69::
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25477	112.9314	MCELROY - UNVRSTY4 138.00 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25365	112.927	45TH ST4 138.00 - EVANS ENERGY CENTER SOUTH 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25453	112.8898	NORTHWEST - SPRING CREEK 345KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25476	112.8838	P12:138:WFEC:MSL15
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25476	112.8702	WAKITA4 138.00 - WAKITAS4 138.00 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25414	112.8443	DELAWARE - NORTHEAST STATION 345KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25414	112.8443	DELAWARE - NORTHEAST STATION 345KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25436	112.8423	GRDA1 - GREC TAP5 345.00 345KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25524	112.8282	BUTLER COUNTY NO. 10 BENTON - WEAVER 69KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25524	112.7846	P12:069:WERE:MOBI-WEAV_69::
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25418	112.7698	GEN635024 4-WALTER SCOTT UNIT 4
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25418	112.7149	GEN532663 1-LAWRENCE ENERGY CENTER UNIT 5
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25476	112.6822	SANDY_CN_138138.00 - WAKITA4 138.00 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25477	112.6466	KINZE - MCELROY 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25418	112.6457	GEN532720 1-CANEYWF1 0.6900
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25524	112.641	BUTLER COUNTY NO. 10 BENTON - MOBIL 69KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25311	112.5526	ROSE HILL (ROSE TX-1) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.27367	112.228	RENFROW7 345.00 (BANK 1) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25039	112.2216	59TH ST - GILL ENERGY CENTER SOUTH 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25039	111.8728	59TH ST - EL PASO 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25039	111.8333	P12:138:WERE:ELPA-MURR_138::
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25165	111.7262	CANEYRV7 345.00 - LATHAMS7 345.00 345KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.28244	111.1577	CHIKASKIA - COYOTE 4 138.00 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.28244	111.1498	COYOTE 4 138.00 - G15-015T 138.00 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25418	110.6898	BASE CASE
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.26072	110.3925	P13:069-138:WERE:WEAV_TX-2::
FDNS	08ALL	0	20WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.24381	110.3419	KILDARE4 - WHITE EAGLE 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25070	110.2784	CANEYRV7 345.00 - LATHAMS7 345.00 345KV CKT 1
FDNS	08ALL	0	20SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.24352	109.9875	KILDARE4 - WHITE EAGLE 138KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25209	109.2832	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25418	108.8031	GEN335831 1-RIVERBEND UNIT#1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25418	108.7942	P12:138:AEPW:CORNVIL4:DUNCAN-4
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25418	108.7169	P12:345:GRDA:CHOUTEAU-SPORTSMANACRES
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25418	108.7146	GEN562992 1-G15063_3 0.6900
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25491	108.6784	WOODRING (WOODRNG2) 345/138/13.8KV TRANSFORMER CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	08ALL	0	20WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25434	108.6334	SUMNER 4 - VIOLA 4 138.00 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25418	108.6084	GEN337910 1-ARKANSAS NUCLEAR ONE UNIT #1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25418	108.5743	GEN336153 1-WATERFORD UNIT#3
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25418	108.5302	GEN562882 1-G15047_3 0.6900
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25165	108.5212	CANEYRV7 345.00 - NEOSHO 345KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25300	108.4252	EL PASO - SIXTY-FOURTH (64TH) 138KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25120	108.3427	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25418	108.2841	GEN562429 1-G13-029 0.6900
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25418	108.2388	GEN337911 1-ARKANSAS NUCLEAR ONE UNIT #2
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25418	108.1968	GEN336821 1-GRAND GULF UNIT
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25169	108.1334	59TH ST - GILL ENERGY CENTER SOUTH 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25418	108.026	GEN533561 1-CITY OF WINFIELD
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25333	107.9781	BOEING - STEARMAN 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25418	107.7696	GEN514806 1-SOONER UNIT 2
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.26458	107.7531	DMNCRKT4 - WHITE EAGLE 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25418	107.7203	GEN301382 1-1OSAGEWINDG10.6900
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25169	107.6219	59TH ST - EL PASO 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25169	107.5812	P12:138:WERE:ELPA-MURR_138::
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25229	107.5647	LATHAMS7 345.00 - ROSE HILL 345KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25418	107.5167	GEN515483 1-BLKWLWD1 0.6900
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.26458	107.5109	DMNCRKT4 - MILLER 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25418	107.4054	4OSAGEWIND 138.00 - 4REMNGTON 138.00 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.26458	107.3488	MILLER - SOONER 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.26135	107.2719	OSAGE - SOONER PUMP TAP 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.26135	107.1622	SOONER - SOONER PUMP TAP 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25418	107.1601	GEN562611 1-G14_064_3 0.6900
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25070	107.1431	CANEYRV7 345.00 - NEOSHO 345KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25209	107.1251	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.29765	106.9329	CHIKASKIA - KILDARE4 138KV CKT 1
FDNS	08ALL	0	20SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.19655	106.235	TIMBER JUNCTION - UDALL 69KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25120	106.2163	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	0	20SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25441	105.8235	SUMNER 4 - VIOLA 4 138.00 138KV CKT 1
FDNS	08ALL	0	20SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.19655	105.8208	P12:069:WERE:TIMJ-WEAV_69::
FDNS	08ALL	0	25SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.24354	105.7832	KILDARE4 - WHITE EAGLE 138KV CKT 1
FDNS	08ALL	0	20SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.19655	105.4311	RICHLAND - UDALL 69KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.26483	105.1815	WEAVER (WEAV TX-2) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25229	104.3894	CANEYRV7 345.00 - LATHAMS7 345.00 345KV CKT 1
FDNS	08ALL	0	20SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.19598	104.0567	G15-015T 138.00 - MDFRDTP4 138.00 138KV CKT 1
FDNS	08ALL	0	20SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.19655	104.0042	RICHLAND - ROSE HILL JUNCTION 69KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25268	103.7025	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.28415	103.5429	CHIKASKIA - COYOTE 4 138.00 138KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.28415	103.5348	COYOTE 4 138.00 - G15-015T 138.00 138KV CKT 1
FDNS	08ALL	0	20WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.19659	103.251	TIMBER JUNCTION - UDALL 69KV CKT 1
FDNS	08ALL	0	20WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.19596	103.0083	G15-015T 138.00 - MDFRDTP4 138.00 138KV CKT 1
FDNS	08ALL	0	20WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.19659	102.9963	P12:069:WERE:TIMJ-WEAV_69::
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25418	102.9417	GEN562691 1-G15_015_3 0.6900
FDNS	08ALL	0	20WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.19659	102.9125	RICHLAND - UDALL 69KV CKT 1
FDNS	08ALL	0	17G	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25186	102.7828	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	0	16WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25319	102.4422	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	0	25SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25437	102.3194	SUMNER 4 - VIOLA 4 138.00 138KV CKT 1
FDNS	08ALL	0	20SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.19655	102.1161	ROSE HILL JUNCTION - WEAVER 69KV CKT 1
FDNS	08ALL	0	20SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.19598	102.0079	MDFRDTP4 138.00 - RENFROW4 138.00 138KV CKT 1
FDNS	08ALL	0	20WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.19659	101.9481	RICHLAND - ROSE HILL JUNCTION 69KV CKT 1
FDNS	08ALL	0	25SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.19656	101.7777	TIMBER JUNCTION - UDALL 69KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.26232	101.7463	P13:069-138:WERE:WEAV_TX-2::
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25418	101.7373	GEN514805 1-SOONER UNIT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25268	101.5852	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	0	25SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.19656	101.3324	P12:069:WERE:TIMJ-WEAV_69::
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.25229	101.2368	CANEYRV7 345.00 - NEOSHO 345KV CKT 1
FDNS	08ALL	0	20WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.19596	101.0232	MDFRDTP4 138.00 - RENFROW4 138.00 138KV CKT 1
FDNS	08ALL	0	25SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.19656	100.93	RICHLAND - UDALL 69KV CKT 1
FDNS	08ALL	0	20WP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.19659	100.7916	ROSE HILL JUNCTION - WEAVER 69KV CKT 1
FDNS	08ALL	0	17SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.27431	100.7066	RENFROW7 345.00 (BANK 1) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	08ALL	0	20L	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.17516	100.4759	BASE CASE
FDNS	08ALL	0	25SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.19599	100.4383	G15-015T 138.00 - MDFRDTP4 138.00 138KV CKT 1
FDNS	08ALL	0	25SP	G16_071	TO->FROM	FARBER - SUMNER COUNTY NO. 10 BELLE PLAIN 138KV CKT 1	160.0	160.0	0.19656	99.4	RICHLAND - ROSE HILL JUNCTION 69KV CKT 1
FDNS	08ALL	0	20L	G16_071	FROM->TO	KILDARE4 - WHITE EAGLE 138KV CKT 1	194.0	222.0	0.40195	107.7514	HUNTERS7 345.00 - WOODRING 345KV CKT 1
FDNS	08ALL	0	20L	G16_071	FROM->TO	KILDARE4 - WHITE EAGLE 138KV CKT 1	194.0	222.0	0.46591	100.6478	G15-015T 138.00 - MDFRDTP4 138.00 138KV CKT 1
FDNS	08ALL	0	20L	G16_071	FROM->TO	OSAGE - WEBB CITY TAP 138KV CKT 1	152.0	180.0	0.06652	100	BASE CASE
FDNS	08ALL	2	20L	G16_071	FROM->TO	OSAGE - WEBB CITY TAP 138KV CKT 1	152.0	180.0	0.06813	100.6804	BASE CASE
FDNS	08ALL	2	20L	G16_071	TO->FROM	OSAGE - WHITE EAGLE 138KV CKT 1	191.0	191.0	0.22639	100.4115	CONTINENTAL EMPIRE - WHITE EAGLE 138KV CKT 1
FDNS	08ALL	0	20L	G16_073	FROM->TO	CANEYRV7 345.00 - NEOSHO 345KV CKT 1	766.0	923.0	0.07636	99	BASE CASE
FDNSLock-Blown up	09ALL	0	16WP	G16_075		Non-Converged Contingency	0.0	0.0	0.86648	-	FTTHOMPSON-GRANDPRAIRIE-TLINE-REACTOR-CKT1
FDNSLock-Blown up	09ALL	0	16WP	G16_075		Non-Converged Contingency	720.0	720.0	0.56676	-	GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z
FDNSLock-Blown up	09ALL	0	16WP	G16_075		Non-Converged Contingency	720.0	720.0	0.56676	-	GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	0	16WP	G16_075		Non-Converged Contingency	720.0	720.0	0.43324	-	FTTHOM2-LNX3345.00 - GRPRAR2-LNX3345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	0	17G	G16_075		Non-Converged Contingency	0.0	0.0	0.85696	-	FTTHOMPSON-GRANDPRAIRIE-TLINE-REACTOR-CKT1
FDNSLock-Blown up	09ALL	0	17G	G16_075		Non-Converged Contingency	720.0	720.0	0.57152	-	GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z
FDNSLock-Blown up	09ALL	0	17G	G16_075		Non-Converged Contingency	720.0	720.0	0.57152	-	GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	0	17G	G16_075		Non-Converged Contingency	720.0	720.0	0.42848	-	FT THOMPSON - FTTHOM2-LNX3345.00 345KV CKT Z
FDNSLock-Blown up	09ALL	0	17G	G16_075		Non-Converged Contingency	720.0	720.0	0.42848	-	FTTHOM2-LNX3345.00 - GRPRAR2-LNX3345.00 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB(MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNSLock-Blown up	09ALL	0	17SP	G16_075		Non-Converged Contingency	0.0	0.0	0.85617	-	FTTHOMPSON-GRANDPRAIRIE-TLINE-REACTOR-CKT1
FDNSLock-Blown up	09ALL	0	17SP	G16_075		Non-Converged Contingency	720.0	720.0	0.57192	-	GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z
FDNSLock-Blown up	09ALL	0	17SP	G16_075		Non-Converged Contingency	720.0	720.0	0.57192	-	GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1
FDNSLock-Blown up	09ALL	0	17SP	G16_075		Non-Converged Contingency	720.0	720.0	0.42808	-	FTTHOM2-LNX3345.00 - GRPRAR2-LNX3345.00 345KV CKT 1
FDNSLock	09ALL	0	17SP	G16_075	FROM->TO	GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z	720.0	720.0	1.00000	119.4505	FT THOMPSON - FTTHOM2-LNX3345.00 345KV CKT Z
FDNSLock	09ALL	0	17G	G16_075	FROM->TO	GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z	720.0	720.0	1.00000	115.8157	GRPRAR2-LNX3345.00 - YANKTON 345KV CKT Z
FDNSLock	09ALL	0	17G	G16_075	FROM->TO	GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z	720.0	720.0	1.00000	115.8132	GRANDPRAIRIE-FTTHOMPSON-TLINE-REACTORS-CKT1
FDNS	09ALL	0	16WP	G16_075	FROM->TO	GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z	720.0	720.0	1.00000	115.747	FT THOMPSON - FTTHOM2-LNX3345.00 345KV CKT Z
FDNS	09ALL	0	17SP	G16_075	FROM->TO	GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z	720.0	720.0	1.00000	115.3965	GRPRAR2-LNX3345.00 - YANKTON 345KV CKT Z
FDNS	09ALL	0	17SP	G16_075	FROM->TO	GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z	720.0	720.0	1.00000	115.3957	GRANDPRAIRIE-FTTHOMPSON-TLINE-REACTORS-CKT1
FDNS	09ALL	0	16WP	G16_075	FROM->TO	GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z	720.0	720.0	1.00000	109.5673	GRPRAR2-LNX3345.00 - YANKTON 345KV CKT Z
FDNS	09ALL	0	16WP	G16_075	FROM->TO	GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z	720.0	720.0	1.00000	109.4877	GRANDPRAIRIE-FTTHOMPSON-TLINE-REACTORS-CKT1
FDNS	09ALL	0	17SP	G16_075	FROM->TO	GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z	720.0	720.0	0.57423	100.4554	KELLY - MEADOWGROVE4230.00 230KV CKT 1
FDNSLock	09ALL	0	17SP	G16_075	TO->FROM	GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1	720.0	720.0	1.00000	118.985	FT THOMPSON - FTTHOM2-LNX3345.00 345KV CKT Z
FDNSLock	09ALL	0	17G	G16_075	TO->FROM	GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1	720.0	720.0	1.00000	115.2542	GRPRAR2-LNX3345.00 - YANKTON 345KV CKT Z
FDNSLock	09ALL	0	17G	G16_075	TO->FROM	GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1	720.0	720.0	1.00000	115.2518	GRANDPRAIRIE-FTTHOMPSON-TLINE-REACTORS-CKT1
FDNS	09ALL	0	16WP	G16_075	TO->FROM	GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1	720.0	720.0	1.00000	115.2408	FT THOMPSON - FTTHOM2-LNX3345.00 345KV CKT Z
FDNS	09ALL	0	17SP	G16_075	TO->FROM	GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1	720.0	720.0	1.00000	114.828	GRPRAR2-LNX3345.00 - YANKTON 345KV CKT Z
FDNS	09ALL	0	17SP	G16_075	TO->FROM	GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1	720.0	720.0	1.00000	114.8271	GRANDPRAIRIE-FTTHOMPSON-TLINE-REACTORS-CKT1
FDNS	09ALL	0	16WP	G16_075	TO->FROM	GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1	720.0	720.0	1.00000	108.9376	GRPRAR2-LNX3345.00 - YANKTON 345KV CKT Z
FDNS	09ALL	0	16WP	G16_075	TO->FROM	GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1	720.0	720.0	1.00000	108.8423	GRANDPRAIRIE-FTTHOMPSON-TLINE-REACTORS-CKT1
FDNS	09ALL	0	17SP	G16_075	TO->FROM	GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1	720.0	720.0	0.57423	99.7	KELLY - MEADOWGROVE4230.00 230KV CKT 1

11.9 G-V: VOLTAGE POWER FLOW ANALYSIS (CONSTRAINTS REQUIRING TRANSMISSION REINFORCEMENT)

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	00	0	16WP	ASGI_16_01	GEN-2016-045345.00 345KV	1.302275	1.283203	0.0190725	1.27699	0.9	1.05	0.09714	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	ASGI_16_01	GEN-2016-045345.00 345KV	1.327337	1.307744	0.0195928	1.30141	0.9	1.05	0.09714	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	ASGI_16_01	GEN-2016-045345.00 345KV	1.328225	1.308855	0.01937	1.27699	0.9	1.05	0.07810	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	ASGI_16_01	GEN-2016-045345.00 345KV	1.353786	1.333895	0.0198903	1.30141	0.9	1.05	0.07810	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	ASGI_16_01	GEN-2016-045345.00 345KV	1.303159	1.284075	0.0190835	1.27699	0.9	1.05	0.06321	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	ASGI_16_01	GEN-2016-045345.00 345KV	1.328238	1.308634	0.0196037	1.30141	0.9	1.05	0.06321	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	ASGI_16_01	GEN-2016-045345.00 345KV	1.303982	1.283132	0.0208503	1.27799	0.9	1.05	0.09298	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	ASGI_16_01	GEN-2016-045345.00 345KV	1.329077	1.307672	0.0214047	1.30243	0.9	1.05	0.09298	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	ASGI_16_01	GEN-2016-045345.00 345KV	1.333544	1.311597	0.021947	1.27799	0.9	1.05	0.07450	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	ASGI_16_01	GEN-2016-045345.00 345KV	1.359207	1.336691	0.0225165	1.30243	0.9	1.05	0.07450	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	ASGI_16_01	GEN-2016-045345.00 345KV	1.307155	1.285756	0.0213988	1.27799	0.9	1.05	0.06230	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	ASGI_16_01	GEN-2016-045345.00 345KV	1.33231	1.310347	0.0219632	1.30243	0.9	1.05	0.06230	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	ASGI_16_01	GEN-2016-045345.00 345KV	1.309628	1.288992	0.0206367	1.28029	0.9	1.05	0.13543	DBL-WWRD-TGA
FDNS	00	0	20SP	ASGI_16_01	GEN-2016-045345.00 345KV	1.334832	1.313646	0.0211858	1.30477	0.9	1.05	0.13543	DBL-WWRD-TGA
FDNS	00	0	20SP	ASGI_16_01	GEN-2016-045345.00 345KV	1.33437	1.312243	0.0221272	1.28029	0.9	1.05	0.08731	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	ASGI_16_01	GEN-2016-045345.00 345KV	1.360049	1.33735	0.0226998	1.30477	0.9	1.05	0.08731	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	ASGI_16_01	GEN-2016-045345.00 345KV	1.309935	1.288951	0.0209841	1.28029	0.9	1.05	0.07389	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	ASGI_16_01	GEN-2016-045345.00 345KV	1.335144	1.313604	0.0215397	1.30477	0.9	1.05	0.07389	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	ASGI_16_01	GEN-2016-045345.00 345KV	1.310007	1.288969	0.0210375	1.28029	0.9	1.05	0.07389	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	ASGI_16_01	GEN-2016-045345.00 345KV	1.335217	1.313623	0.0215942	1.30477	0.9	1.05	0.07389	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	ASGI_16_01	GEN-2016-045345.00 345KV	1.308164	1.286876	0.0212878	1.28029	0.9	1.05	0.06777	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	ASGI_16_01	GEN-2016-045345.00 345KV	1.333339	1.311489	0.0218499	1.30477	0.9	1.05	0.06777	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	ASGI_16_01	GEN-2016-045345.00 345KV	1.305864	1.28671	0.0191541	1.27615	0.9	1.05	0.13301	DBL-WWRD-TGA
FDNS	00	0	20WP	ASGI_16_01	GEN-2016-045345.00 345KV	1.330995	1.31132	0.019675	1.30055	0.9	1.05	0.13301	DBL-WWRD-TGA
FDNS	00	0	20WP	ASGI_16_01	GEN-2016-045345.00 345KV	1.323208	1.303765	0.0194432	1.27615	0.9	1.05	0.08694	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	ASGI_16_01	GEN-2016-045345.00 345KV	1.348673	1.328706	0.0199662	1.30055	0.9	1.05	0.08694	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	ASGI_16_01	GEN-2016-045345.00 345KV	1.326278	1.306902	0.0193765	1.30055	0.9	1.05	0.07533	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	ASGI_16_01	GEN-2016-045345.00 345KV	1.326357	1.306911	0.0194464	1.30055	0.9	1.05	0.07533	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	ASGI_16_01	GEN-2016-045345.00 345KV	1.325717	1.30636	0.0193567	1.30055	0.9	1.05	0.06554	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	ASGI_16_01	GEN-2016-045345.00 345KV	1.324474	1.304677	0.0197963	1.27732	0.9	1.05	0.08969	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	ASGI_16_01	GEN-2016-045345.00 345KV	1.349963	1.329637	0.0203258	1.30175	0.9	1.05	0.08969	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	ASGI_16_01	GEN-2016-045345.00 345KV	1.303018	1.283173	0.019845	1.27732	0.9	1.05	0.07134	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	ASGI_16_01	GEN-2016-045345.00 345KV	1.328094	1.307714	0.0203803	1.30175	0.9	1.05	0.07134	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	ASGI_16_01	GEN-2016-057345.00 345KV	1.315324	1.295967	0.0193568	1.28969	0.9	1.05	0.09714	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	ASGI_16_01	GEN-2016-057345.00 345KV	1.341534	1.32188	0.019654	1.28969	0.9	1.05	0.07810	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	ASGI_16_01	GEN-2016-057345.00 345KV	1.316217	1.296849	0.0193679	1.28969	0.9	1.05	0.06321	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	ASGI_16_01	GEN-2016-057345.00 345KV	1.317048	1.295896	0.0211525	1.2907	0.9	1.05	0.09298	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	ASGI_16_01	GEN-2016-057345.00 345KV	1.346906	1.32465	0.0222567	1.2907	0.9	1.05	0.07450	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	ASGI_16_01	GEN-2016-057345.00 345KV	1.320253	1.298546	0.0217063	1.2907	0.9	1.05	0.06230	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	ASGI_16_01	GEN-2016-057345.00 345KV	1.322751	1.301815	0.0209361	1.29302	0.9	1.05	0.13543	DBL-WWRD-TGA
FDNS	00	0	20SP	ASGI_16_01	GEN-2016-057345.00 345KV	1.347741	1.325302	0.0224383	1.29302	0.9	1.05	0.08731	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	ASGI_16_01	GEN-2016-057345.00 345KV	1.323061	1.301774	0.0212868	1.29302	0.9	1.05	0.07389	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	ASGI_16_01	GEN-2016-057345.00 345KV	1.323133	1.301793	0.0213408	1.29302	0.9	1.05	0.07389	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	ASGI_16_01	GEN-2016-057345.00 345KV	1.321272	1.299678	0.0215942	1.29302	0.9	1.05	0.06777	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	ASGI_16_01	GEN-2016-057345.00 345KV	1.318949	1.29951	0.0194386	1.28884	0.9	1.05	0.13301	DBL-WWRD-TGA
FDNS	00	0	20WP	ASGI_16_01	GEN-2016-057345.00 345KV	1.336467	1.316738	0.0197288	1.28884	0.9	1.05	0.08694	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	ASGI_16_01	GEN-2016-057345.00 345KV	1.314275	1.295132	0.0191426	1.28884	0.9	1.05	0.07533	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	ASGI_16_01	GEN-2016-057345.00 345KV	1.314354	1.295142	0.019212	1.28884	0.9	1.05	0.07533	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	ASGI_16_01	GEN-2016-057345.00 345KV	1.313719	1.294596	0.019123	1.28884	0.9	1.05	0.06554	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	ASGI_16_01	GEN-2016-057345.00 345KV	1.337745	1.31766	0.0200852	1.29003	0.9	1.05	0.08969	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	ASGI_16_01	GEN-2016-057345.00 345KV	1.316075	1.295937	0.0201374	1.29003	0.9	1.05	0.07134	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	02ALL	2	17G	ASGI_16_01	MATHWSN7 345.00 345KV	1	1.057966	0.0579665	1.05205	0.9	1.05	0.09863	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL	2	17G	ASGI_16_01	MATHWSN7 345.00 345KV	1	1.060389	0.0603888	1.05205	0.9	1.05	0.09863	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_01	MCLEAN RURAL SUB 115KV	0.933339	0.89248	0.0408586	0.94889	0.9	1.05	0.20241	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_01	SHAMROCK 115KV	0.911364	0.864894	0.0464693	0.92956	0.92	1.05	0.20241	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_01	SHAMROCK 115KV	0.921558	0.890208	0.0313495	0.92956	0.92	1.05	0.18204	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_01	SHAMROCK 115KV	0.938216	0.905653	0.0325633	0.92956	0.92	1.05	0.16352	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_01	SHAMROCK 115KV	0.938216	0.905653	0.0325631	0.92956	0.92	1.05	0.16352	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNS	06ALL	6	17G	ASGI_16_01	SHAMROCK 115KV	0.932605	0.910884	0.0217218	0.92956	0.92	1.05	0.16235	CHISHOLM7 345.00 - G16-037-TAP 345.00 345KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_01	SHAMROCK 115KV	0.933373	0.906096	0.0272766	0.92956	0.92	1.05	0.16235	G16-037-TAP 345.00 - GRACEMONT 345KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_01	SHAMROCK 115KV	0.940696	0.909748	0.030948	0.92956	0.92	1.05	0.13220	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_01	SHAMROCK 115KV	0.939142	0.913869	0.0252723	0.92956	0.92	1.05	0.13220	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_01	SHAMROCK 115KV	0.944283	0.911952	0.0323306	0.92956	0.92	1.05	0.09862	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_01	SHAMROCK 115KV	0.935809	0.904739	0.0310695	0.92956	0.92	1.05	0.06318	CHISHOLM6 230.00 - ELK CITY 230KV 230KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_01	SHAMROCK 115KV	0.931566	0.908706	0.0228604	0.92956	0.92	1.05	0.05385	STATELINE INTERCHANGE - STLN-DEMARC6 230KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_01	SHAMROCK 115KV	0.932759	0.911022	0.021737	0.92956	0.92	1.05	0.05385	STLN-DEMARC6 - SWEETWATER 230KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_01	SHAMROCK 115KV	0.934321	0.907423	0.0268984	0.92956	0.92	1.05	0.04590	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNS	06ALL	6	20L	ASGI_16_01	SHAMROCK 115KV	0.936253	0.901881	0.0343719	0.95391	0.92	1.05	0.15937	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20L	ASGI_16_01	SHAMROCK 115KV	0.936253	0.901881	0.0343719	0.95391	0.92	1.05	0.15937	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20L	ASGI_16_01	SHAMROCK 115KV	0.923555	0.895417	0.0281389	0.95391	0.92	1.05	0.09314	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNS	06ALL	6	20L	ASGI_16_01	SHAMROCK 115KV	0.933464	0.911038	0.0224263	0.95391	0.92	1.05	0.04215	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNS	06ALL	6	20WP	ASGI_16_01	SHAMROCK 115KV	0.93991	0.891866	0.0480433	0.9604	0.92	1.05	0.19790	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	ASGI_16_01	SHAMROCK 115KV	0.93991	0.891866	0.0480433	0.9604	0.92	1.05	0.19790	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	06ALL	6	20WP	ASGI_16_01	SHAMROCK 115KV	0.939273	0.906513	0.0327598	0.9604	0.92	1.05	0.18833	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	ASGI_16_01	SHAMROCK 115KV	0.939273	0.906513	0.0327598	0.9604	0.92	1.05	0.18833	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	ASGI_16_01	SHAMROCK 115KV	0.916691	0.893822	0.0228696	0.9604	0.92	1.05	0.11469	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNS	06ALL	6	20WP	ASGI_16_01	SHAMROCK 115KV	0.935879	0.913992	0.0218866	0.9604	0.92	1.05	0.05316	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_01	SHAMROCK 69KV	0.927509	0.885744	0.0417651	0.94554	0.92	1.05	0.20241	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_01	SHAMROCK 69KV	0.938055	0.911641	0.0264134	0.94554	0.92	1.05	0.18204	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20L	ASGI_16_01	SHAMROCK 69KV	0.940765	0.913238	0.0275269	0.97198	0.92	1.05	0.09314	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNS	06ALL	6	20WP	ASGI_16_01	SHAMROCK 69KV	0.960626	0.913935	0.0466906	0.97894	0.92	1.05	0.19790	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	ASGI_16_01	SHAMROCK 69KV	0.960626	0.913935	0.0466906	0.97894	0.92	1.05	0.19790	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	ASGI_16_01	SHAMROCK 69KV	0.936192	0.911756	0.0244357	0.97894	0.92	1.05	0.11469	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNS	00	0	16WP	ASGI_16_02	GEN-2016-045345.00 345KV	1.302275	1.283203	0.0190725	1.27699	0.9	1.05	0.09613	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	ASGI_16_02	GEN-2016-045345.00 345KV	1.327337	1.307744	0.0195928	1.30141	0.9	1.05	0.09613	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	ASGI_16_02	GEN-2016-045345.00 345KV	1.328225	1.308855	0.01937	1.27699	0.9	1.05	0.07786	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	ASGI_16_02	GEN-2016-045345.00 345KV	1.353786	1.333895	0.0198903	1.30141	0.9	1.05	0.07786	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	ASGI_16_02	GEN-2016-045345.00 345KV	1.303159	1.284075	0.0190835	1.27699	0.9	1.05	0.06316	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	ASGI_16_02	GEN-2016-045345.00 345KV	1.328238	1.308634	0.0196037	1.30141	0.9	1.05	0.06316	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	ASGI_16_02	GEN-2016-045345.00 345KV	1.303982	1.283132	0.0208503	1.27799	0.9	1.05	0.09238	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	ASGI_16_02	GEN-2016-045345.00 345KV	1.329077	1.307672	0.0214047	1.30243	0.9	1.05	0.09238	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	ASGI_16_02	GEN-2016-045345.00 345KV	1.333544	1.311597	0.021947	1.27799	0.9	1.05	0.07436	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	ASGI_16_02	GEN-2016-045345.00 345KV	1.359207	1.336691	0.0225165	1.30243	0.9	1.05	0.07436	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	ASGI_16_02	GEN-2016-045345.00 345KV	1.307155	1.285756	0.0213988	1.27799	0.9	1.05	0.06227	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	ASGI_16_02	GEN-2016-045345.00 345KV	1.33231	1.310347	0.0219632	1.30243	0.9	1.05	0.06227	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	ASGI_16_02	GEN-2016-045345.00 345KV	1.309628	1.288992	0.0206367	1.28029	0.9	1.05	0.13499	DBL-WWRD-TGA
FDNS	00	0	20SP	ASGI_16_02	GEN-2016-045345.00 345KV	1.334832	1.313646	0.0211858	1.30477	0.9	1.05	0.13499	DBL-WWRD-TGA
FDNS	00	0	20SP	ASGI_16_02	GEN-2016-045345.00 345KV	1.33437	1.312243	0.0221272	1.28029	0.9	1.05	0.08720	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	ASGI_16_02	GEN-2016-045345.00 345KV	1.360049	1.33735	0.0226998	1.30477	0.9	1.05	0.08720	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	ASGI_16_02	GEN-2016-045345.00 345KV	1.309935	1.288951	0.0209841	1.28029	0.9	1.05	0.07399	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	ASGI_16_02	GEN-2016-045345.00 345KV	1.335144	1.313604	0.0215397	1.30477	0.9	1.05	0.07399	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	ASGI_16_02	GEN-2016-045345.00 345KV	1.310007	1.288969	0.0210375	1.28029	0.9	1.05	0.07399	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	ASGI_16_02	GEN-2016-045345.00 345KV	1.335217	1.313623	0.0215942	1.30477	0.9	1.05	0.07399	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	ASGI_16_02	GEN-2016-045345.00 345KV	1.308164	1.286876	0.0212878	1.28029	0.9	1.05	0.06774	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	ASGI_16_02	GEN-2016-045345.00 345KV	1.333339	1.311489	0.0218499	1.30477	0.9	1.05	0.06774	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	ASGI_16_02	GEN-2016-045345.00 345KV	1.305864	1.28671	0.0191541	1.27615	0.9	1.05	0.13257	DBL-WWRD-TGA
FDNS	00	0	20WP	ASGI_16_02	GEN-2016-045345.00 345KV	1.330995	1.31132	0.019675	1.30055	0.9	1.05	0.13257	DBL-WWRD-TGA
FDNS	00	0	20WP	ASGI_16_02	GEN-2016-045345.00 345KV	1.323208	1.303765	0.0194432	1.27615	0.9	1.05	0.08683	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	ASGI_16_02	GEN-2016-045345.00 345KV	1.348673	1.328706	0.0199662	1.30055	0.9	1.05	0.08683	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	ASGI_16_02	GEN-2016-045345.00 345KV	1.326278	1.306902	0.0193765	1.30055	0.9	1.05	0.07544	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	ASGI_16_02	GEN-2016-045345.00 345KV	1.326357	1.306911	0.0194464	1.30055	0.9	1.05	0.07544	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	ASGI_16_02	GEN-2016-045345.00 345KV	1.325717	1.30636	0.0193567	1.30055	0.9	1.05	0.06551	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	ASGI_16_02	GEN-2016-045345.00 345KV	1.324474	1.304677	0.0197963	1.27732	0.9	1.05	0.08958	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	ASGI_16_02	GEN-2016-045345.00 345KV	1.349963	1.329637	0.0203258	1.30175	0.9	1.05	0.08958	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	ASGI_16_02	GEN-2016-045345.00 345KV	1.303018	1.283173	0.019845	1.27732	0.9	1.05	0.07131	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	ASGI_16_02	GEN-2016-045345.00 345KV	1.328094	1.307714	0.0203803	1.30175	0.9	1.05	0.07131	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	ASGI_16_02	GEN-2016-057345.00 345KV	1.315324	1.295967	0.0193568	1.28969	0.9	1.05	0.09613	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	ASGI_16_02	GEN-2016-057345.00 345KV	1.341534	1.32188	0.019654	1.28969	0.9	1.05	0.07786	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	ASGI_16_02	GEN-2016-057345.00 345KV	1.316217	1.296849	0.0193679	1.28969	0.9	1.05	0.06316	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	ASGI_16_02	GEN-2016-057345.00 345KV	1.317048	1.295896	0.0211525	1.2907	0.9	1.05	0.09238	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	ASGI_16_02	GEN-2016-057345.00 345KV	1.346906	1.32465	0.0222567	1.2907	0.9	1.05	0.07436	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	ASGI_16_02	GEN-2016-057345.00 345KV	1.320253	1.298546	0.0217063	1.2907	0.9	1.05	0.06227	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	ASGI_16_02	GEN-2016-057345.00 345KV	1.322751	1.301815	0.0209361	1.29302	0.9	1.05	0.13499	DBL-WWRD-TGA
FDNS	00	0	20SP	ASGI_16_02	GEN-2016-057345.00 345KV	1.347741	1.325302	0.0224383	1.29302	0.9	1.05	0.08720	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	ASGI_16_02	GEN-2016-057345.00 345KV	1.323061	1.301774	0.0212868	1.29302	0.9	1.05	0.07399	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	ASGI_16_02	GEN-2016-057345.00 345KV	1.323133	1.301793	0.0213408	1.29302	0.9	1.05	0.07399	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	ASGI_16_02	GEN-2016-057345.00 345KV	1.321272	1.299678	0.0215942	1.29302	0.9	1.05	0.06774	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	ASGI_16_02	GEN-2016-057345.00 345KV	1.318949	1.29951	0.0194386	1.28884	0.9	1.05	0.13257	DBL-WWRD-TGA
FDNS	00	0	20WP	ASGI_16_02	GEN-2016-057345.00 345KV	1.336467	1.316738	0.0197288	1.28884	0.9	1.05	0.08683	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	ASGI_16_02	GEN-2016-057345.00 345KV	1.314275	1.295132	0.0191426	1.28884	0.9	1.05	0.07544	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	ASGI_16_02	GEN-2016-057345.00 345KV	1.314354	1.295142	0.019212	1.28884	0.9	1.05	0.07544	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	ASGI_16_02	GEN-2016-057345.00 345KV	1.313719	1.294596	0.019123	1.28884	0.9	1.05	0.06551	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	ASGI_16_02	GEN-2016-057345.00 345KV	1.337745	1.31766	0.0200852	1.29003	0.9	1.05	0.08958	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	ASGI_16_02	GEN-2016-057345.00 345KV	1.316075	1.295937	0.0201374	1.29003	0.9	1.05	0.07131	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	02ALL	2	17G	ASGI_16_02	MATHWSN7 345.00 345KV	1	1.057966	0.0579665	1.05205	0.9	1.05	0.09764	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL	2	17G	ASGI_16_02	MATHWSN7 345.00 345KV	1	1.060389	0.0603888	1.05205	0.9	1.05	0.09764	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_02	MCLEAN RURAL SUB 115KV	0.933339	0.89248	0.0408586	0.94889	0.9	1.05	0.20363	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_02	SHAMROCK 115KV	0.911364	0.864894	0.0464693	0.92956	0.92	1.05	0.20363	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_02	SHAMROCK 115KV	0.921558	0.890208	0.0313495	0.92956	0.92	1.05	0.18021	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_02	SHAMROCK 115KV	0.938216	0.905653	0.0325633	0.92956	0.92	1.05	0.16475	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_02	SHAMROCK 115KV	0.938216	0.905653	0.0325631	0.92956	0.92	1.05	0.16475	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNS	06ALL	6	17G	ASGI_16_02	SHAMROCK 115KV	0.932605	0.910884	0.0217218	0.92956	0.92	1.05	0.16255	CHISHOLM7 345.00 - G16-037-TAP 345.00 345KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_02	SHAMROCK 115KV	0.933373	0.906096	0.0272766	0.92956	0.92	1.05	0.16255	G16-037-TAP 345.00 - GRACEMONT 345KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_02	SHAMROCK 115KV	0.940696	0.909748	0.030948	0.92956	0.92	1.05	0.13154	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_02	SHAMROCK 115KV	0.939142	0.913869	0.0252723	0.92956	0.92	1.05	0.13154	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_02	SHAMROCK 115KV	0.944283	0.911952	0.0323306	0.92956	0.92	1.05	0.09821	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	06ALL	6	17G	ASGI_16_02	SHAMROCK 115KV	0.935809	0.904739	0.0310695	0.92956	0.92	1.05	0.06322	CHISHOLM6 230.00 - ELK CITY 230KV 230KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_02	SHAMROCK 115KV	0.931566	0.908706	0.0228604	0.92956	0.92	1.05	0.05291	STATELINE INTERCHANGE - STLN-DEMARC6 230KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_02	SHAMROCK 115KV	0.932759	0.911022	0.021737	0.92956	0.92	1.05	0.05291	STLN-DEMARC6 - SWEETWATER 230KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_02	SHAMROCK 115KV	0.934321	0.907423	0.0268984	0.92956	0.92	1.05	0.04510	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNS	06ALL	6	20L	ASGI_16_02	SHAMROCK 115KV	0.936253	0.901881	0.0343719	0.95391	0.92	1.05	0.15820	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20L	ASGI_16_02	SHAMROCK 115KV	0.936253	0.901881	0.0343719	0.95391	0.92	1.05	0.15820	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20L	ASGI_16_02	SHAMROCK 115KV	0.923555	0.895417	0.0281389	0.95391	0.92	1.05	0.09263	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNS	06ALL	6	20L	ASGI_16_02	SHAMROCK 115KV	0.933464	0.911038	0.0224263	0.95391	0.92	1.05	0.04161	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNS	06ALL	6	20WP	ASGI_16_02	SHAMROCK 115KV	0.93991	0.891866	0.0480433	0.9604	0.92	1.05	0.19864	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	ASGI_16_02	SHAMROCK 115KV	0.93991	0.891866	0.0480433	0.9604	0.92	1.05	0.19864	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	ASGI_16_02	SHAMROCK 115KV	0.939273	0.906513	0.0327598	0.9604	0.92	1.05	0.18716	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	ASGI_16_02	SHAMROCK 115KV	0.939273	0.906513	0.0327598	0.9604	0.92	1.05	0.18716	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	ASGI_16_02	SHAMROCK 115KV	0.916691	0.893822	0.0228696	0.9604	0.92	1.05	0.11418	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNS	06ALL	6	20WP	ASGI_16_02	SHAMROCK 115KV	0.935879	0.913992	0.0218866	0.9604	0.92	1.05	0.05263	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_02	SHAMROCK 69KV	0.927509	0.885744	0.0417651	0.94554	0.92	1.05	0.20363	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_02	SHAMROCK 69KV	0.938055	0.911641	0.0264134	0.94554	0.92	1.05	0.18021	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20L	ASGI_16_02	SHAMROCK 69KV	0.940765	0.913238	0.0275269	0.97198	0.92	1.05	0.09263	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNS	06ALL	6	20WP	ASGI_16_02	SHAMROCK 69KV	0.960626	0.913935	0.0466906	0.97894	0.92	1.05	0.19864	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	ASGI_16_02	SHAMROCK 69KV	0.960626	0.913935	0.0466906	0.97894	0.92	1.05	0.19864	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	ASGI_16_02	SHAMROCK 69KV	0.936192	0.911756	0.0244357	0.97894	0.92	1.05	0.11418	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNS	00	0	16WP	ASGI_16_03	GEN-2016-045345.00 345KV	1.327852	1.308625	0.0192273	1.30141	0.9	1.05	0.04131	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	ASGI_16_03	GEN-2016-045345.00 345KV	1.328063	1.308725	0.0193386	1.30141	0.9	1.05	0.04131	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	ASGI_16_03	GEN-2016-045345.00 345KV	1.307321	1.286507	0.0208138	1.27799	0.9	1.05	0.04332	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	ASGI_16_03	GEN-2016-045345.00 345KV	1.33248	1.311113	0.0213668	1.30243	0.9	1.05	0.04332	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	ASGI_16_03	GEN-2016-045345.00 345KV	1.307442	1.286574	0.0208676	1.27799	0.9	1.05	0.04332	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	ASGI_16_03	GEN-2016-045345.00 345KV	1.332603	1.311181	0.0214216	1.30243	0.9	1.05	0.04332	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	ASGI_16_03	GEN-2016-045345.00 345KV	1.30271	1.283473	0.0192374	1.27732	0.9	1.05	0.04281	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	ASGI_16_03	GEN-2016-045345.00 345KV	1.327781	1.30802	0.0197607	1.30175	0.9	1.05	0.04281	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	ASGI_16_03	GEN-2016-045345.00 345KV	1.302807	1.2835	0.0193068	1.27732	0.9	1.05	0.04281	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	ASGI_16_03	GEN-2016-045345.00 345KV	1.327879	1.308047	0.0198315	1.30175	0.9	1.05	0.04281	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	16WP	ASGI_16_03	GEN-2016-057345.00 345KV	1.316044	1.296939	0.0191053	1.28969	0.9	1.05	0.04131	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	ASGI_16_03	GEN-2016-057345.00 345KV	1.320421	1.299306	0.0211154	1.2907	0.9	1.05	0.04332	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	ASGI_16_03	GEN-2016-057345.00 345KV	1.320542	1.299373	0.0211695	1.2907	0.9	1.05	0.04332	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	ASGI_16_03	GEN-2016-057345.00 345KV	1.315764	1.29624	0.0195235	1.29003	0.9	1.05	0.04281	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	ASGI_16_03	GEN-2016-057345.00 345KV	1.315861	1.296268	0.0195937	1.29003	0.9	1.05	0.04281	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	16WP	ASGI_16_04	GEN-2016-045345.00 345KV	1.302275	1.283203	0.0190725	1.27699	0.9	1.05	0.12115	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	ASGI_16_04	GEN-2016-045345.00 345KV	1.327337	1.307744	0.0195928	1.30141	0.9	1.05	0.12115	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	ASGI_16_04	GEN-2016-045345.00 345KV	1.328225	1.308855	0.01937	1.27699	0.9	1.05	0.08374	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	ASGI_16_04	GEN-2016-045345.00 345KV	1.353786	1.333895	0.0198903	1.30141	0.9	1.05	0.08374	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	ASGI_16_04	GEN-2016-045345.00 345KV	1.303159	1.284075	0.0190835	1.27699	0.9	1.05	0.06452	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	ASGI_16_04	GEN-2016-045345.00 345KV	1.328238	1.308634	0.0196037	1.30141	0.9	1.05	0.06452	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	ASGI_16_04	GEN-2016-045345.00 345KV	1.303982	1.283132	0.0208503	1.27799	0.9	1.05	0.11718	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	ASGI_16_04	GEN-2016-045345.00 345KV	1.329077	1.307672	0.0214047	1.30243	0.9	1.05	0.11718	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	ASGI_16_04	GEN-2016-045345.00 345KV	1.333544	1.311597	0.021947	1.27799	0.9	1.05	0.08013	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	ASGI_16_04	GEN-2016-045345.00 345KV	1.359207	1.336691	0.0225165	1.30243	0.9	1.05	0.08013	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	ASGI_16_04	GEN-2016-045345.00 345KV	1.307155	1.285756	0.0213988	1.27799	0.9	1.05	0.06356	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	ASGI_16_04	GEN-2016-045345.00 345KV	1.33231	1.310347	0.0219632	1.30243	0.9	1.05	0.06356	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	ASGI_16_04	GEN-2016-045345.00 345KV	1.309628	1.288992	0.0206367	1.28029	0.9	1.05	0.17240	DBL-WWRD-TGA
FDNS	00	0	20SP	ASGI_16_04	GEN-2016-045345.00 345KV	1.334832	1.313646	0.0211858	1.30477	0.9	1.05	0.17240	DBL-WWRD-TGA
FDNS	00	0	20SP	ASGI_16_04	GEN-2016-045345.00 345KV	1.33437	1.312243	0.0221272	1.28029	0.9	1.05	0.09690	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	ASGI_16_04	GEN-2016-045345.00 345KV	1.360049	1.33735	0.0226998	1.30477	0.9	1.05	0.09690	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	ASGI_16_04	GEN-2016-045345.00 345KV	1.308164	1.286876	0.0212878	1.28029	0.9	1.05	0.07021	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	ASGI_16_04	GEN-2016-045345.00 345KV	1.333339	1.311489	0.0218499	1.30477	0.9	1.05	0.07021	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	ASGI_16_04	GEN-2016-045345.00 345KV	1.309935	1.288951	0.0209841	1.28029	0.9	1.05	0.06520	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	ASGI_16_04	GEN-2016-045345.00 345KV	1.335144	1.313604	0.0215397	1.30477	0.9	1.05	0.06520	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	ASGI_16_04	GEN-2016-045345.00 345KV	1.310007	1.288969	0.0210375	1.28029	0.9	1.05	0.06520	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	ASGI_16_04	GEN-2016-045345.00 345KV	1.335217	1.313623	0.0215942	1.30477	0.9	1.05	0.06520	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	ASGI_16_04	GEN-2016-045345.00 345KV	1.305864	1.28671	0.0191541	1.27615	0.9	1.05	0.16999	DBL-WWRD-TGA
FDNS	00	0	20WP	ASGI_16_04	GEN-2016-045345.00 345KV	1.330995	1.31132	0.019675	1.30055	0.9	1.05	0.16999	DBL-WWRD-TGA
FDNS	00	0	20WP	ASGI_16_04	GEN-2016-045345.00 345KV	1.323208	1.303765	0.0194432	1.27615	0.9	1.05	0.09653	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	ASGI_16_04	GEN-2016-045345.00 345KV	1.348673	1.328706	0.0199662	1.30055	0.9	1.05	0.09653	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	ASGI_16_04	GEN-2016-045345.00 345KV	1.325717	1.30636	0.0193567	1.30055	0.9	1.05	0.06798	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	ASGI_16_04	GEN-2016-045345.00 345KV	1.326278	1.306902	0.0193765	1.30055	0.9	1.05	0.06664	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	ASGI_16_04	GEN-2016-045345.00 345KV	1.326357	1.306911	0.0194464	1.30055	0.9	1.05	0.06664	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	ASGI_16_04	GEN-2016-045345.00 345KV	1.324474	1.304677	0.0197963	1.27732	0.9	1.05	0.09874	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	ASGI_16_04	GEN-2016-045345.00 345KV	1.349963	1.329637	0.0203258	1.30175	0.9	1.05	0.09874	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	ASGI_16_04	GEN-2016-045345.00 345KV	1.303018	1.283173	0.019845	1.27732	0.9	1.05	0.07386	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	ASGI_16_04	GEN-2016-045345.00 345KV	1.328094	1.307714	0.0203803	1.30175	0.9	1.05	0.07386	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	ASGI_16_04	GEN-2016-057345.00 345KV	1.315324	1.295967	0.0193568	1.28969	0.9	1.05	0.12115	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	ASGI_16_04	GEN-2016-057345.00 345KV	1.341534	1.32188	0.019654	1.28969	0.9	1.05	0.08374	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	ASGI_16_04	GEN-2016-057345.00 345KV	1.316217	1.296849	0.0193679	1.28969	0.9	1.05	0.06452	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	ASGI_16_04	GEN-2016-057345.00 345KV	1.317048	1.295896	0.0211525	1.2907	0.9	1.05	0.11718	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	ASGI_16_04	GEN-2016-057345.00 345KV	1.346906	1.32465	0.0222567	1.2907	0.9	1.05	0.08013	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	00	0	17SP	ASGI_16_04	GEN-2016-057345.00 345KV	1.320253	1.298546	0.0217063	1.2907	0.9	1.05	0.06356	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	ASGI_16_04	GEN-2016-057345.00 345KV	1.322751	1.301815	0.0209361	1.29302	0.9	1.05	0.17240	DBL-WWRD-TGA
FDNS	00	0	20SP	ASGI_16_04	GEN-2016-057345.00 345KV	1.347741	1.325302	0.0224383	1.29302	0.9	1.05	0.09690	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	ASGI_16_04	GEN-2016-057345.00 345KV	1.321272	1.299678	0.0215942	1.29302	0.9	1.05	0.07021	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	ASGI_16_04	GEN-2016-057345.00 345KV	1.323061	1.301774	0.0212868	1.29302	0.9	1.05	0.06520	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	ASGI_16_04	GEN-2016-057345.00 345KV	1.323133	1.301793	0.0213408	1.29302	0.9	1.05	0.06520	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	ASGI_16_04	GEN-2016-057345.00 345KV	1.318949	1.29951	0.0194386	1.28884	0.9	1.05	0.16999	DBL-WWRD-TGA
FDNS	00	0	20WP	ASGI_16_04	GEN-2016-057345.00 345KV	1.336467	1.316738	0.0197288	1.28884	0.9	1.05	0.09653	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	ASGI_16_04	GEN-2016-057345.00 345KV	1.313719	1.294596	0.019123	1.28884	0.9	1.05	0.06798	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	ASGI_16_04	GEN-2016-057345.00 345KV	1.314275	1.295132	0.0191426	1.28884	0.9	1.05	0.06664	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	ASGI_16_04	GEN-2016-057345.00 345KV	1.314354	1.295142	0.019212	1.28884	0.9	1.05	0.06664	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	ASGI_16_04	GEN-2016-057345.00 345KV	1.337745	1.31766	0.0200852	1.29003	0.9	1.05	0.09874	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	ASGI_16_04	GEN-2016-057345.00 345KV	1.316075	1.295937	0.0201374	1.29003	0.9	1.05	0.07386	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	02ALL	2	17G	ASGI_16_04	MATHWSN7 345.00 345KV	1	1.057966	0.0579665	1.05205	0.9	1.05	0.12225	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL	2	17G	ASGI_16_04	MATHWSN7 345.00 345KV	1	1.060389	0.0603888	1.05205	0.9	1.05	0.12225	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_04	MCLEAN RURAL SUB 115KV	0.933339	0.89248	0.0408586	0.94889	0.9	1.05	0.14371	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_04	SHAMROCK 115KV	0.921558	0.890208	0.0313495	0.92956	0.92	1.05	0.22442	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_04	SHAMROCK 115KV	0.940696	0.909748	0.030948	0.92956	0.92	1.05	0.16011	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_04	SHAMROCK 115KV	0.939142	0.913869	0.0252723	0.92956	0.92	1.05	0.16011	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_04	SHAMROCK 115KV	0.932605	0.910884	0.0217218	0.92956	0.92	1.05	0.15527	CHISHOLM7 345.00 - G16-037-TAP 345.00 345KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_04	SHAMROCK 115KV	0.933373	0.906096	0.0272766	0.92956	0.92	1.05	0.15527	G16-037-TAP 345.00 - GRACEMONT 345KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_04	SHAMROCK 115KV	0.911364	0.864894	0.0464693	0.92956	0.92	1.05	0.14371	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_04	SHAMROCK 115KV	0.931566	0.908706	0.0228604	0.92956	0.92	1.05	0.12311	STATELINE INTERCHANGE - STLN-DEMARC6 230KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_04	SHAMROCK 115KV	0.932759	0.911022	0.021737	0.92956	0.92	1.05	0.12311	STLN-DEMARC6 - SWEETWATER 230KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_04	SHAMROCK 115KV	0.944283	0.911952	0.0323306	0.92956	0.92	1.05	0.11575	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_04	SHAMROCK 115KV	0.934321	0.907423	0.0268984	0.92956	0.92	1.05	0.10385	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_04	SHAMROCK 115KV	0.938216	0.905653	0.0325633	0.92956	0.92	1.05	0.09784	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_04	SHAMROCK 115KV	0.938216	0.905653	0.0325631	0.92956	0.92	1.05	0.09784	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNS	06ALL	6	17G	ASGI_16_04	SHAMROCK 115KV	0.935809	0.904739	0.0310695	0.92956	0.92	1.05	0.06447	CHISHOLM6 230.00 - ELK CITY 230KV 230KV CKT 1
FDNS	06ALL	6	20L	ASGI_16_04	SHAMROCK 115KV	0.936253	0.901881	0.0343719	0.95391	0.92	1.05	0.20286	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20L	ASGI_16_04	SHAMROCK 115KV	0.936253	0.901881	0.0343719	0.95391	0.92	1.05	0.20286	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20L	ASGI_16_04	SHAMROCK 115KV	0.923555	0.895417	0.0281389	0.95391	0.92	1.05	0.16299	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNS	06ALL	6	20L	ASGI_16_04	SHAMROCK 115KV	0.933464	0.911038	0.0224263	0.95391	0.92	1.05	0.11105	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNS	06ALL	6	20WP	ASGI_16_04	SHAMROCK 115KV	0.939273	0.906513	0.0327598	0.9604	0.92	1.05	0.23181	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	ASGI_16_04	SHAMROCK 115KV	0.939273	0.906513	0.0327598	0.9604	0.92	1.05	0.23181	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	ASGI_16_04	SHAMROCK 115KV	0.916691	0.893822	0.0228696	0.9604	0.92	1.05	0.18453	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNS	06ALL	6	20WP	ASGI_16_04	SHAMROCK 115KV	0.93991	0.891866	0.0480433	0.9604	0.92	1.05	0.13829	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	ASGI_16_04	SHAMROCK 115KV	0.93991	0.891866	0.0480433	0.9604	0.92	1.05	0.13829	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	ASGI_16_04	SHAMROCK 115KV	0.935879	0.913992	0.0218866	0.9604	0.92	1.05	0.12206	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNS	06ALL	6	20WP	ASGI_16_04	SHAMROCK 138KV	1.019443	1.063338	0.0438951	1.01504	0.92	1.05	0.04363	P12:138:AEPW:SHAM4WT:CHILD4WT
FDNSLock	06ALL	6	20WP	ASGI_16_04	SHAMROCK 138KV	1.071097	1.102877	0.0317798	1.01504	0.92	1.05	0.03183	P12:69:WFEC-AEPW:RUSSELL2:LAKEP2WT
FDNS	06ALL	6	17G	ASGI_16_04	SHAMROCK 69KV	0.938055	0.911641	0.0264134	0.94554	0.92	1.05	0.22442	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	17G	ASGI_16_04	SHAMROCK 69KV	0.927509	0.885744	0.0417651	0.94554	0.92	1.05	0.14371	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20L	ASGI_16_04	SHAMROCK 69KV	0.940765	0.913238	0.0275269	0.97198	0.92	1.05	0.16299	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNS	06ALL	6	20WP	ASGI_16_04	SHAMROCK 69KV	0.936192	0.911756	0.0244357	0.97894	0.92	1.05	0.18453	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNS	06ALL	6	20WP	ASGI_16_04	SHAMROCK 69KV	0.960626	0.913935	0.0466906	0.97894	0.92	1.05	0.13829	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	ASGI_16_04	SHAMROCK 69KV	0.960626	0.913935	0.0466906	0.97894	0.92	1.05	0.13829	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNSLock	06ALL	6	20WP	ASGI_16_04	SHAMROCK 69KV	1.042869	1.067482	0.024613	0.97894	0.92	1.05	0.03183	P12:69:WFEC-AEPW:RUSSELL2:LAKEP2WT
FDNS	00	0	20SP	ASGI_16_05	GEN-2016-045345.00 345KV	1.309628	1.288992	0.0206367	1.28029	0.9	1.05	0.03598	DBL-WWRD-TGA
FDNS	00	0	20SP	ASGI_16_05	GEN-2016-045345.00 345KV	1.334832	1.313646	0.0211858	1.30477	0.9	1.05	0.03598	DBL-WWRD-TGA
FDNS	00	0	20WP	ASGI_16_05	GEN-2016-045345.00 345KV	1.305864	1.28671	0.0191541	1.27615	0.9	1.05	0.03353	DBL-WWRD-TGA
FDNS	00	0	20WP	ASGI_16_05	GEN-2016-045345.00 345KV	1.330995	1.31132	0.019675	1.30055	0.9	1.05	0.03353	DBL-WWRD-TGA
FDNS	00	0	20SP	ASGI_16_05	GEN-2016-057345.00 345KV	1.322751	1.301815	0.0209361	1.29302	0.9	1.05	0.03598	DBL-WWRD-TGA
FDNS	00	0	20WP	ASGI_16_05	GEN-2016-057345.00 345KV	1.318949	1.29951	0.0194386	1.28884	0.9	1.05	0.03353	DBL-WWRD-TGA
FDNS	00	0	20SP	ASGI_16_06	GEN-2016-045345.00 345KV	1.309628	1.288992	0.0206367	1.28029	0.9	1.05	0.03398	DBL-WWRD-TGA
FDNS	00	0	20SP	ASGI_16_06	GEN-2016-045345.00 345KV	1.334832	1.313646	0.0211858	1.30477	0.9	1.05	0.03398	DBL-WWRD-TGA
FDNS	00	0	20WP	ASGI_16_06	GEN-2016-045345.00 345KV	1.305864	1.28671	0.0191541	1.27615	0.9	1.05	0.03153	DBL-WWRD-TGA
FDNS	00	0	20WP	ASGI_16_06	GEN-2016-045345.00 345KV	1.330995	1.31132	0.019675	1.30055	0.9	1.05	0.03153	DBL-WWRD-TGA
FDNS	00	0	20SP	ASGI_16_06	GEN-2016-057345.00 345KV	1.322751	1.301815	0.0209361	1.29302	0.9	1.05	0.03398	DBL-WWRD-TGA
FDNS	00	0	20WP	ASGI_16_06	GEN-2016-057345.00 345KV	1.318949	1.29951	0.0194386	1.28884	0.9	1.05	0.03153	DBL-WWRD-TGA
FDNS	00	0	20SP	ASGI_16_07	GEN-2016-045345.00 345KV	1.309628	1.288992	0.0206367	1.28029	0.9	1.05	0.03598	DBL-WWRD-TGA
FDNS	00	0	20SP	ASGI_16_07	GEN-2016-045345.00 345KV	1.334832	1.313646	0.0211858	1.30477	0.9	1.05	0.03598	DBL-WWRD-TGA
FDNS	00	0	20WP	ASGI_16_07	GEN-2016-045345.00 345KV	1.305864	1.28671	0.0191541	1.27615	0.9	1.05	0.03353	DBL-WWRD-TGA
FDNS	00	0	20WP	ASGI_16_07	GEN-2016-045345.00 345KV	1.330995	1.31132	0.019675	1.30055	0.9	1.05	0.03353	DBL-WWRD-TGA
FDNS	00	0	20SP	ASGI_16_07	GEN-2016-057345.00 345KV	1.322751	1.301815	0.0209361	1.29302	0.9	1.05	0.03598	DBL-WWRD-TGA
FDNS	00	0	20WP	ASGI_16_07	GEN-2016-057345.00 345KV	1.318949	1.29951	0.0194386	1.28884	0.9	1.05	0.03353	DBL-WWRD-TGA
FDNS	00	0	20SP	G15_036	GEN-2016-045345.00 345KV	1.309935	1.288951	0.0209841	1.28029	0.9	1.05	0.07024	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G15_036	GEN-2016-045345.00 345KV	1.335144	1.313604	0.0215397	1.30477	0.9	1.05	0.07024	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G15_036	GEN-2016-045345.00 345KV	1.310007	1.288969	0.0210375	1.28029	0.9	1.05	0.07024	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G15_036	GEN-2016-045345.00 345KV	1.335217	1.313623	0.0215942	1.30477	0.9	1.05	0.07024	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	G15_036	GEN-2016-045345.00 345KV	1.326278	1.306902	0.0193765	1.30055	0.9	1.05	0.07168	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G15_036	GEN-2016-045345.00 345KV	1.326357	1.306911	0.0194464	1.30055	0.9	1.05	0.07168	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G15_036	GEN-2016-045345.00 345KV	1.303669	1.284397	0.019272	1.27732	0.9	1.05	0.06297	DBL-WWRD-TGA

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	00	0	25SP	G15_036	GEN-2016-045345.00 345KV	1.328758	1.308962	0.0197957	1.30175	0.9	1.05	0.06297	DBL-WWRD-TGA
FDNS	00	0	20SP	G15_036	GEN-2016-057345.00 345KV	1.323061	1.301774	0.0212868	1.29302	0.9	1.05	0.07024	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G15_036	GEN-2016-057345.00 345KV	1.323133	1.301793	0.0213408	1.29302	0.9	1.05	0.07024	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	G15_036	GEN-2016-057345.00 345KV	1.314275	1.295132	0.0191426	1.28884	0.9	1.05	0.07168	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G15_036	GEN-2016-057345.00 345KV	1.314354	1.295142	0.019212	1.28884	0.9	1.05	0.07168	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G15_036	GEN-2016-057345.00 345KV	1.316732	1.297174	0.0195582	1.29003	0.9	1.05	0.06297	DBL-WWRD-TGA
FDNS	00	0	16WP	G15_041	GEN-2016-045345.00 345KV	1.302275	1.283203	0.0190725	1.27699	0.9	1.05	0.08719	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G15_041	GEN-2016-045345.00 345KV	1.327337	1.307744	0.0195928	1.30141	0.9	1.05	0.08719	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G15_041	GEN-2016-045345.00 345KV	1.328225	1.308855	0.01937	1.27699	0.9	1.05	0.07574	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G15_041	GEN-2016-045345.00 345KV	1.353786	1.333895	0.0198903	1.30141	0.9	1.05	0.07574	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G15_041	GEN-2016-045345.00 345KV	1.303159	1.284075	0.0190835	1.27699	0.9	1.05	0.06265	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G15_041	GEN-2016-045345.00 345KV	1.328238	1.308634	0.0196037	1.30141	0.9	1.05	0.06265	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G15_041	GEN-2016-045345.00 345KV	1.303982	1.283132	0.0208503	1.27799	0.9	1.05	0.08389	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G15_041	GEN-2016-045345.00 345KV	1.329077	1.307672	0.0214047	1.30243	0.9	1.05	0.08389	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G15_041	GEN-2016-045345.00 345KV	1.333544	1.311597	0.021947	1.27799	0.9	1.05	0.07236	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G15_041	GEN-2016-045345.00 345KV	1.359207	1.336691	0.0225165	1.30243	0.9	1.05	0.07236	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G15_041	GEN-2016-045345.00 345KV	1.307155	1.285756	0.0213988	1.27799	0.9	1.05	0.06180	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G15_041	GEN-2016-045345.00 345KV	1.33231	1.310347	0.0219632	1.30243	0.9	1.05	0.06180	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G15_041	GEN-2016-045345.00 345KV	1.309628	1.288992	0.0206367	1.28029	0.9	1.05	0.12543	DBL-WWRD-TGA
FDNS	00	0	20SP	G15_041	GEN-2016-045345.00 345KV	1.334832	1.313646	0.0211858	1.30477	0.9	1.05	0.12543	DBL-WWRD-TGA
FDNS	00	0	20SP	G15_041	GEN-2016-045345.00 345KV	1.33437	1.312243	0.0221272	1.28029	0.9	1.05	0.08471	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G15_041	GEN-2016-045345.00 345KV	1.360049	1.33735	0.0226998	1.30477	0.9	1.05	0.08471	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G15_041	GEN-2016-045345.00 345KV	1.309935	1.288951	0.0209841	1.28029	0.9	1.05	0.07619	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G15_041	GEN-2016-045345.00 345KV	1.335144	1.313604	0.0215397	1.30477	0.9	1.05	0.07619	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G15_041	GEN-2016-045345.00 345KV	1.310007	1.288969	0.0210375	1.28029	0.9	1.05	0.07619	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G15_041	GEN-2016-045345.00 345KV	1.335217	1.313623	0.0215942	1.30477	0.9	1.05	0.07619	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G15_041	GEN-2016-045345.00 345KV	1.308164	1.286876	0.0212878	1.28029	0.9	1.05	0.06709	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G15_041	GEN-2016-045345.00 345KV	1.333339	1.311489	0.0218499	1.30477	0.9	1.05	0.06709	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G15_041	GEN-2016-045345.00 345KV	1.305864	1.28671	0.0191541	1.27615	0.9	1.05	0.12301	DBL-WWRD-TGA
FDNS	00	0	20WP	G15_041	GEN-2016-045345.00 345KV	1.330995	1.31132	0.019675	1.30055	0.9	1.05	0.12301	DBL-WWRD-TGA
FDNS	00	0	20WP	G15_041	GEN-2016-045345.00 345KV	1.323208	1.303765	0.0194432	1.27615	0.9	1.05	0.08434	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G15_041	GEN-2016-045345.00 345KV	1.348673	1.328706	0.0199662	1.30055	0.9	1.05	0.08434	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G15_041	GEN-2016-045345.00 345KV	1.326278	1.306902	0.0193765	1.30055	0.9	1.05	0.07763	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G15_041	GEN-2016-045345.00 345KV	1.326357	1.306911	0.0194464	1.30055	0.9	1.05	0.07763	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	G15_041	GEN-2016-045345.00 345KV	1.325717	1.30636	0.0193567	1.30055	0.9	1.05	0.06486	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G15_041	GEN-2016-045345.00 345KV	1.324474	1.304677	0.0197963	1.27732	0.9	1.05	0.08722	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G15_041	GEN-2016-045345.00 345KV	1.349963	1.329637	0.0203258	1.30175	0.9	1.05	0.08722	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G15_041	GEN-2016-045345.00 345KV	1.303018	1.283173	0.019845	1.27732	0.9	1.05	0.07064	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G15_041	GEN-2016-045345.00 345KV	1.328094	1.307714	0.0203803	1.30175	0.9	1.05	0.07064	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G15_041	GEN-2016-057345.00 345KV	1.315324	1.295967	0.0193568	1.28969	0.9	1.05	0.08719	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G15_041	GEN-2016-057345.00 345KV	1.341534	1.32188	0.019654	1.28969	0.9	1.05	0.07574	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G15_041	GEN-2016-057345.00 345KV	1.316217	1.296849	0.0193679	1.28969	0.9	1.05	0.06265	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G15_041	GEN-2016-057345.00 345KV	1.317048	1.295896	0.0211525	1.2907	0.9	1.05	0.08389	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G15_041	GEN-2016-057345.00 345KV	1.346906	1.32465	0.0222567	1.2907	0.9	1.05	0.07236	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G15_041	GEN-2016-057345.00 345KV	1.320253	1.298546	0.0217063	1.2907	0.9	1.05	0.06180	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G15_041	GEN-2016-057345.00 345KV	1.322751	1.301815	0.0209361	1.29302	0.9	1.05	0.12543	DBL-WWRD-TGA
FDNS	00	0	20SP	G15_041	GEN-2016-057345.00 345KV	1.347741	1.325302	0.0224383	1.29302	0.9	1.05	0.08471	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G15_041	GEN-2016-057345.00 345KV	1.323061	1.301774	0.0212868	1.29302	0.9	1.05	0.07619	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G15_041	GEN-2016-057345.00 345KV	1.323133	1.301793	0.0213408	1.29302	0.9	1.05	0.07619	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G15_041	GEN-2016-057345.00 345KV	1.321272	1.299678	0.0215942	1.29302	0.9	1.05	0.06709	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G15_041	GEN-2016-057345.00 345KV	1.318949	1.29951	0.0194386	1.28884	0.9	1.05	0.12301	DBL-WWRD-TGA
FDNS	00	0	20WP	G15_041	GEN-2016-057345.00 345KV	1.336467	1.316738	0.0197288	1.28884	0.9	1.05	0.08434	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G15_041	GEN-2016-057345.00 345KV	1.314275	1.295132	0.0191426	1.28884	0.9	1.05	0.07763	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G15_041	GEN-2016-057345.00 345KV	1.314354	1.295142	0.019212	1.28884	0.9	1.05	0.07763	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	G15_041	GEN-2016-057345.00 345KV	1.313719	1.294596	0.019123	1.28884	0.9	1.05	0.06486	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G15_041	GEN-2016-057345.00 345KV	1.337745	1.31766	0.0200852	1.29003	0.9	1.05	0.08722	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G15_041	GEN-2016-057345.00 345KV	1.316075	1.295937	0.0201374	1.29003	0.9	1.05	0.07064	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G15_082	GEN-2016-045345.00 345KV	1.302275	1.283203	0.0190725	1.27699	0.9	1.05	0.19644	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G15_082	GEN-2016-045345.00 345KV	1.327337	1.307744	0.0195928	1.30141	0.9	1.05	0.19644	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G15_082	GEN-2016-045345.00 345KV	1.328225	1.308855	0.01937	1.27699	0.9	1.05	0.10348	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G15_082	GEN-2016-045345.00 345KV	1.353786	1.333895	0.0198903	1.30141	0.9	1.05	0.10348	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G15_082	GEN-2016-045345.00 345KV	1.303159	1.284075	0.0190835	1.27699	0.9	1.05	0.06910	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G15_082	GEN-2016-045345.00 345KV	1.328238	1.308634	0.0196037	1.30141	0.9	1.05	0.06910	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G15_082	GEN-2016-045345.00 345KV	1.303982	1.283132	0.0208503	1.27799	0.9	1.05	0.19248	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G15_082	GEN-2016-045345.00 345KV	1.329077	1.307672	0.0214047	1.30243	0.9	1.05	0.19248	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G15_082	GEN-2016-045345.00 345KV	1.333544	1.311597	0.021947	1.27799	0.9	1.05	0.09985	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G15_082	GEN-2016-045345.00 345KV	1.359207	1.336691	0.0225165	1.30243	0.9	1.05	0.09985	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G15_082	GEN-2016-045345.00 345KV	1.307155	1.285756	0.0213988	1.27799	0.9	1.05	0.06813	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G15_082	GEN-2016-045345.00 345KV	1.33231	1.310347	0.0219632	1.30243	0.9	1.05	0.06813	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G15_082	GEN-2016-045345.00 345KV	1.307585	1.287215	0.0203704	1.27799	0.9	1.05	0.03048	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G15_082	GEN-2016-045345.00 345KV	1.332749	1.311835	0.0209147	1.30243	0.9	1.05	0.03048	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G15_082	GEN-2016-045345.00 345KV	1.307585	1.287215	0.0203704	1.27799	0.9	1.05	0.03048	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G15_082	GEN-2016-045345.00 345KV	1.332749	1.311835	0.0209147	1.30243	0.9	1.05	0.03048	CIMARRON - MATHWSN7 345.00 345KV CKT 2

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	00	0	20SP	G15_082	GEN-2016-045345.00 345KV	1.309628	1.288992	0.0206367	1.28029	0.9	1.05	0.28465	DBL-WWRD-TGA
FDNS	00	0	20SP	G15_082	GEN-2016-045345.00 345KV	1.334832	1.313646	0.0211858	1.30477	0.9	1.05	0.28465	DBL-WWRD-TGA
FDNS	00	0	20SP	G15_082	GEN-2016-045345.00 345KV	1.33437	1.312243	0.0221272	1.28029	0.9	1.05	0.12816	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G15_082	GEN-2016-045345.00 345KV	1.360049	1.33735	0.0226998	1.30477	0.9	1.05	0.12816	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G15_082	GEN-2016-045345.00 345KV	1.308164	1.286876	0.0212878	1.28029	0.9	1.05	0.07833	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G15_082	GEN-2016-045345.00 345KV	1.333339	1.311489	0.0218499	1.30477	0.9	1.05	0.07833	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G15_082	GEN-2016-045345.00 345KV	1.309935	1.288951	0.0209841	1.28029	0.9	1.05	0.05371	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G15_082	GEN-2016-045345.00 345KV	1.335144	1.313604	0.0215397	1.30477	0.9	1.05	0.05371	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G15_082	GEN-2016-045345.00 345KV	1.310007	1.288969	0.0210375	1.28029	0.9	1.05	0.05371	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G15_082	GEN-2016-045345.00 345KV	1.335217	1.313623	0.0215942	1.30477	0.9	1.05	0.05371	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G15_082	GEN-2016-045345.00 345KV	1.309077	1.2882	0.020877	1.28029	0.9	1.05	0.05139	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G15_082	GEN-2016-045345.00 345KV	1.334269	1.312838	0.0214309	1.30477	0.9	1.05	0.05139	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G15_082	GEN-2016-045345.00 345KV	1.309077	1.2882	0.0208769	1.28029	0.9	1.05	0.05139	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G15_082	GEN-2016-045345.00 345KV	1.334269	1.312838	0.021431	1.30477	0.9	1.05	0.05139	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G15_082	GEN-2016-045345.00 345KV	1.305864	1.28671	0.0191541	1.27615	0.9	1.05	0.28223	DBL-WWRD-TGA
FDNS	00	0	20WP	G15_082	GEN-2016-045345.00 345KV	1.330995	1.31132	0.019675	1.30055	0.9	1.05	0.28223	DBL-WWRD-TGA
FDNS	00	0	20WP	G15_082	GEN-2016-045345.00 345KV	1.323208	1.303765	0.0194432	1.27615	0.9	1.05	0.12779	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G15_082	GEN-2016-045345.00 345KV	1.348673	1.328706	0.0199662	1.30055	0.9	1.05	0.12779	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G15_082	GEN-2016-045345.00 345KV	1.325717	1.30636	0.0193567	1.30055	0.9	1.05	0.07610	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G15_082	GEN-2016-045345.00 345KV	1.326278	1.306902	0.0193765	1.30055	0.9	1.05	0.05516	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G15_082	GEN-2016-045345.00 345KV	1.326357	1.306911	0.0194464	1.30055	0.9	1.05	0.05516	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	G15_082	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.04964	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G15_082	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.04964	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	25SP	G15_082	GEN-2016-045345.00 345KV	1.324474	1.304677	0.0197963	1.27732	0.9	1.05	0.12863	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G15_082	GEN-2016-045345.00 345KV	1.349963	1.329637	0.0203258	1.30175	0.9	1.05	0.12863	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G15_082	GEN-2016-045345.00 345KV	1.303018	1.283173	0.019845	1.27732	0.9	1.05	0.08219	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G15_082	GEN-2016-045345.00 345KV	1.328094	1.307714	0.0203803	1.30175	0.9	1.05	0.08219	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G15_082	GEN-2016-057345.00 345KV	1.315324	1.295967	0.0193568	1.28969	0.9	1.05	0.19644	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G15_082	GEN-2016-057345.00 345KV	1.341534	1.32188	0.019654	1.28969	0.9	1.05	0.10348	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G15_082	GEN-2016-057345.00 345KV	1.316217	1.296849	0.0193679	1.28969	0.9	1.05	0.06910	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G15_082	GEN-2016-057345.00 345KV	1.317048	1.295896	0.0211525	1.2907	0.9	1.05	0.19248	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G15_082	GEN-2016-057345.00 345KV	1.346906	1.32465	0.0222567	1.2907	0.9	1.05	0.09985	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G15_082	GEN-2016-057345.00 345KV	1.320253	1.298546	0.0217063	1.2907	0.9	1.05	0.06813	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G15_082	GEN-2016-057345.00 345KV	1.320688	1.30002	0.0206672	1.2907	0.9	1.05	0.03048	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G15_082	GEN-2016-057345.00 345KV	1.320688	1.30002	0.0206672	1.2907	0.9	1.05	0.03048	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G15_082	GEN-2016-057345.00 345KV	1.322751	1.301815	0.0209361	1.29302	0.9	1.05	0.28465	DBL-WWRD-TGA
FDNS	00	0	20SP	G15_082	GEN-2016-057345.00 345KV	1.347741	1.325302	0.0224383	1.29302	0.9	1.05	0.12816	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G15_082	GEN-2016-057345.00 345KV	1.321272	1.299678	0.0215942	1.29302	0.9	1.05	0.07833	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G15_082	GEN-2016-057345.00 345KV	1.323061	1.301774	0.0212868	1.29302	0.9	1.05	0.05371	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G15_082	GEN-2016-057345.00 345KV	1.323133	1.301793	0.0213408	1.29302	0.9	1.05	0.05371	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G15_082	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.05139	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G15_082	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.05139	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G15_082	GEN-2016-057345.00 345KV	1.318949	1.29951	0.0194386	1.28884	0.9	1.05	0.28223	DBL-WWRD-TGA
FDNS	00	0	20WP	G15_082	GEN-2016-057345.00 345KV	1.336467	1.316738	0.0197288	1.28884	0.9	1.05	0.12779	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G15_082	GEN-2016-057345.00 345KV	1.313719	1.294596	0.019123	1.28884	0.9	1.05	0.07610	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G15_082	GEN-2016-057345.00 345KV	1.314275	1.295132	0.0191426	1.28884	0.9	1.05	0.05516	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G15_082	GEN-2016-057345.00 345KV	1.314354	1.295142	0.019212	1.28884	0.9	1.05	0.05516	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	G15_082	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.04964	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G15_082	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.04964	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	25SP	G15_082	GEN-2016-057345.00 345KV	1.337745	1.31766	0.0200852	1.29003	0.9	1.05	0.12863	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G15_082	GEN-2016-057345.00 345KV	1.316075	1.295937	0.0201374	1.29003	0.9	1.05	0.08219	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	02ALL	2	17G	G15_082	MATHWSN7 345.00 345KV	1	1.057966	0.0579665	1.05205	0.9	1.05	0.19676	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL	2	17G	G15_082	MATHWSN7 345.00 345KV	1	1.060389	0.0603888	1.05205	0.9	1.05	0.19676	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	09ALL	4	25SP	G15_089	ATWOOD 115KV	0.937465	0.89625	0.0412151	0.93305	0.9	1.05	0.08274	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G15_089	ATWOOD SWITCH 115KV	0.936343	0.896664	0.0396796	0.93238	0.9	1.05	0.08274	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G15_089	BVERVLLY 115.00 115KV	0.94028	0.89886	0.0414202	0.9356	0.9	1.05	0.08274	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	00	0	17SP	G15_089	GEN-2016-045345.00 345KV	1.307321	1.286507	0.0208138	1.27799	0.9	1.05	0.02974	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G15_089	GEN-2016-045345.00 345KV	1.33248	1.311113	0.0213668	1.30243	0.9	1.05	0.02974	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G15_089	GEN-2016-045345.00 345KV	1.307442	1.286574	0.0208676	1.27799	0.9	1.05	0.02974	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G15_089	GEN-2016-045345.00 345KV	1.332603	1.311181	0.0214216	1.30243	0.9	1.05	0.02974	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G15_089	GEN-2016-045345.00 345KV	1.309628	1.288992	0.0206367	1.28029	0.9	1.05	0.03422	DBL-WWRD-TGA
FDNS	00	0	20SP	G15_089	GEN-2016-045345.00 345KV	1.334832	1.313646	0.0211858	1.30477	0.9	1.05	0.03422	DBL-WWRD-TGA
FDNS	00	0	20WP	G15_089	GEN-2016-045345.00 345KV	1.305864	1.28671	0.0191541	1.27615	0.9	1.05	0.03175	DBL-WWRD-TGA
FDNS	00	0	20WP	G15_089	GEN-2016-045345.00 345KV	1.330995	1.31132	0.019675	1.30055	0.9	1.05	0.03175	DBL-WWRD-TGA
FDNS	00	0	17SP	G15_089	GEN-2016-057345.00 345KV	1.320421	1.299306	0.0211154	1.2907	0.9	1.05	0.02974	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G15_089	GEN-2016-057345.00 345KV	1.320542	1.299373	0.0211695	1.2907	0.9	1.05	0.02974	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G15_089	GEN-2016-057345.00 345KV	1.322751	1.301815	0.0209361	1.29302	0.9	1.05	0.03422	DBL-WWRD-TGA
FDNS	00	0	20WP	G15_089	GEN-2016-057345.00 345KV	1.318949	1.29951	0.0194386	1.28884	0.9	1.05	0.03175	DBL-WWRD-TGA
FDNS	09ALL	4	25SP	G15_089	LUDELL 3 115.00 115KV	0.936082	0.897028	0.0390532	0.93227	0.9	1.05	0.08274	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G15_089	LUDELL 3 115.00 115KV	0.938739	0.899773	0.0389661	0.93227	0.9	1.05	0.06325	MINGO - SETAB 345KV CKT 1
FDNS	09ALL	4	25SP	G15_089	LUDELLT3 115.00 115KV	0.936098	0.897045	0.0390525	0.93229	0.9	1.05	0.08274	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G15_089	LUDELLT3 115.00 115KV	0.938755	0.89979	0.0389654	0.93229	0.9	1.05	0.06325	MINGO - SETAB 345KV CKT 1
FDNS	09ALL	4	25SP	G15_089	MCDONLD3 115.00 115KV	0.940883	0.899428	0.041455	0.93614	0.9	1.05	0.08274	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	09ALL	4	25SP	G15_089	NORTH ATWOOD 115KV	0.936247	0.896563	0.0396842	0.93228	0.9	1.05	0.08274	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G15_089	NORTH ATWOOD 115KV	0.939221	0.899939	0.0392824	0.93228	0.9	1.05	0.06325	MINGO - SETAB 345KV CKT 1
FDNS	09ALL	4	25SP	G15_089	ONEOK 3 115.00 115KV	0.940149	0.898709	0.0414398	0.93547	0.9	1.05	0.08274	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	00	0	16WP	G15_095	GEN-2016-045345.00 345KV	1.327852	1.308625	0.0192273	1.30141	0.9	1.05	0.07728	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G15_095	GEN-2016-045345.00 345KV	1.328063	1.308725	0.0193386	1.30141	0.9	1.05	0.07728	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	16WP	G15_095	GEN-2016-045345.00 345KV	1.328225	1.308855	0.01937	1.27699	0.9	1.05	0.07254	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G15_095	GEN-2016-045345.00 345KV	1.353786	1.333895	0.0198903	1.30141	0.9	1.05	0.07254	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G15_095	GEN-2016-045345.00 345KV	1.303159	1.284075	0.0190835	1.27699	0.9	1.05	0.06662	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G15_095	GEN-2016-045345.00 345KV	1.328238	1.308634	0.0196037	1.30141	0.9	1.05	0.06662	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G15_095	GEN-2016-045345.00 345KV	1.302275	1.283203	0.0190725	1.27699	0.9	1.05	0.05855	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G15_095	GEN-2016-045345.00 345KV	1.327337	1.307744	0.0195928	1.30141	0.9	1.05	0.05855	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G15_095	GEN-2016-045345.00 345KV	1.330992	1.311745	0.0192469	1.30141	0.9	1.05	0.03165	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G15_095	GEN-2016-045345.00 345KV	1.330992	1.311745	0.0192469	1.30141	0.9	1.05	0.03165	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G15_095	GEN-2016-045345.00 345KV	1.307321	1.286507	0.0208138	1.27799	0.9	1.05	0.07958	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G15_095	GEN-2016-045345.00 345KV	1.33248	1.311113	0.0213668	1.30243	0.9	1.05	0.07958	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G15_095	GEN-2016-045345.00 345KV	1.307442	1.286574	0.0208676	1.27799	0.9	1.05	0.07958	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G15_095	GEN-2016-045345.00 345KV	1.332603	1.311181	0.0214216	1.30243	0.9	1.05	0.07958	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G15_095	GEN-2016-045345.00 345KV	1.333544	1.311597	0.021947	1.27799	0.9	1.05	0.06936	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G15_095	GEN-2016-045345.00 345KV	1.359207	1.336691	0.0225165	1.30243	0.9	1.05	0.06936	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G15_095	GEN-2016-045345.00 345KV	1.307155	1.285756	0.0213988	1.27799	0.9	1.05	0.06589	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G15_095	GEN-2016-045345.00 345KV	1.33231	1.310347	0.0219632	1.30243	0.9	1.05	0.06589	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G15_095	GEN-2016-045345.00 345KV	1.303982	1.283132	0.0208503	1.27799	0.9	1.05	0.05567	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G15_095	GEN-2016-045345.00 345KV	1.329077	1.307672	0.0214047	1.30243	0.9	1.05	0.05567	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G15_095	GEN-2016-045345.00 345KV	1.307585	1.287215	0.0203704	1.27799	0.9	1.05	0.03295	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G15_095	GEN-2016-045345.00 345KV	1.332749	1.311835	0.0209147	1.30243	0.9	1.05	0.03295	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G15_095	GEN-2016-045345.00 345KV	1.307585	1.287215	0.0203704	1.27799	0.9	1.05	0.03295	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G15_095	GEN-2016-045345.00 345KV	1.332749	1.311835	0.0209147	1.30243	0.9	1.05	0.03295	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G15_095	GEN-2016-045345.00 345KV	1.309628	1.288992	0.0206367	1.28029	0.9	1.05	0.08286	DBL-WWRD-TGA
FDNS	00	0	20SP	G15_095	GEN-2016-045345.00 345KV	1.334832	1.313646	0.0211858	1.30477	0.9	1.05	0.08286	DBL-WWRD-TGA
FDNS	00	0	20SP	G15_095	GEN-2016-045345.00 345KV	1.33437	1.312243	0.0221272	1.28029	0.9	1.05	0.07607	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G15_095	GEN-2016-045345.00 345KV	1.360049	1.33735	0.0226998	1.30477	0.9	1.05	0.07607	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G15_095	GEN-2016-045345.00 345KV	1.308164	1.286876	0.0212878	1.28029	0.9	1.05	0.06883	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G15_095	GEN-2016-045345.00 345KV	1.333339	1.311489	0.0218499	1.30477	0.9	1.05	0.06883	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G15_095	GEN-2016-045345.00 345KV	1.309077	1.2882	0.020877	1.28029	0.9	1.05	0.03880	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G15_095	GEN-2016-045345.00 345KV	1.334269	1.312838	0.0214309	1.30477	0.9	1.05	0.03880	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G15_095	GEN-2016-045345.00 345KV	1.309077	1.2882	0.0208769	1.28029	0.9	1.05	0.03880	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G15_095	GEN-2016-045345.00 345KV	1.334269	1.312838	0.021431	1.30477	0.9	1.05	0.03880	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G15_095	GEN-2016-045345.00 345KV	1.305864	1.28671	0.0191541	1.27615	0.9	1.05	0.08044	DBL-WWRD-TGA
FDNS	00	0	20WP	G15_095	GEN-2016-045345.00 345KV	1.330995	1.31132	0.019675	1.30055	0.9	1.05	0.08044	DBL-WWRD-TGA
FDNS	00	0	20WP	G15_095	GEN-2016-045345.00 345KV	1.323208	1.303765	0.0194432	1.27615	0.9	1.05	0.07570	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G15_095	GEN-2016-045345.00 345KV	1.348673	1.328706	0.0199662	1.30055	0.9	1.05	0.07570	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G15_095	GEN-2016-045345.00 345KV	1.325717	1.30636	0.0193567	1.30055	0.9	1.05	0.06660	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G15_095	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.03706	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G15_095	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.03706	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	25SP	G15_095	GEN-2016-045345.00 345KV	1.324474	1.304677	0.0197963	1.27732	0.9	1.05	0.07699	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G15_095	GEN-2016-045345.00 345KV	1.349963	1.329637	0.0203258	1.30175	0.9	1.05	0.07699	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G15_095	GEN-2016-045345.00 345KV	1.303018	1.283173	0.019845	1.27732	0.9	1.05	0.07263	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G15_095	GEN-2016-045345.00 345KV	1.328094	1.307714	0.0203803	1.30175	0.9	1.05	0.07263	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G15_095	GEN-2016-045345.00 345KV	1.30271	1.283473	0.0192374	1.27732	0.9	1.05	0.07009	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	G15_095	GEN-2016-045345.00 345KV	1.327781	1.30802	0.0197607	1.30175	0.9	1.05	0.07009	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	G15_095	GEN-2016-045345.00 345KV	1.302807	1.2835	0.0193068	1.27732	0.9	1.05	0.07009	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G15_095	GEN-2016-045345.00 345KV	1.327879	1.308047	0.0198315	1.30175	0.9	1.05	0.07009	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	01ALL	2	20L	G15_095	GEN-2016-045345.00 345KV	1.292531	1.26205	0.030481	1.06203	0.9	1.05	0.03224	GEN587303 1-G16-045-GEN10.6900
FDNS	01ALL	2	20L	G15_095	GEN-2016-045345.00 345KV	1.317405	1.286813	0.0305924	1.0646	0.9	1.05	0.03224	GEN587307 1-G16-045-GEN20.6900
FDNS	01ALL	2	20WP	G15_095	GEN-2016-045345.00 345KV	1.287071	1.255685	0.0313865	1.0597	0.9	1.05	0.04369	GEN587303 1-G16-045-GEN10.6900
FDNS	01ALL	2	20WP	G15_095	GEN-2016-045345.00 345KV	1.31184	1.280449	0.031391	1.06232	0.9	1.05	0.04369	GEN587307 1-G16-045-GEN20.6900
FDNS	00	0	16WP	G15_095	GEN-2016-057345.00 345KV	1.316044	1.296939	0.0191053	1.28969	0.9	1.05	0.07728	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	16WP	G15_095	GEN-2016-057345.00 345KV	1.341534	1.32188	0.019654	1.28969	0.9	1.05	0.07254	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G15_095	GEN-2016-057345.00 345KV	1.316217	1.296849	0.0193679	1.28969	0.9	1.05	0.06662	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G15_095	GEN-2016-057345.00 345KV	1.315324	1.295967	0.0193568	1.28969	0.9	1.05	0.05855	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G15_095	GEN-2016-057345.00 345KV	1.318946	1.299931	0.0190147	1.28969	0.9	1.05	0.03165	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G15_095	GEN-2016-057345.00 345KV	1.318946	1.299931	0.0190147	1.28969	0.9	1.05	0.03165	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G15_095	GEN-2016-057345.00 345KV	1.320421	1.299306	0.0211154	1.2907	0.9	1.05	0.07958	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G15_095	GEN-2016-057345.00 345KV	1.320542	1.299373	0.0211695	1.2907	0.9	1.05	0.07958	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G15_095	GEN-2016-057345.00 345KV	1.346906	1.32465	0.0222567	1.2907	0.9	1.05	0.06936	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G15_095	GEN-2016-057345.00 345KV	1.320253	1.298546	0.0217063	1.2907	0.9	1.05	0.06589	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G15_095	GEN-2016-057345.00 345KV	1.317048	1.295896	0.0211525	1.2907	0.9	1.05	0.05567	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G15_095	GEN-2016-057345.00 345KV	1.320688	1.30002	0.0206672	1.2907	0.9	1.05	0.03295	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G15_095	GEN-2016-057345.00 345KV	1.320688	1.30002	0.0206672	1.2907	0.9	1.05	0.03295	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G15_095	GEN-2016-057345.00 345KV	1.322751	1.301815	0.0209361	1.29302	0.9	1.05	0.08286	DBL-WWRD-TGA
FDNS	00	0	20SP	G15_095	GEN-2016-057345.00 345KV	1.347741	1.325302	0.0224383	1.29302	0.9	1.05	0.07607	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G15_095	GEN-2016-057345.00 345KV	1.321272	1.299678	0.0215942	1.29302	0.9	1.05	0.06883	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G15_095	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.03880	CIMARRON - MATHWSN7 345.00 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	00	0	20SP	G15_095	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.03880	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G15_095	GEN-2016-057345.00 345KV	1.318949	1.29951	0.0194386	1.28884	0.9	1.05	0.08044	DBL-WWRD-TGA
FDNS	00	0	20WP	G15_095	GEN-2016-057345.00 345KV	1.336467	1.316738	0.0197288	1.28884	0.9	1.05	0.07570	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G15_095	GEN-2016-057345.00 345KV	1.313719	1.294596	0.019123	1.28884	0.9	1.05	0.06660	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G15_095	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.03706	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G15_095	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.03706	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	25SP	G15_095	GEN-2016-057345.00 345KV	1.337745	1.31766	0.0200852	1.29003	0.9	1.05	0.07699	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G15_095	GEN-2016-057345.00 345KV	1.316075	1.295937	0.0201374	1.29003	0.9	1.05	0.07263	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G15_095	GEN-2016-057345.00 345KV	1.315764	1.29624	0.0195235	1.29003	0.9	1.05	0.07009	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	G15_095	GEN-2016-057345.00 345KV	1.315861	1.296268	0.0195937	1.29003	0.9	1.05	0.07009	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	01ALL	2	20L	G15_095	GEN-2016-057345.00 345KV	1.305482	1.274943	0.0305399	1.06338	0.9	1.05	0.03224	GEN587383 1-G16-045-GEN10.6900
FDNS	01ALL	2	20WP	G15_095	GEN-2016-057345.00 345KV	1.299968	1.268578	0.03139	1.06107	0.9	1.05	0.04369	GEN587383 1-G16-045-GEN10.6900
FDNS	02ALL	2	17G	G15_095	MATHWSN7 345.00 345KV	1	1.057966	0.0579665	1.05205	0.9	1.05	0.05863	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL	2	17G	G15_095	MATHWSN7 345.00 345KV	1	1.060389	0.0603888	1.05205	0.9	1.05	0.05863	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_003	GEN-2016-045345.00 345KV	1.302275	1.283203	0.0190725	1.27699	0.9	1.05	0.22409	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_003	GEN-2016-045345.00 345KV	1.327337	1.307744	0.0195928	1.30141	0.9	1.05	0.22409	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_003	GEN-2016-045345.00 345KV	1.328225	1.308855	0.01937	1.27699	0.9	1.05	0.11246	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_003	GEN-2016-045345.00 345KV	1.353786	1.333895	0.0198903	1.30141	0.9	1.05	0.11246	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_003	GEN-2016-045345.00 345KV	1.303159	1.284075	0.0190835	1.27699	0.9	1.05	0.07276	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_003	GEN-2016-045345.00 345KV	1.328238	1.308634	0.0196037	1.30141	0.9	1.05	0.07276	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_003	GEN-2016-045345.00 345KV	1.330992	1.311745	0.0192469	1.30141	0.9	1.05	0.03701	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_003	GEN-2016-045345.00 345KV	1.330992	1.311745	0.0192469	1.30141	0.9	1.05	0.03701	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_003	GEN-2016-045345.00 345KV	1.303982	1.283132	0.0208503	1.27799	0.9	1.05	0.22065	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_003	GEN-2016-045345.00 345KV	1.329077	1.307672	0.0214047	1.30243	0.9	1.05	0.22065	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_003	GEN-2016-045345.00 345KV	1.333544	1.311597	0.021947	1.27799	0.9	1.05	0.10904	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_003	GEN-2016-045345.00 345KV	1.359207	1.336691	0.0225165	1.30243	0.9	1.05	0.10904	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_003	GEN-2016-045345.00 345KV	1.307155	1.285756	0.0213988	1.27799	0.9	1.05	0.07191	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_003	GEN-2016-045345.00 345KV	1.33231	1.310347	0.0219632	1.30243	0.9	1.05	0.07191	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_003	GEN-2016-045345.00 345KV	1.307585	1.287215	0.0203704	1.27799	0.9	1.05	0.03836	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_003	GEN-2016-045345.00 345KV	1.332749	1.311835	0.0209147	1.30243	0.9	1.05	0.03836	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_003	GEN-2016-045345.00 345KV	1.307585	1.287215	0.0203704	1.27799	0.9	1.05	0.03836	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_003	GEN-2016-045345.00 345KV	1.332749	1.311835	0.0209147	1.30243	0.9	1.05	0.03836	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_003	GEN-2016-045345.00 345KV	1.309628	1.288992	0.0206367	1.28029	0.9	1.05	0.32637	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_003	GEN-2016-045345.00 345KV	1.334832	1.313646	0.0211858	1.30477	0.9	1.05	0.32637	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_003	GEN-2016-045345.00 345KV	1.33437	1.312243	0.0221272	1.28029	0.9	1.05	0.14157	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_003	GEN-2016-045345.00 345KV	1.360049	1.33735	0.0226998	1.30477	0.9	1.05	0.14157	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_003	GEN-2016-045345.00 345KV	1.308164	1.286876	0.0212878	1.28029	0.9	1.05	0.08346	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_003	GEN-2016-045345.00 345KV	1.333339	1.311489	0.0218499	1.30477	0.9	1.05	0.08346	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_003	GEN-2016-045345.00 345KV	1.309077	1.2882	0.020877	1.28029	0.9	1.05	0.06237	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_003	GEN-2016-045345.00 345KV	1.334269	1.312838	0.0214309	1.30477	0.9	1.05	0.06237	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_003	GEN-2016-045345.00 345KV	1.309077	1.2882	0.0208769	1.28029	0.9	1.05	0.06237	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_003	GEN-2016-045345.00 345KV	1.334269	1.312838	0.021431	1.30477	0.9	1.05	0.06237	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_003	GEN-2016-045345.00 345KV	1.309935	1.288951	0.0209841	1.28029	0.9	1.05	0.06006	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_003	GEN-2016-045345.00 345KV	1.335144	1.313604	0.0215397	1.30477	0.9	1.05	0.06006	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_003	GEN-2016-045345.00 345KV	1.310007	1.288969	0.0210375	1.28029	0.9	1.05	0.06006	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G16_003	GEN-2016-045345.00 345KV	1.335217	1.313623	0.0215942	1.30477	0.9	1.05	0.06006	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	G16_003	GEN-2016-045345.00 345KV	1.305864	1.28671	0.0191541	1.27615	0.9	1.05	0.32396	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_003	GEN-2016-045345.00 345KV	1.330995	1.31132	0.019675	1.30055	0.9	1.05	0.32396	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_003	GEN-2016-045345.00 345KV	1.323208	1.303765	0.0194432	1.27615	0.9	1.05	0.14120	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_003	GEN-2016-045345.00 345KV	1.348673	1.328706	0.0199662	1.30055	0.9	1.05	0.14120	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_003	GEN-2016-045345.00 345KV	1.325717	1.30636	0.0193567	1.30055	0.9	1.05	0.08123	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_003	GEN-2016-045345.00 345KV	1.326278	1.306902	0.0193765	1.30055	0.9	1.05	0.06150	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_003	GEN-2016-045345.00 345KV	1.326357	1.306911	0.0194464	1.30055	0.9	1.05	0.06150	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	G16_003	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.06063	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_003	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.06063	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	25SP	G16_003	GEN-2016-045345.00 345KV	1.324474	1.304677	0.0197963	1.27732	0.9	1.05	0.14171	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_003	GEN-2016-045345.00 345KV	1.349963	1.329637	0.0203258	1.30175	0.9	1.05	0.14171	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_003	GEN-2016-045345.00 345KV	1.303018	1.283173	0.019845	1.27732	0.9	1.05	0.08736	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_003	GEN-2016-045345.00 345KV	1.328094	1.307714	0.0203803	1.30175	0.9	1.05	0.08736	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	01ALL	2	20L	G16_003	GEN-2016-045345.00 345KV	1.292531	1.26205	0.030481	1.06203	0.9	1.05	0.04556	GEN587303 1-G16-045-GEN10.6900
FDNS	01ALL	2	20L	G16_003	GEN-2016-045345.00 345KV	1.317405	1.286813	0.0305924	1.0646	0.9	1.05	0.04556	GEN587307 1-G16-045-GEN20.6900
FDNS	01ALL	2	20WP	G16_003	GEN-2016-045345.00 345KV	1.287071	1.255685	0.0313865	1.0597	0.9	1.05	0.05701	GEN587303 1-G16-045-GEN10.6900
FDNS	01ALL	2	20WP	G16_003	GEN-2016-045345.00 345KV	1.31184	1.280449	0.031391	1.06232	0.9	1.05	0.05701	GEN587307 1-G16-045-GEN20.6900
FDNS	00	0	16WP	G16_003	GEN-2016-057345.00 345KV	1.315324	1.295967	0.0193568	1.28969	0.9	1.05	0.22409	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_003	GEN-2016-057345.00 345KV	1.341534	1.32188	0.019654	1.28969	0.9	1.05	0.11246	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_003	GEN-2016-057345.00 345KV	1.316217	1.296849	0.0193679	1.28969	0.9	1.05	0.07276	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_003	GEN-2016-057345.00 345KV	1.318946	1.299931	0.0190147	1.28969	0.9	1.05	0.03701	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_003	GEN-2016-057345.00 345KV	1.318946	1.299931	0.0190147	1.28969	0.9	1.05	0.03701	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_003	GEN-2016-057345.00 345KV	1.317048	1.295896	0.0211525	1.2907	0.9	1.05	0.22065	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_003	GEN-2016-057345.00 345KV	1.346906	1.32465	0.0222567	1.2907	0.9	1.05	0.10904	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_003	GEN-2016-057345.00 345KV	1.320253	1.298546	0.0217063	1.2907	0.9	1.05	0.07191	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_003	GEN-2016-057345.00 345KV	1.320688	1.30002	0.0206672	1.2907	0.9	1.05	0.03836	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_003	GEN-2016-057345.00 345KV	1.320688	1.30002	0.0206672	1.2907	0.9	1.05	0.03836	CIMARRON - MATHWSN7 345.00 345KV CKT 2

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	00	0	20SP	G16_003	GEN-2016-057345.00 345KV	1.322751	1.301815	0.0209361	1.29302	0.9	1.05	0.32637	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_003	GEN-2016-057345.00 345KV	1.347741	1.325302	0.0224383	1.29302	0.9	1.05	0.14157	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_003	GEN-2016-057345.00 345KV	1.321272	1.299678	0.0215942	1.29302	0.9	1.05	0.08346	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_003	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.06237	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_003	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.06237	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_003	GEN-2016-057345.00 345KV	1.323061	1.301774	0.0212868	1.29302	0.9	1.05	0.06006	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_003	GEN-2016-057345.00 345KV	1.323133	1.301793	0.0213408	1.29302	0.9	1.05	0.06006	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	G16_003	GEN-2016-057345.00 345KV	1.318949	1.29951	0.0194386	1.28884	0.9	1.05	0.32396	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_003	GEN-2016-057345.00 345KV	1.336467	1.316738	0.0197288	1.28884	0.9	1.05	0.14120	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_003	GEN-2016-057345.00 345KV	1.313719	1.294596	0.019123	1.28884	0.9	1.05	0.08123	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_003	GEN-2016-057345.00 345KV	1.314275	1.295132	0.0191426	1.28884	0.9	1.05	0.06150	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_003	GEN-2016-057345.00 345KV	1.314354	1.295142	0.019212	1.28884	0.9	1.05	0.06150	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	G16_003	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.06063	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_003	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.06063	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	25SP	G16_003	GEN-2016-057345.00 345KV	1.337745	1.31766	0.0200852	1.29003	0.9	1.05	0.14171	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_003	GEN-2016-057345.00 345KV	1.316075	1.295937	0.0201374	1.29003	0.9	1.05	0.08736	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	01ALL	2	20L	G16_003	GEN-2016-057345.00 345KV	1.305482	1.274943	0.0305399	1.06338	0.9	1.05	0.04556	GEN587383 1-G16-045-GEN10.6900
FDNS	01ALL	2	20WP	G16_003	GEN-2016-057345.00 345KV	1.299968	1.268578	0.03139	1.06107	0.9	1.05	0.05701	GEN587383 1-G16-045-GEN10.6900
FDNS	02ALL	2	17G	G16_003	MATHWSN7 345.00 345KV	1	1.057966	0.0579665	1.05205	0.9	1.05	0.22429	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL	2	17G	G16_003	MATHWSN7 345.00 345KV	1	1.060389	0.0603888	1.05205	0.9	1.05	0.22429	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	16ALL	0	16WP	G16_004	G16-017-TAP 345.00 345KV	1.123772	1.097005	0.0267669	1.01172	0.9	1.05	0.33335	GEN-2016-017TAP-FTTHOMPSONREACTOR-FTTHOMPSON-CKT1
FDNS	16ALL	0	16WP	G16_004	G16-017-TAP 345.00 345KV	1.123674	1.096841	0.0268327	1.01172	0.9	1.05	0.16668	FTTHOM1-LNX3345.00 - G16-017-TAP 345.00 345KV CKT 1
FDNS	16ALL	0	17G	G16_004	G16-017-TAP 345.00 345KV	1.116778	1.089922	0.0268551	0.99101	0.9	1.05	0.32826	GEN-2016-017TAP-FTTHOMPSONREACTOR-FTTHOMPSON-CKT1
FDNS	16ALL	0	17G	G16_004	G16-017-TAP 345.00 345KV	1.116621	1.089741	0.0268803	0.99101	0.9	1.05	0.16413	FTTHOM1-LNX3345.00 - G16-017-TAP 345.00 345KV CKT 1
FDNS	16ALL	0	17SP	G16_004	G16-017-TAP 345.00 345KV	1.114908	1.0868	0.028108	0.96969	0.9	1.05	0.33516	GEN-2016-017TAP-FTTHOMPSONREACTOR-FTTHOMPSON-CKT1
FDNS	16ALL	0	17SP	G16_004	G16-017-TAP 345.00 345KV	1.114715	1.086619	0.028096	0.96969	0.9	1.05	0.16758	FTTHOM1-LNX3345.00 - G16-017-TAP 345.00 345KV CKT 1
FDNS	16ALL	0	20L	G16_004	G16-017-TAP 345.00 345KV	1.13037	1.104604	0.0257661	1.00752	0.9	1.05	0.31509	GEN-2016-017TAP-FTTHOMPSONREACTOR-FTTHOMPSON-CKT1
FDNS	16ALL	0	20L	G16_004	G16-017-TAP 345.00 345KV	1.130268	1.10449	0.0257777	1.00752	0.9	1.05	0.15754	FTTHOM1-LNX3345.00 - G16-017-TAP 345.00 345KV CKT 1
FDNS	16ALL	0	20SP	G16_004	G16-017-TAP 345.00 345KV	1.122036	1.094931	0.0271053	0.99251	0.9	1.05	0.33248	GEN-2016-017TAP-FTTHOMPSONREACTOR-FTTHOMPSON-CKT1
FDNS	16ALL	0	20SP	G16_004	G16-017-TAP 345.00 345KV	1.121957	1.094833	0.0271235	0.99251	0.9	1.05	0.16624	FTTHOM1-LNX3345.00 - G16-017-TAP 345.00 345KV CKT 1
FDNS	16ALL	0	20WP	G16_004	G16-017-TAP 345.00 345KV	1.12983	1.104317	0.0255128	1.0188	0.9	1.05	0.32967	GEN-2016-017TAP-FTTHOMPSONREACTOR-FTTHOMPSON-CKT1
FDNS	16ALL	0	20WP	G16_004	G16-017-TAP 345.00 345KV	1.129783	1.105048	0.0247344	1.0188	0.9	1.05	0.16483	FTTHOM1-LNX3345.00 - G16-017-TAP 345.00 345KV CKT 1
FDNS	16ALL	0	25SP	G16_004	G16-017-TAP 345.00 345KV	1.119728	1.092472	0.027256	0.98589	0.9	1.05	0.33317	GEN-2016-017TAP-FTTHOMPSONREACTOR-FTTHOMPSON-CKT1
FDNS	16ALL	0	25SP	G16_004	G16-017-TAP 345.00 345KV	1.119602	1.092728	0.0268749	0.98589	0.9	1.05	0.16659	FTTHOM1-LNX3345.00 - G16-017-TAP 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_004	GEN-2016-045345.00 345KV	1.309628	1.288992	0.0206367	1.28029	0.9	1.05	0.03220	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_004	GEN-2016-045345.00 345KV	1.334832	1.313646	0.0211858	1.30477	0.9	1.05	0.03220	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_004	GEN-2016-045345.00 345KV	1.305864	1.28671	0.0191541	1.27615	0.9	1.05	0.02978	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_004	GEN-2016-045345.00 345KV	1.330995	1.31132	0.019675	1.30055	0.9	1.05	0.02978	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_004	GEN-2016-057345.00 345KV	1.322751	1.301815	0.0209361	1.29302	0.9	1.05	0.03220	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_004	GEN-2016-057345.00 345KV	1.318949	1.29951	0.0194386	1.28884	0.9	1.05	0.02978	DBL-WWRD-TGA
FDNSLock	00NR	0	17SP	G16_004	GRAND ISLAND 345KV	0.911281	0.891725	0.0195557	0.91911	0.9	1.05	0.12400	WATERTOWN-WHITE-TLINE-REACTOR-CKT1
FDNSLock	00NR	0	17SP	G16_004	GRAND ISLAND 345KV	0.911238	0.891388	0.0198499	0.91911	0.9	1.05	0.06200	WATERTN-LNX3345.00 - WATERTOWN 345KV CKT Z
FDNS	00NR	0	17SP	G16_004	GRAND ISLAND 345KV	1	0.898959	0.101041	0.91911	0.9	1.05	0.06200	WATERTN-LNX3345.00 - WHITE 345KV CKT 1
FDNSLock	00NR	0	17SP	G16_004	GRPRAR 345KV	0.875398	0.849799	0.0255985	0.88051	0.9	1.05	0.24225	LELANDOLDS-GROTON-TLINE-REACTORS-345kV-CKT1
FDNSLock	00NR	0	17SP	G16_004	GRPRAR 345KV	0.858192	0.810207	0.0479848	0.88051	0.9	1.05	0.12400	WATERTOWN-WHITE-TLINE-REACTOR-CKT1
FDNS	00NR	0	17SP	G16_004	GRPRAR 345KV	0.892729	0.873431	0.0192978	0.88051	0.9	1.05	0.09032	LELAND OLDS - STANTON 230KV CKT 1
FDNSLock	00NR	0	17SP	G16_004	GRPRAR 345KV	0.875479	0.850236	0.0252434	0.88051	0.9	1.05	0.08075	GROTON - GROTON-LNX3 345.00 345KV CKT Z
FDNSLock	00NR	0	17SP	G16_004	GRPRAR 345KV	0.873174	0.84429	0.0288848	0.88051	0.9	1.05	0.08075	GROTON-LNX3 345.00 - LELAND1-LNX3345.00 345KV CKT 1
FDNSLock	00NR	0	17SP	G16_004	GRPRAR 345KV	0.875558	0.850449	0.0251091	0.88051	0.9	1.05	0.08075	LELAND OLDS - LELAND1-LNX3345.00 345KV CKT Z
FDNSLock	00NR	0	17SP	G16_004	GRPRAR 345KV	0.884271	0.863437	0.0208332	0.88051	0.9	1.05	0.06840	ANTELOP-LNX3345.00 - BRDLAND-LNX3345.00 345KV CKT 1
FDNSLock	00NR	0	17SP	G16_004	GRPRAR 345KV	0.87059	0.838611	0.0319788	0.88051	0.9	1.05	0.06318	G09_001IST 345.00 - GROTON 345KV CKT 1
FDNSLock	00NR	0	17SP	G16_004	GRPRAR 345KV	0.858091	0.809257	0.0488333	0.88051	0.9	1.05	0.06200	WATERTN-LNX3345.00 - WATERTOWN 345KV CKT Z
FDNS	00NR	0	17SP	G16_004	GRPRAR 345KV	1	0.833558	0.166442	0.88051	0.9	1.05	0.06200	WATERTN-LNX3345.00 - WHITE 345KV CKT 1
FDNS	00NR	0	17SP	G16_004	GRPRAR 345KV	0.884087	0.863348	0.0207393	0.88051	0.9	1.05	0.04734	FT THOMPSON (FT2 KU1B) 345/230/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	17SP	G16_004	GRPRAR 345KV	0.884126	0.863401	0.0207257	0.88051	0.9	1.05	0.04727	FT THOMPSON (FT2 KU1A) 345/230/13.8KV TRANSFORMER CKT 1
FDNS	00	0	16WP	G16_005	GEN-2016-045345.00 345KV	1.302275	1.283203	0.0190725	1.27699	0.9	1.05	0.10867	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_005	GEN-2016-045345.00 345KV	1.327337	1.307744	0.0195928	1.30141	0.9	1.05	0.10867	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_005	GEN-2016-045345.00 345KV	1.328225	1.308855	0.01937	1.27699	0.9	1.05	0.07008	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_005	GEN-2016-045345.00 345KV	1.353786	1.333895	0.0198903	1.30141	0.9	1.05	0.07008	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_005	GEN-2016-045345.00 345KV	1.303159	1.284075	0.0190835	1.27699	0.9	1.05	0.05226	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_005	GEN-2016-045345.00 345KV	1.328238	1.308634	0.0196037	1.30141	0.9	1.05	0.05226	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_005	GEN-2016-045345.00 345KV	1.330992	1.311745	0.0192469	1.30141	0.9	1.05	0.03364	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_005	GEN-2016-045345.00 345KV	1.330992	1.311745	0.0192469	1.30141	0.9	1.05	0.03364	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_005	GEN-2016-045345.00 345KV	1.303982	1.283132	0.0208503	1.27799	0.9	1.05	0.10660	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_005	GEN-2016-045345.00 345KV	1.329077	1.307672	0.0214047	1.30243	0.9	1.05	0.10660	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_005	GEN-2016-045345.00 345KV	1.333544	1.311597	0.021947	1.27799	0.9	1.05	0.06725	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_005	GEN-2016-045345.00 345KV	1.359207	1.336691	0.0225165	1.30243	0.9	1.05	0.06725	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_005	GEN-2016-045345.00 345KV	1.307155	1.285756	0.0213988	1.27799	0.9	1.05	0.05178	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_005	GEN-2016-045345.00 345KV	1.33231	1.310347	0.0219632	1.30243	0.9	1.05	0.05178	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_005	GEN-2016-045345.00 345KV	1.307585	1.287215	0.0203704	1.27799	0.9	1.05	0.03489	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_005	GEN-2016-045345.00 345KV	1.332749	1.311835	0.0209147	1.30243	0.9	1.05	0.03489	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_005	GEN-2016-045345.00 345KV	1.307585	1.287215	0.0203704	1.27799	0.9	1.05	0.03489	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_005	GEN-2016-045345.00 345KV	1.332749	1.311835	0.0209147	1.30243	0.9	1.05	0.03489	CIMARRON - MATHWSN7 345.00 345KV CKT 2

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	00	0	17SP	G16_005	GEN-2016-045345.00 345KV	1.307321	1.286507	0.0208138	1.27799	0.9	1.05	0.03044	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_005	GEN-2016-045345.00 345KV	1.33248	1.311113	0.0213668	1.30243	0.9	1.05	0.03044	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_005	GEN-2016-045345.00 345KV	1.307442	1.286574	0.0208676	1.27799	0.9	1.05	0.03044	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_005	GEN-2016-045345.00 345KV	1.332603	1.311181	0.0214216	1.30243	0.9	1.05	0.03044	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G16_005	GEN-2016-045345.00 345KV	1.309628	1.288992	0.0206367	1.28029	0.9	1.05	0.15494	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_005	GEN-2016-045345.00 345KV	1.334832	1.313646	0.0211858	1.30477	0.9	1.05	0.15494	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_005	GEN-2016-045345.00 345KV	1.33437	1.312243	0.0221272	1.28029	0.9	1.05	0.08187	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_005	GEN-2016-045345.00 345KV	1.360049	1.33735	0.0226998	1.30477	0.9	1.05	0.08187	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_005	GEN-2016-045345.00 345KV	1.308164	1.286876	0.0212878	1.28029	0.9	1.05	0.05728	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_005	GEN-2016-045345.00 345KV	1.333339	1.311489	0.0218499	1.30477	0.9	1.05	0.05728	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_005	GEN-2016-045345.00 345KV	1.309077	1.2882	0.020877	1.28029	0.9	1.05	0.04662	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_005	GEN-2016-045345.00 345KV	1.334269	1.312838	0.0214309	1.30477	0.9	1.05	0.04662	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_005	GEN-2016-045345.00 345KV	1.309077	1.2882	0.0208769	1.28029	0.9	1.05	0.04662	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_005	GEN-2016-045345.00 345KV	1.334269	1.312838	0.021431	1.30477	0.9	1.05	0.04662	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G16_005	GEN-2016-045345.00 345KV	1.305864	1.28671	0.0191541	1.27615	0.9	1.05	0.15252	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_005	GEN-2016-045345.00 345KV	1.330995	1.31132	0.019675	1.30055	0.9	1.05	0.15252	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_005	GEN-2016-045345.00 345KV	1.323208	1.303765	0.0194432	1.27615	0.9	1.05	0.08149	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_005	GEN-2016-045345.00 345KV	1.348673	1.328706	0.0199662	1.30055	0.9	1.05	0.08149	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_005	GEN-2016-045345.00 345KV	1.325717	1.30636	0.0193567	1.30055	0.9	1.05	0.05504	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_005	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.04487	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_005	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.04487	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	25SP	G16_005	GEN-2016-045345.00 345KV	1.324474	1.304677	0.0197963	1.27732	0.9	1.05	0.08255	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_005	GEN-2016-045345.00 345KV	1.349963	1.329637	0.0203258	1.30175	0.9	1.05	0.08255	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_005	GEN-2016-045345.00 345KV	1.303018	1.283173	0.019845	1.27732	0.9	1.05	0.06111	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_005	GEN-2016-045345.00 345KV	1.328094	1.307714	0.0203803	1.30175	0.9	1.05	0.06111	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_005	GEN-2016-057345.00 345KV	1.315324	1.295967	0.0193568	1.28969	0.9	1.05	0.10867	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_005	GEN-2016-057345.00 345KV	1.341534	1.32188	0.019654	1.28969	0.9	1.05	0.07008	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_005	GEN-2016-057345.00 345KV	1.316217	1.296849	0.0193679	1.28969	0.9	1.05	0.05226	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_005	GEN-2016-057345.00 345KV	1.318946	1.299931	0.0190147	1.28969	0.9	1.05	0.03364	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_005	GEN-2016-057345.00 345KV	1.318946	1.299931	0.0190147	1.28969	0.9	1.05	0.03364	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_005	GEN-2016-057345.00 345KV	1.317048	1.295896	0.0211525	1.2907	0.9	1.05	0.10660	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_005	GEN-2016-057345.00 345KV	1.346906	1.32465	0.0222567	1.2907	0.9	1.05	0.06725	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_005	GEN-2016-057345.00 345KV	1.320253	1.298546	0.0217063	1.2907	0.9	1.05	0.05178	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_005	GEN-2016-057345.00 345KV	1.320688	1.30002	0.0206672	1.2907	0.9	1.05	0.03489	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_005	GEN-2016-057345.00 345KV	1.320688	1.30002	0.0206672	1.2907	0.9	1.05	0.03489	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_005	GEN-2016-057345.00 345KV	1.320421	1.299306	0.0211154	1.2907	0.9	1.05	0.03044	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_005	GEN-2016-057345.00 345KV	1.320542	1.299373	0.0211695	1.2907	0.9	1.05	0.03044	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G16_005	GEN-2016-057345.00 345KV	1.322751	1.301815	0.0209361	1.29302	0.9	1.05	0.15494	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_005	GEN-2016-057345.00 345KV	1.347741	1.325302	0.0224383	1.29302	0.9	1.05	0.08187	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_005	GEN-2016-057345.00 345KV	1.321272	1.299678	0.0215942	1.29302	0.9	1.05	0.05728	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_005	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.04662	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_005	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.04662	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G16_005	GEN-2016-057345.00 345KV	1.318949	1.29951	0.0194386	1.28884	0.9	1.05	0.15252	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_005	GEN-2016-057345.00 345KV	1.336467	1.316738	0.0197288	1.28884	0.9	1.05	0.08149	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_005	GEN-2016-057345.00 345KV	1.313719	1.294596	0.019123	1.28884	0.9	1.05	0.05504	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_005	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.04487	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_005	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.04487	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	25SP	G16_005	GEN-2016-057345.00 345KV	1.337745	1.31766	0.0200852	1.29003	0.9	1.05	0.08255	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_005	GEN-2016-057345.00 345KV	1.316075	1.295937	0.0201374	1.29003	0.9	1.05	0.06111	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	02ALL	2	17G	G16_005	MATHWSN7 345.00 345KV	1	1.057966	0.0579665	1.05205	0.9	1.05	0.10884	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL	2	17G	G16_005	MATHWSN7 345.00 345KV	1	1.060389	0.0603888	1.05205	0.9	1.05	0.10884	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_009	GEN-2016-045345.00 345KV	1.327852	1.308625	0.0192273	1.30141	0.9	1.05	0.12664	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_009	GEN-2016-045345.00 345KV	1.328063	1.308725	0.0193386	1.30141	0.9	1.05	0.12664	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	16WP	G16_009	GEN-2016-045345.00 345KV	1.303159	1.284075	0.0190835	1.27699	0.9	1.05	0.05007	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_009	GEN-2016-045345.00 345KV	1.328238	1.308634	0.0196037	1.30141	0.9	1.05	0.05007	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_009	GEN-2016-045345.00 345KV	1.330992	1.311745	0.0192469	1.30141	0.9	1.05	0.04156	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_009	GEN-2016-045345.00 345KV	1.330992	1.311745	0.0192469	1.30141	0.9	1.05	0.04156	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_009	GEN-2016-045345.00 345KV	1.307321	1.286507	0.0208138	1.27799	0.9	1.05	0.12877	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_009	GEN-2016-045345.00 345KV	1.33248	1.311113	0.0213668	1.30243	0.9	1.05	0.12877	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_009	GEN-2016-045345.00 345KV	1.307442	1.286574	0.0208676	1.27799	0.9	1.05	0.12877	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_009	GEN-2016-045345.00 345KV	1.332603	1.311181	0.0214216	1.30243	0.9	1.05	0.12877	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_009	GEN-2016-045345.00 345KV	1.307155	1.285756	0.0213988	1.27799	0.9	1.05	0.04944	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_009	GEN-2016-045345.00 345KV	1.33231	1.310347	0.0219632	1.30243	0.9	1.05	0.04944	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_009	GEN-2016-045345.00 345KV	1.307585	1.287215	0.0203704	1.27799	0.9	1.05	0.04289	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_009	GEN-2016-045345.00 345KV	1.332749	1.311835	0.0209147	1.30243	0.9	1.05	0.04289	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_009	GEN-2016-045345.00 345KV	1.307585	1.287215	0.0203704	1.27799	0.9	1.05	0.04289	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_009	GEN-2016-045345.00 345KV	1.332749	1.311835	0.0209147	1.30243	0.9	1.05	0.04289	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_009	GEN-2016-045345.00 345KV	1.308164	1.286876	0.0212878	1.28029	0.9	1.05	0.04726	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_009	GEN-2016-045345.00 345KV	1.333339	1.311489	0.0218499	1.30477	0.9	1.05	0.04726	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_009	GEN-2016-045345.00 345KV	1.309077	1.2882	0.020877	1.28029	0.9	1.05	0.03889	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_009	GEN-2016-045345.00 345KV	1.334269	1.312838	0.0214309	1.30477	0.9	1.05	0.03889	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_009	GEN-2016-045345.00 345KV	1.309077	1.2882	0.0208769	1.28029	0.9	1.05	0.03889	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_009	GEN-2016-045345.00 345KV	1.334269	1.312838	0.021431	1.30477	0.9	1.05	0.03889	CIMARRON - MATHWSN7 345.00 345KV CKT 2

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	00	0	20WP	G16_009	GEN-2016-045345.00 345KV	1.325717	1.30636	0.0193567	1.30055	0.9	1.05	0.04503	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_009	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.03715	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_009	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.03715	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	25SP	G16_009	GEN-2016-045345.00 345KV	1.30271	1.283473	0.0192374	1.27732	0.9	1.05	0.12961	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	G16_009	GEN-2016-045345.00 345KV	1.327781	1.30802	0.0197607	1.30175	0.9	1.05	0.12961	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	G16_009	GEN-2016-045345.00 345KV	1.302807	1.2835	0.0193068	1.27732	0.9	1.05	0.12961	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_009	GEN-2016-045345.00 345KV	1.327879	1.308047	0.0198315	1.30175	0.9	1.05	0.12961	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_009	GEN-2016-045345.00 345KV	1.303018	1.283173	0.019845	1.27732	0.9	1.05	0.05105	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_009	GEN-2016-045345.00 345KV	1.328094	1.307714	0.0203803	1.30175	0.9	1.05	0.05105	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_009	GEN-2016-045345.00 345KV	1.303669	1.284397	0.019272	1.27732	0.9	1.05	0.04423	DBL-WWRD-TGA
FDNS	00	0	25SP	G16_009	GEN-2016-045345.00 345KV	1.328758	1.308962	0.0197957	1.30175	0.9	1.05	0.04423	DBL-WWRD-TGA
FDNS	00	0	16WP	G16_009	GEN-2016-057345.00 345KV	1.316044	1.296939	0.0191053	1.28969	0.9	1.05	0.12664	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	16WP	G16_009	GEN-2016-057345.00 345KV	1.316217	1.296849	0.0193679	1.28969	0.9	1.05	0.05007	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_009	GEN-2016-057345.00 345KV	1.318946	1.299931	0.0190147	1.28969	0.9	1.05	0.04156	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_009	GEN-2016-057345.00 345KV	1.318946	1.299931	0.0190147	1.28969	0.9	1.05	0.04156	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_009	GEN-2016-057345.00 345KV	1.320421	1.299306	0.0211154	1.2907	0.9	1.05	0.12877	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_009	GEN-2016-057345.00 345KV	1.320542	1.299373	0.0211695	1.2907	0.9	1.05	0.12877	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_009	GEN-2016-057345.00 345KV	1.320253	1.298546	0.0217063	1.2907	0.9	1.05	0.04944	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_009	GEN-2016-057345.00 345KV	1.320688	1.30002	0.0206672	1.2907	0.9	1.05	0.04289	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_009	GEN-2016-057345.00 345KV	1.320688	1.30002	0.0206672	1.2907	0.9	1.05	0.04289	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_009	GEN-2016-057345.00 345KV	1.321272	1.299678	0.0215942	1.29302	0.9	1.05	0.04726	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_009	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.03889	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_009	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.03889	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G16_009	GEN-2016-057345.00 345KV	1.313719	1.294596	0.019123	1.28884	0.9	1.05	0.04503	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_009	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.03715	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_009	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.03715	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	25SP	G16_009	GEN-2016-057345.00 345KV	1.315764	1.29624	0.0195235	1.29003	0.9	1.05	0.12961	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	G16_009	GEN-2016-057345.00 345KV	1.315861	1.296268	0.0195937	1.29003	0.9	1.05	0.12961	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_009	GEN-2016-057345.00 345KV	1.316075	1.295937	0.0201374	1.29003	0.9	1.05	0.05105	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_009	GEN-2016-057345.00 345KV	1.316732	1.297174	0.0195582	1.29003	0.9	1.05	0.04423	DBL-WWRD-TGA
FDNS	00	0	16WP	G16_015	GEN-2016-045345.00 345KV	1.302275	1.283203	0.0190725	1.27699	0.9	1.05	0.10273	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_015	GEN-2016-045345.00 345KV	1.327337	1.307744	0.0195928	1.30141	0.9	1.05	0.10273	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_015	GEN-2016-045345.00 345KV	1.328225	1.308855	0.01937	1.27699	0.9	1.05	0.07941	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_015	GEN-2016-045345.00 345KV	1.353786	1.333895	0.0198903	1.30141	0.9	1.05	0.07941	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_015	GEN-2016-045345.00 345KV	1.303159	1.284075	0.0190835	1.27699	0.9	1.05	0.06350	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_015	GEN-2016-045345.00 345KV	1.328238	1.308634	0.0196037	1.30141	0.9	1.05	0.06350	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_015	GEN-2016-045345.00 345KV	1.303982	1.283132	0.0208503	1.27799	0.9	1.05	0.09850	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_015	GEN-2016-045345.00 345KV	1.329077	1.307672	0.0214047	1.30243	0.9	1.05	0.09850	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_015	GEN-2016-045345.00 345KV	1.333544	1.311597	0.021947	1.27799	0.9	1.05	0.07578	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_015	GEN-2016-045345.00 345KV	1.359207	1.336691	0.0225165	1.30243	0.9	1.05	0.07578	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_015	GEN-2016-045345.00 345KV	1.307155	1.285756	0.0213988	1.27799	0.9	1.05	0.06257	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_015	GEN-2016-045345.00 345KV	1.33231	1.310347	0.0219632	1.30243	0.9	1.05	0.06257	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_015	GEN-2016-045345.00 345KV	1.309628	1.288992	0.0206367	1.28029	0.9	1.05	0.13772	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_015	GEN-2016-045345.00 345KV	1.334832	1.313646	0.0211858	1.30477	0.9	1.05	0.13772	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_015	GEN-2016-045345.00 345KV	1.33437	1.312243	0.0221272	1.28029	0.9	1.05	0.08790	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_015	GEN-2016-045345.00 345KV	1.360049	1.33735	0.0226998	1.30477	0.9	1.05	0.08790	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_015	GEN-2016-045345.00 345KV	1.309935	1.288951	0.0209841	1.28029	0.9	1.05	0.07334	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_015	GEN-2016-045345.00 345KV	1.335144	1.313604	0.0215397	1.30477	0.9	1.05	0.07334	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_015	GEN-2016-045345.00 345KV	1.310007	1.288969	0.0210375	1.28029	0.9	1.05	0.07334	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G16_015	GEN-2016-045345.00 345KV	1.335217	1.313623	0.0215942	1.30477	0.9	1.05	0.07334	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G16_015	GEN-2016-045345.00 345KV	1.308164	1.286876	0.0212878	1.28029	0.9	1.05	0.06791	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_015	GEN-2016-045345.00 345KV	1.333339	1.311489	0.0218499	1.30477	0.9	1.05	0.06791	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_015	GEN-2016-045345.00 345KV	1.305864	1.28671	0.0191541	1.27615	0.9	1.05	0.13531	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_015	GEN-2016-045345.00 345KV	1.330995	1.31132	0.019675	1.30055	0.9	1.05	0.13531	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_015	GEN-2016-045345.00 345KV	1.323208	1.303765	0.0194432	1.27615	0.9	1.05	0.08753	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_015	GEN-2016-045345.00 345KV	1.348673	1.328706	0.0199662	1.30055	0.9	1.05	0.08753	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_015	GEN-2016-045345.00 345KV	1.326278	1.306902	0.0193765	1.30055	0.9	1.05	0.07479	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_015	GEN-2016-045345.00 345KV	1.326357	1.306911	0.0194464	1.30055	0.9	1.05	0.07479	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	G16_015	GEN-2016-045345.00 345KV	1.325717	1.30636	0.0193567	1.30055	0.9	1.05	0.06568	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_015	GEN-2016-045345.00 345KV	1.324474	1.304677	0.0197963	1.27732	0.9	1.05	0.09024	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_015	GEN-2016-045345.00 345KV	1.349963	1.329637	0.0203258	1.30175	0.9	1.05	0.09024	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_015	GEN-2016-045345.00 345KV	1.303018	1.283173	0.019845	1.27732	0.9	1.05	0.07148	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_015	GEN-2016-045345.00 345KV	1.328094	1.307714	0.0203803	1.30175	0.9	1.05	0.07148	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_015	GEN-2016-057345.00 345KV	1.315324	1.295967	0.0193568	1.28969	0.9	1.05	0.10273	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_015	GEN-2016-057345.00 345KV	1.341534	1.32188	0.019654	1.28969	0.9	1.05	0.07941	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_015	GEN-2016-057345.00 345KV	1.316217	1.296849	0.0193679	1.28969	0.9	1.05	0.06350	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_015	GEN-2016-057345.00 345KV	1.317048	1.295896	0.0211525	1.2907	0.9	1.05	0.09850	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_015	GEN-2016-057345.00 345KV	1.346906	1.32465	0.0222567	1.2907	0.9	1.05	0.07578	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_015	GEN-2016-057345.00 345KV	1.320253	1.298546	0.0217063	1.2907	0.9	1.05	0.06257	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_015	GEN-2016-057345.00 345KV	1.322751	1.301815	0.0209361	1.29302	0.9	1.05	0.13772	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_015	GEN-2016-057345.00 345KV	1.347741	1.325302	0.0224383	1.29302	0.9	1.05	0.08790	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_015	GEN-2016-057345.00 345KV	1.323061	1.301774	0.0212868	1.29302	0.9	1.05	0.07334	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_015	GEN-2016-057345.00 345KV	1.323133	1.301793	0.0213408	1.29302	0.9	1.05	0.07334	G15063_T 345.00 - WOODRING 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	00	0	20SP	G16_015	GEN-2016-057345.00 345KV	1.321272	1.299678	0.0215942	1.29302	0.9	1.05	0.06791	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_015	GEN-2016-057345.00 345KV	1.318949	1.29951	0.0194386	1.28884	0.9	1.05	0.13531	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_015	GEN-2016-057345.00 345KV	1.336467	1.316738	0.0197288	1.28884	0.9	1.05	0.08753	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_015	GEN-2016-057345.00 345KV	1.314275	1.295132	0.0191426	1.28884	0.9	1.05	0.07479	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_015	GEN-2016-057345.00 345KV	1.314354	1.295142	0.019212	1.28884	0.9	1.05	0.07479	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	G16_015	GEN-2016-057345.00 345KV	1.313719	1.294596	0.019123	1.28884	0.9	1.05	0.06568	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_015	GEN-2016-057345.00 345KV	1.337745	1.31766	0.0200852	1.29003	0.9	1.05	0.09024	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_015	GEN-2016-057345.00 345KV	1.316075	1.295937	0.0201374	1.29003	0.9	1.05	0.07148	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	02ALL	2	17G	G16_015	MATHWSN7 345.00 345KV	1	1.057966	0.0579665	1.05205	0.9	1.05	0.10416	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL	2	17G	G16_015	MATHWSN7 345.00 345KV	1	1.060389	0.0603888	1.05205	0.9	1.05	0.10416	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	06ALL	6	17G	G16_015	MCLEAN RURAL SUB 115KV	0.933339	0.89248	0.0408586	0.94889	0.9	1.05	0.19896	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	17G	G16_015	SHAMROCK 115KV	0.911364	0.864894	0.0464693	0.92956	0.92	1.05	0.19896	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	17G	G16_015	SHAMROCK 115KV	0.921558	0.890208	0.0313495	0.92956	0.92	1.05	0.18844	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	17G	G16_015	SHAMROCK 115KV	0.932605	0.910884	0.0217218	0.92956	0.92	1.05	0.16183	CHISHOLM7 345.00 - G16-037-TAP 345.00 345KV CKT 1
FDNS	06ALL	6	17G	G16_015	SHAMROCK 115KV	0.933373	0.906096	0.0272766	0.92956	0.92	1.05	0.16183	G16-037-TAP 345.00 - GRACEMONT 345KV CKT 1
FDNS	06ALL	6	17G	G16_015	SHAMROCK 115KV	0.938216	0.905653	0.0325633	0.92956	0.92	1.05	0.16055	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNS	06ALL	6	17G	G16_015	SHAMROCK 115KV	0.938216	0.905653	0.0325631	0.92956	0.92	1.05	0.16055	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNS	06ALL	6	17G	G16_015	SHAMROCK 115KV	0.940696	0.909748	0.030948	0.92956	0.92	1.05	0.13405	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1
FDNS	06ALL	6	17G	G16_015	SHAMROCK 115KV	0.939142	0.913869	0.0252723	0.92956	0.92	1.05	0.13405	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNS	06ALL	6	17G	G16_015	SHAMROCK 115KV	0.944283	0.911952	0.0323306	0.92956	0.92	1.05	0.09983	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	06ALL	6	17G	G16_015	SHAMROCK 115KV	0.935809	0.904739	0.0310695	0.92956	0.92	1.05	0.06299	CHISHOLM6 230.00 - ELK CITY 230KV 230KV CKT 1
FDNS	06ALL	6	17G	G16_015	SHAMROCK 115KV	0.931566	0.908706	0.0228604	0.92956	0.92	1.05	0.05568	STATELINE INTERCHANGE - STLN-DEMARC6 230KV CKT 1
FDNS	06ALL	6	17G	G16_015	SHAMROCK 115KV	0.932759	0.911022	0.021737	0.92956	0.92	1.05	0.05568	STLN-DEMARC6 - SWEETWATER 230KV CKT 1
FDNS	06ALL	6	17G	G16_015	SHAMROCK 115KV	0.934321	0.907423	0.0268984	0.92956	0.92	1.05	0.04744	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNS	06ALL	6	20L	G16_015	SHAMROCK 115KV	0.936253	0.901881	0.0343719	0.95391	0.92	1.05	0.16572	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20L	G16_015	SHAMROCK 115KV	0.936253	0.901881	0.0343719	0.95391	0.92	1.05	0.16572	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20L	G16_015	SHAMROCK 115KV	0.923555	0.895417	0.0281389	0.95391	0.92	1.05	0.09454	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNS	06ALL	6	20L	G16_015	SHAMROCK 115KV	0.933464	0.911038	0.0224263	0.95391	0.92	1.05	0.04376	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNS	06ALL	6	20WP	G16_015	SHAMROCK 115KV	0.939273	0.906513	0.0327598	0.9604	0.92	1.05	0.19466	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	G16_015	SHAMROCK 115KV	0.939273	0.906513	0.0327598	0.9604	0.92	1.05	0.19466	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	G16_015	SHAMROCK 115KV	0.93991	0.891866	0.0480433	0.9604	0.92	1.05	0.19453	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	G16_015	SHAMROCK 115KV	0.93991	0.891866	0.0480433	0.9604	0.92	1.05	0.19453	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	G16_015	SHAMROCK 115KV	0.916691	0.893822	0.0228696	0.9604	0.92	1.05	0.11608	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNS	06ALL	6	20WP	G16_015	SHAMROCK 115KV	0.935879	0.913992	0.0218866	0.9604	0.92	1.05	0.05476	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNS	06ALL	6	17G	G16_015	SHAMROCK 69KV	0.927509	0.885744	0.0417651	0.94554	0.92	1.05	0.19896	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	17G	G16_015	SHAMROCK 69KV	0.938055	0.911641	0.0264134	0.94554	0.92	1.05	0.18844	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20L	G16_015	SHAMROCK 69KV	0.940765	0.913238	0.0275269	0.97198	0.92	1.05	0.09454	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNS	06ALL	6	20WP	G16_015	SHAMROCK 69KV	0.960626	0.913935	0.0466906	0.97894	0.92	1.05	0.19453	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	G16_015	SHAMROCK 69KV	0.960626	0.913935	0.0466906	0.97894	0.92	1.05	0.19453	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	G16_015	SHAMROCK 69KV	0.936192	0.911756	0.0244357	0.97894	0.92	1.05	0.11608	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNS	00	0	16WP	G16_016	GEN-2016-045345.00 345KV	1.302275	1.283203	0.0190725	1.27699	0.9	1.05	0.07841	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_016	GEN-2016-045345.00 345KV	1.327337	1.307744	0.0195928	1.30141	0.9	1.05	0.07841	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_016	GEN-2016-045345.00 345KV	1.328225	1.308855	0.01937	1.27699	0.9	1.05	0.05788	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_016	GEN-2016-045345.00 345KV	1.353786	1.333895	0.0198903	1.30141	0.9	1.05	0.05788	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_016	GEN-2016-045345.00 345KV	1.303159	1.284075	0.0190835	1.27699	0.9	1.05	0.04584	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_016	GEN-2016-045345.00 345KV	1.328238	1.308634	0.0196037	1.30141	0.9	1.05	0.04584	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_016	GEN-2016-045345.00 345KV	1.327852	1.308625	0.0192273	1.30141	0.9	1.05	0.04422	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_016	GEN-2016-045345.00 345KV	1.328063	1.308725	0.0193386	1.30141	0.9	1.05	0.04422	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	16WP	G16_016	GEN-2016-045345.00 345KV	1.330992	1.311745	0.0192469	1.30141	0.9	1.05	0.03238	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_016	GEN-2016-045345.00 345KV	1.330992	1.311745	0.0192469	1.30141	0.9	1.05	0.03238	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_016	GEN-2016-045345.00 345KV	1.303982	1.283132	0.0208503	1.27799	0.9	1.05	0.07634	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_016	GEN-2016-045345.00 345KV	1.329077	1.307672	0.0214047	1.30243	0.9	1.05	0.07634	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_016	GEN-2016-045345.00 345KV	1.333544	1.311597	0.021947	1.27799	0.9	1.05	0.05504	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_016	GEN-2016-045345.00 345KV	1.359207	1.336691	0.0225165	1.30243	0.9	1.05	0.05504	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_016	GEN-2016-045345.00 345KV	1.307321	1.286507	0.0208138	1.27799	0.9	1.05	0.04595	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_016	GEN-2016-045345.00 345KV	1.33248	1.311113	0.0213668	1.30243	0.9	1.05	0.04595	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_016	GEN-2016-045345.00 345KV	1.307442	1.286574	0.0208676	1.27799	0.9	1.05	0.04595	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_016	GEN-2016-045345.00 345KV	1.332603	1.311181	0.0214216	1.30243	0.9	1.05	0.04595	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_016	GEN-2016-045345.00 345KV	1.307155	1.285756	0.0213988	1.27799	0.9	1.05	0.04537	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_016	GEN-2016-045345.00 345KV	1.33231	1.310347	0.0219632	1.30243	0.9	1.05	0.04537	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_016	GEN-2016-045345.00 345KV	1.307585	1.287215	0.0203704	1.27799	0.9	1.05	0.03363	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_016	GEN-2016-045345.00 345KV	1.332749	1.311835	0.0209147	1.30243	0.9	1.05	0.03363	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_016	GEN-2016-045345.00 345KV	1.307585	1.287215	0.0203704	1.27799	0.9	1.05	0.03363	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_016	GEN-2016-045345.00 345KV	1.332749	1.311835	0.0209147	1.30243	0.9	1.05	0.03363	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_016	GEN-2016-045345.00 345KV	1.309628	1.288992	0.0206367	1.28029	0.9	1.05	0.10977	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_016	GEN-2016-045345.00 345KV	1.334832	1.313646	0.0211858	1.30477	0.9	1.05	0.10977	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_016	GEN-2016-045345.00 345KV	1.33437	1.312243	0.0221272	1.28029	0.9	1.05	0.06519	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_016	GEN-2016-045345.00 345KV	1.360049	1.33735	0.0226998	1.30477	0.9	1.05	0.06519	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_016	GEN-2016-045345.00 345KV	1.308164	1.286876	0.0212878	1.28029	0.9	1.05	0.04942	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_016	GEN-2016-045345.00 345KV	1.333339	1.311489	0.0218499	1.30477	0.9	1.05	0.04942	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_016	GEN-2016-045345.00 345KV	1.309077	1.2882	0.020877	1.28029	0.9	1.05	0.04219	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_016	GEN-2016-045345.00 345KV	1.334269	1.312838	0.0214309	1.30477	0.9	1.05	0.04219	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_016	GEN-2016-045345.00 345KV	1.309077	1.2882	0.0208769	1.28029	0.9	1.05	0.04219	CIMARRON - MATHWSN7 345.00 345KV CKT 2

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	00	0	20SP	G16_016	GEN-2016-045345.00 345KV	1.334269	1.312838	0.021431	1.30477	0.9	1.05	0.04219	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G16_016	GEN-2016-045345.00 345KV	1.305864	1.28671	0.0191541	1.27615	0.9	1.05	0.10734	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_016	GEN-2016-045345.00 345KV	1.330995	1.31132	0.019675	1.30055	0.9	1.05	0.10734	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_016	GEN-2016-045345.00 345KV	1.323208	1.303765	0.0194432	1.27615	0.9	1.05	0.06481	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_016	GEN-2016-045345.00 345KV	1.348673	1.328706	0.0199662	1.30055	0.9	1.05	0.06481	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_016	GEN-2016-045345.00 345KV	1.325717	1.30636	0.0193567	1.30055	0.9	1.05	0.04718	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_016	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.04044	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_016	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.04044	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	25SP	G16_016	GEN-2016-045345.00 345KV	1.324474	1.304677	0.0197963	1.27732	0.9	1.05	0.06602	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_016	GEN-2016-045345.00 345KV	1.349963	1.329637	0.0203258	1.30175	0.9	1.05	0.06602	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_016	GEN-2016-045345.00 345KV	1.303018	1.283173	0.019845	1.27732	0.9	1.05	0.05323	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_016	GEN-2016-045345.00 345KV	1.328094	1.307714	0.0203803	1.30175	0.9	1.05	0.05323	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_016	GEN-2016-045345.00 345KV	1.30271	1.283473	0.0192374	1.27732	0.9	1.05	0.03908	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	G16_016	GEN-2016-045345.00 345KV	1.327781	1.30802	0.0197607	1.30175	0.9	1.05	0.03908	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	G16_016	GEN-2016-045345.00 345KV	1.302807	1.2835	0.0193068	1.27732	0.9	1.05	0.03908	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_016	GEN-2016-045345.00 345KV	1.327879	1.308047	0.0198315	1.30175	0.9	1.05	0.03908	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	16WP	G16_016	GEN-2016-057345.00 345KV	1.315324	1.295967	0.0193568	1.28969	0.9	1.05	0.07841	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_016	GEN-2016-057345.00 345KV	1.341534	1.32188	0.019654	1.28969	0.9	1.05	0.05788	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_016	GEN-2016-057345.00 345KV	1.316217	1.296849	0.0193679	1.28969	0.9	1.05	0.04584	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_016	GEN-2016-057345.00 345KV	1.316044	1.296939	0.0191053	1.28969	0.9	1.05	0.04422	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	16WP	G16_016	GEN-2016-057345.00 345KV	1.318946	1.299931	0.0190147	1.28969	0.9	1.05	0.03238	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_016	GEN-2016-057345.00 345KV	1.318946	1.299931	0.0190147	1.28969	0.9	1.05	0.03238	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_016	GEN-2016-057345.00 345KV	1.317048	1.295896	0.0211525	1.2907	0.9	1.05	0.07634	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_016	GEN-2016-057345.00 345KV	1.346906	1.32465	0.0222567	1.2907	0.9	1.05	0.05504	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_016	GEN-2016-057345.00 345KV	1.320421	1.299306	0.0211154	1.2907	0.9	1.05	0.04595	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_016	GEN-2016-057345.00 345KV	1.320542	1.299373	0.0211695	1.2907	0.9	1.05	0.04595	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_016	GEN-2016-057345.00 345KV	1.320253	1.298546	0.0217063	1.2907	0.9	1.05	0.04537	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_016	GEN-2016-057345.00 345KV	1.320688	1.30002	0.0206672	1.2907	0.9	1.05	0.03363	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_016	GEN-2016-057345.00 345KV	1.320688	1.30002	0.0206672	1.2907	0.9	1.05	0.03363	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_016	GEN-2016-057345.00 345KV	1.322751	1.301815	0.0209361	1.29302	0.9	1.05	0.10977	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_016	GEN-2016-057345.00 345KV	1.347741	1.325302	0.0224383	1.29302	0.9	1.05	0.06519	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_016	GEN-2016-057345.00 345KV	1.321272	1.299678	0.0215942	1.29302	0.9	1.05	0.04942	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_016	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.04219	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_016	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.04219	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G16_016	GEN-2016-057345.00 345KV	1.318949	1.29951	0.0194386	1.28884	0.9	1.05	0.10734	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_016	GEN-2016-057345.00 345KV	1.336467	1.316738	0.0197288	1.28884	0.9	1.05	0.06481	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_016	GEN-2016-057345.00 345KV	1.313719	1.294596	0.019123	1.28884	0.9	1.05	0.04718	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_016	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.04044	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_016	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.04044	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	25SP	G16_016	GEN-2016-057345.00 345KV	1.337745	1.31766	0.0200852	1.29003	0.9	1.05	0.06602	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_016	GEN-2016-057345.00 345KV	1.316075	1.295937	0.0201374	1.29003	0.9	1.05	0.05323	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_016	GEN-2016-057345.00 345KV	1.315764	1.29624	0.0195235	1.29003	0.9	1.05	0.03908	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	G16_016	GEN-2016-057345.00 345KV	1.315861	1.296268	0.0195937	1.29003	0.9	1.05	0.03908	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	02ALL	2	17G	G16_016	MATHWSN7 345.00 345KV	1	1.057966	0.0579665	1.05205	0.9	1.05	0.07857	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL	2	17G	G16_016	MATHWSN7 345.00 345KV	1	1.060389	0.0603888	1.05205	0.9	1.05	0.07857	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	20SP	G16_017	GEN-2016-045345.00 345KV	1.309628	1.288992	0.0206367	1.28029	0.9	1.05	0.03930	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_017	GEN-2016-045345.00 345KV	1.334832	1.313646	0.0211858	1.30477	0.9	1.05	0.03930	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_017	GEN-2016-045345.00 345KV	1.305864	1.28671	0.0191541	1.27615	0.9	1.05	0.03686	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_017	GEN-2016-045345.00 345KV	1.330995	1.31132	0.019675	1.30055	0.9	1.05	0.03686	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_017	GEN-2016-057345.00 345KV	1.322751	1.301815	0.0209361	1.29302	0.9	1.05	0.03930	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_017	GEN-2016-057345.00 345KV	1.318949	1.29951	0.0194386	1.28884	0.9	1.05	0.03686	DBL-WWRD-TGA
FDNS	00	0	16WP	G16_020	GEN-2016-045345.00 345KV	1.302275	1.283203	0.0190725	1.27699	0.9	1.05	0.09590	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_020	GEN-2016-045345.00 345KV	1.327337	1.307744	0.0195928	1.30141	0.9	1.05	0.09590	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_020	GEN-2016-045345.00 345KV	1.328225	1.308855	0.01937	1.27699	0.9	1.05	0.07520	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_020	GEN-2016-045345.00 345KV	1.353786	1.333895	0.0198903	1.30141	0.9	1.05	0.07520	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_020	GEN-2016-045345.00 345KV	1.303159	1.284075	0.0190835	1.27699	0.9	1.05	0.06716	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_020	GEN-2016-045345.00 345KV	1.328238	1.308634	0.0196037	1.30141	0.9	1.05	0.06716	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_020	GEN-2016-045345.00 345KV	1.303982	1.283132	0.0208503	1.27799	0.9	1.05	0.09287	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_020	GEN-2016-045345.00 345KV	1.329077	1.307672	0.0214047	1.30243	0.9	1.05	0.09287	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_020	GEN-2016-045345.00 345KV	1.333544	1.311597	0.021947	1.27799	0.9	1.05	0.07196	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_020	GEN-2016-045345.00 345KV	1.359207	1.336691	0.0225165	1.30243	0.9	1.05	0.07196	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_020	GEN-2016-045345.00 345KV	1.307155	1.285756	0.0213988	1.27799	0.9	1.05	0.06639	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_020	GEN-2016-045345.00 345KV	1.33231	1.310347	0.0219632	1.30243	0.9	1.05	0.06639	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_020	GEN-2016-045345.00 345KV	1.309628	1.288992	0.0206367	1.28029	0.9	1.05	0.13764	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_020	GEN-2016-045345.00 345KV	1.334832	1.313646	0.0211858	1.30477	0.9	1.05	0.13764	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_020	GEN-2016-045345.00 345KV	1.33437	1.312243	0.0221272	1.28029	0.9	1.05	0.08482	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_020	GEN-2016-045345.00 345KV	1.360049	1.33735	0.0226998	1.30477	0.9	1.05	0.08482	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_020	GEN-2016-045345.00 345KV	1.308164	1.286876	0.0212878	1.28029	0.9	1.05	0.07150	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_020	GEN-2016-045345.00 345KV	1.333339	1.311489	0.0218499	1.30477	0.9	1.05	0.07150	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_020	GEN-2016-045345.00 345KV	1.309077	1.2882	0.020877	1.28029	0.9	1.05	0.03095	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_020	GEN-2016-045345.00 345KV	1.334269	1.312838	0.0214309	1.30477	0.9	1.05	0.03095	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_020	GEN-2016-045345.00 345KV	1.309077	1.2882	0.0208769	1.28029	0.9	1.05	0.03095	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_020	GEN-2016-045345.00 345KV	1.334269	1.312838	0.021431	1.30477	0.9	1.05	0.03095	CIMARRON - MATHWSN7 345.00 345KV CKT 2

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	00	0	20WP	G16_020	GEN-2016-045345.00 345KV	1.305864	1.28671	0.0191541	1.27615	0.9	1.05	0.13522	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_020	GEN-2016-045345.00 345KV	1.330995	1.31132	0.019675	1.30055	0.9	1.05	0.13522	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_020	GEN-2016-045345.00 345KV	1.323208	1.303765	0.0194432	1.27615	0.9	1.05	0.08445	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_020	GEN-2016-045345.00 345KV	1.348673	1.328706	0.0199662	1.30055	0.9	1.05	0.08445	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_020	GEN-2016-045345.00 345KV	1.325717	1.30636	0.0193567	1.30055	0.9	1.05	0.06927	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_020	GEN-2016-045345.00 345KV	1.324474	1.304677	0.0197963	1.27732	0.9	1.05	0.08595	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_020	GEN-2016-045345.00 345KV	1.349963	1.329637	0.0203258	1.30175	0.9	1.05	0.08595	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_020	GEN-2016-045345.00 345KV	1.303018	1.283173	0.019845	1.27732	0.9	1.05	0.07527	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_020	GEN-2016-045345.00 345KV	1.328094	1.307714	0.0203803	1.30175	0.9	1.05	0.07527	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	01ALL	2	20L	G16_020	GEN-2016-045345.00 345KV	1.292531	1.26205	0.030481	1.06203	0.9	1.05	0.04167	GEN587303 1-G16-045-GEN10.6900
FDNS	01ALL	2	20L	G16_020	GEN-2016-045345.00 345KV	1.317405	1.286813	0.0305924	1.0646	0.9	1.05	0.04167	GEN587307 1-G16-045-GEN20.6900
FDNS	01ALL	2	20WP	G16_020	GEN-2016-045345.00 345KV	1.287071	1.255685	0.0313865	1.0597	0.9	1.05	0.05313	GEN587303 1-G16-045-GEN10.6900
FDNS	01ALL	2	20WP	G16_020	GEN-2016-045345.00 345KV	1.31184	1.280449	0.031391	1.06232	0.9	1.05	0.05313	GEN587307 1-G16-045-GEN20.6900
FDNS	00	0	16WP	G16_020	GEN-2016-057345.00 345KV	1.315324	1.295967	0.0193568	1.28969	0.9	1.05	0.09590	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_020	GEN-2016-057345.00 345KV	1.341534	1.32188	0.019654	1.28969	0.9	1.05	0.07520	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_020	GEN-2016-057345.00 345KV	1.316217	1.296849	0.0193679	1.28969	0.9	1.05	0.06716	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_020	GEN-2016-057345.00 345KV	1.317048	1.295896	0.0211525	1.2907	0.9	1.05	0.09287	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_020	GEN-2016-057345.00 345KV	1.346906	1.32465	0.0222567	1.2907	0.9	1.05	0.07196	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_020	GEN-2016-057345.00 345KV	1.320253	1.298546	0.0217063	1.2907	0.9	1.05	0.06639	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_020	GEN-2016-057345.00 345KV	1.322751	1.301815	0.0209361	1.29302	0.9	1.05	0.13764	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_020	GEN-2016-057345.00 345KV	1.347741	1.325302	0.0224383	1.29302	0.9	1.05	0.08482	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_020	GEN-2016-057345.00 345KV	1.321272	1.299678	0.0215942	1.29302	0.9	1.05	0.07150	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_020	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.03095	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_020	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.03095	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G16_020	GEN-2016-057345.00 345KV	1.318949	1.29951	0.0194386	1.28884	0.9	1.05	0.13522	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_020	GEN-2016-057345.00 345KV	1.336467	1.316738	0.0197288	1.28884	0.9	1.05	0.08445	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_020	GEN-2016-057345.00 345KV	1.313719	1.294596	0.019123	1.28884	0.9	1.05	0.06927	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_020	GEN-2016-057345.00 345KV	1.337745	1.31766	0.0200852	1.29003	0.9	1.05	0.08595	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_020	GEN-2016-057345.00 345KV	1.316075	1.295937	0.0201374	1.29003	0.9	1.05	0.07527	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	01ALL	2	20L	G16_020	GEN-2016-057345.00 345KV	1.305482	1.274943	0.0305399	1.06338	0.9	1.05	0.04167	GEN587383 1-G16-045-GEN10.6900
FDNS	01ALL	2	20WP	G16_020	GEN-2016-057345.00 345KV	1.299968	1.268578	0.03139	1.06107	0.9	1.05	0.05313	GEN587383 1-G16-045-GEN10.6900
FDNS	02ALL	2	17G	G16_020	MATHWSN7 345.00 345KV	1	1.057966	0.0579665	1.05205	0.9	1.05	0.09599	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL	2	17G	G16_020	MATHWSN7 345.00 345KV	1	1.060389	0.0603888	1.05205	0.9	1.05	0.09599	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	09ALL	4	25SP	G16_021	ATWOOD 115KV	0.937465	0.89625	0.0412151	0.93305	0.9	1.05	0.08872	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G16_021	ATWOOD SWITCH 115KV	0.936343	0.896664	0.0396796	0.93238	0.9	1.05	0.08872	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G16_021	BVERVLLY 115.00 115KV	0.94028	0.89886	0.0414202	0.9356	0.9	1.05	0.08872	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	00	0	17SP	G16_021	GEN-2016-045345.00 345KV	1.307321	1.286507	0.0208138	1.27799	0.9	1.05	0.03111	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_021	GEN-2016-045345.00 345KV	1.33248	1.311113	0.0213668	1.30243	0.9	1.05	0.03111	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_021	GEN-2016-045345.00 345KV	1.307442	1.286574	0.0208676	1.27799	0.9	1.05	0.03111	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_021	GEN-2016-045345.00 345KV	1.332603	1.311181	0.0214216	1.30243	0.9	1.05	0.03111	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G16_021	GEN-2016-045345.00 345KV	1.309628	1.288992	0.0206367	1.28029	0.9	1.05	0.03651	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_021	GEN-2016-045345.00 345KV	1.334832	1.313646	0.0211858	1.30477	0.9	1.05	0.03651	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_021	GEN-2016-045345.00 345KV	1.305864	1.28671	0.0191541	1.27615	0.9	1.05	0.03404	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_021	GEN-2016-045345.00 345KV	1.330995	1.31132	0.019675	1.30055	0.9	1.05	0.03404	DBL-WWRD-TGA
FDNS	00	0	17SP	G16_021	GEN-2016-057345.00 345KV	1.320421	1.299306	0.0211154	1.2907	0.9	1.05	0.03111	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_021	GEN-2016-057345.00 345KV	1.320542	1.299373	0.0211695	1.2907	0.9	1.05	0.03111	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G16_021	GEN-2016-057345.00 345KV	1.322751	1.301815	0.0209361	1.29302	0.9	1.05	0.03651	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_021	GEN-2016-057345.00 345KV	1.318949	1.29951	0.0194386	1.28884	0.9	1.05	0.03404	DBL-WWRD-TGA
FDNS	09ALL	4	25SP	G16_021	LUDELL 3 115.00 115KV	0.936082	0.897028	0.0390532	0.93227	0.9	1.05	0.08872	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G16_021	LUDELL 3 115.00 115KV	0.938739	0.899773	0.0389661	0.93227	0.9	1.05	0.06193	MINGO - SETAB 345KV CKT 1
FDNS	09ALL	4	25SP	G16_021	LUDELLT3 115.00 115KV	0.936098	0.897045	0.0390525	0.93229	0.9	1.05	0.08872	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G16_021	LUDELLT3 115.00 115KV	0.938755	0.89979	0.0389654	0.93229	0.9	1.05	0.06193	MINGO - SETAB 345KV CKT 1
FDNS	09ALL	4	25SP	G16_021	MCDONLD3 115.00 115KV	0.940883	0.899428	0.041455	0.93614	0.9	1.05	0.08872	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G16_021	NORTH ATWOOD 115KV	0.936247	0.896563	0.0396842	0.93228	0.9	1.05	0.08872	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G16_021	NORTH ATWOOD 115KV	0.939221	0.899939	0.0392824	0.93228	0.9	1.05	0.06193	MINGO - SETAB 345KV CKT 1
FDNS	09ALL	4	25SP	G16_021	ONEOK 3 115.00 115KV	0.940149	0.898709	0.0414398	0.93547	0.9	1.05	0.08872	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	08ALL	3	16WP	G16_022	CANEYRV7 345.00 345KV	0.968493	0.947728	0.0207649	0.97454	0.95	1.05	0.62286	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	3	16WP	G16_022	CANEYRV7 345.00 345KV	0.957889	0.930216	0.0276732	0.97454	0.95	1.05	0.09748	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	16WP	G16_022	CANEYRV7 345.00 345KV	0.967302	0.942965	0.0243372	0.97454	0.95	1.05	0.09748	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	17G	G16_022	CANEYRV7 345.00 345KV	0.971453	0.94816	0.0232931	0.98427	0.95	1.05	0.09268	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	20L	G16_022	CANEYRV7 345.00 345KV	0.961378	0.939471	0.0219065	0.97036	0.95	1.05	0.63632	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_022	CANEYRV7 345.00 345KV	0.951442	0.924033	0.0274088	0.97036	0.95	1.05	0.08725	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_022	CANEYRV7 345.00 345KV	0.961057	0.939411	0.0216459	0.97036	0.95	1.05	0.08725	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	20WP	G16_022	CANEYRV7 345.00 345KV	0.96391	0.941114	0.0227962	0.97062	0.95	1.05	0.62236	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	3	20WP	G16_022	CANEYRV7 345.00 345KV	0.955032	0.926187	0.0288444	0.97062	0.95	1.05	0.09672	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	20WP	G16_022	CANEYRV7 345.00 345KV	0.963877	0.939795	0.0240821	0.97062	0.95	1.05	0.09672	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	16WP	G16_022	ELKRVR17 345.00 345KV	0.968943	0.94939	0.0195534	0.97593	0.95	1.05	0.62286	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	3	16WP	G16_022	ELKRVR17 345.00 345KV	0.959343	0.93365	0.0256935	0.97593	0.95	1.05	0.09748	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	16WP	G16_022	ELKRVR17 345.00 345KV	0.968505	0.946079	0.0224264	0.97593	0.95	1.05	0.09748	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	20L	G16_022	ELKRVR17 345.00 345KV	0.964027	0.943097	0.0209303	0.97326	0.95	1.05	0.63632	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_022	ELKRVR17 345.00 345KV	0.955506	0.930443	0.0250634	0.97326	0.95	1.05	0.08725	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_022	ELKRVR17 345.00 345KV	0.96445	0.944976	0.0194742	0.97326	0.95	1.05	0.08725	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	20WP	G16_022	ELKRVR17 345.00 345KV	0.96508	0.943685	0.0213954	0.97282	0.95	1.05	0.62236	RANCHRD7 345.00 - SOONER 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	08ALL	3	20WP	G16_022	ELKRVR17 345.00 345KV	0.957215	0.930383	0.026832	0.97282	0.95	1.05	0.09672	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	20WP	G16_022	ELKRVR17 345.00 345KV	0.965717	0.943673	0.0220444	0.97282	0.95	1.05	0.09672	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	00	0	16WP	G16_022	GEN-2016-045345.00 345KV	1.327852	1.308625	0.0192273	1.30141	0.9	1.05	0.10337	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_022	GEN-2016-045345.00 345KV	1.328063	1.308725	0.0193386	1.30141	0.9	1.05	0.10337	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	16WP	G16_022	GEN-2016-045345.00 345KV	1.303159	1.284075	0.0190835	1.27699	0.9	1.05	0.05365	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_022	GEN-2016-045345.00 345KV	1.328238	1.308634	0.0196037	1.30141	0.9	1.05	0.05365	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_022	GEN-2016-045345.00 345KV	1.330992	1.311745	0.0192469	1.30141	0.9	1.05	0.04109	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_022	GEN-2016-045345.00 345KV	1.330992	1.311745	0.0192469	1.30141	0.9	1.05	0.04109	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_022	GEN-2016-045345.00 345KV	1.307321	1.286507	0.0208138	1.27799	0.9	1.05	0.10547	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_022	GEN-2016-045345.00 345KV	1.33248	1.311113	0.0213668	1.30243	0.9	1.05	0.10547	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_022	GEN-2016-045345.00 345KV	1.307442	1.286574	0.0208676	1.27799	0.9	1.05	0.10547	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_022	GEN-2016-045345.00 345KV	1.332603	1.311181	0.0214216	1.30243	0.9	1.05	0.10547	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_022	GEN-2016-045345.00 345KV	1.307155	1.285756	0.0213988	1.27799	0.9	1.05	0.05304	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_022	GEN-2016-045345.00 345KV	1.33231	1.310347	0.0219632	1.30243	0.9	1.05	0.05304	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_022	GEN-2016-045345.00 345KV	1.307585	1.287215	0.0203704	1.27799	0.9	1.05	0.04242	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_022	GEN-2016-045345.00 345KV	1.332749	1.311835	0.0209147	1.30243	0.9	1.05	0.04242	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_022	GEN-2016-045345.00 345KV	1.307585	1.287215	0.0203704	1.27799	0.9	1.05	0.04242	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_022	GEN-2016-045345.00 345KV	1.332749	1.311835	0.0209147	1.30243	0.9	1.05	0.04242	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_022	GEN-2016-045345.00 345KV	1.308164	1.286876	0.0212878	1.28029	0.9	1.05	0.05213	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_022	GEN-2016-045345.00 345KV	1.333339	1.311489	0.0218499	1.30477	0.9	1.05	0.05213	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_022	GEN-2016-045345.00 345KV	1.309077	1.2882	0.020877	1.28029	0.9	1.05	0.03979	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_022	GEN-2016-045345.00 345KV	1.334269	1.312838	0.0214309	1.30477	0.9	1.05	0.03979	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_022	GEN-2016-045345.00 345KV	1.309077	1.2882	0.0208769	1.28029	0.9	1.05	0.03979	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_022	GEN-2016-045345.00 345KV	1.334269	1.312838	0.021431	1.30477	0.9	1.05	0.03979	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G16_022	GEN-2016-045345.00 345KV	1.325717	1.30636	0.0193567	1.30055	0.9	1.05	0.04990	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_022	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.03805	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_022	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.03805	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	25SP	G16_022	GEN-2016-045345.00 345KV	1.30271	1.283473	0.0192374	1.27732	0.9	1.05	0.10864	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	G16_022	GEN-2016-045345.00 345KV	1.327781	1.30802	0.0197607	1.30175	0.9	1.05	0.10864	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	G16_022	GEN-2016-045345.00 345KV	1.302807	1.2835	0.0193068	1.27732	0.9	1.05	0.10864	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_022	GEN-2016-045345.00 345KV	1.327879	1.308047	0.0198315	1.30175	0.9	1.05	0.10864	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_022	GEN-2016-045345.00 345KV	1.303018	1.283173	0.019845	1.27732	0.9	1.05	0.05592	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_022	GEN-2016-045345.00 345KV	1.328094	1.307714	0.0203803	1.30175	0.9	1.05	0.05592	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_022	GEN-2016-045345.00 345KV	1.303669	1.284397	0.019272	1.27732	0.9	1.05	0.03730	DBL-WWRD-TGA
FDNS	00	0	25SP	G16_022	GEN-2016-045345.00 345KV	1.328758	1.308962	0.0197957	1.30175	0.9	1.05	0.03730	DBL-WWRD-TGA
FDNS	00	0	16WP	G16_022	GEN-2016-057345.00 345KV	1.316044	1.296939	0.0191053	1.28969	0.9	1.05	0.10337	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	16WP	G16_022	GEN-2016-057345.00 345KV	1.316217	1.296849	0.0193679	1.28969	0.9	1.05	0.05365	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_022	GEN-2016-057345.00 345KV	1.318946	1.299931	0.0190147	1.28969	0.9	1.05	0.04109	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_022	GEN-2016-057345.00 345KV	1.318946	1.299931	0.0190147	1.28969	0.9	1.05	0.04109	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_022	GEN-2016-057345.00 345KV	1.320421	1.299306	0.0211154	1.2907	0.9	1.05	0.10547	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_022	GEN-2016-057345.00 345KV	1.320542	1.299373	0.0211695	1.2907	0.9	1.05	0.10547	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_022	GEN-2016-057345.00 345KV	1.320253	1.298546	0.0217063	1.2907	0.9	1.05	0.05304	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_022	GEN-2016-057345.00 345KV	1.320688	1.30002	0.0206672	1.2907	0.9	1.05	0.04242	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_022	GEN-2016-057345.00 345KV	1.320688	1.30002	0.0206672	1.2907	0.9	1.05	0.04242	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_022	GEN-2016-057345.00 345KV	1.321272	1.299678	0.0215942	1.29302	0.9	1.05	0.05213	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_022	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.03979	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_022	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.03979	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G16_022	GEN-2016-057345.00 345KV	1.313719	1.294596	0.019123	1.28884	0.9	1.05	0.04990	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_022	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.03805	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_022	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.03805	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	25SP	G16_022	GEN-2016-057345.00 345KV	1.315764	1.29624	0.0195235	1.29003	0.9	1.05	0.10864	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	G16_022	GEN-2016-057345.00 345KV	1.315861	1.296268	0.0195937	1.29003	0.9	1.05	0.10864	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_022	GEN-2016-057345.00 345KV	1.316075	1.295937	0.0201374	1.29003	0.9	1.05	0.05592	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_022	GEN-2016-057345.00 345KV	1.316732	1.297174	0.0195582	1.29003	0.9	1.05	0.03730	DBL-WWRD-TGA
FDNS	08ALL	3	16WP	G16_022	LATHAMS7 345.00 345KV	0.969075	0.949315	0.01976	0.97613	0.95	1.05	0.62286	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	3	16WP	G16_022	LATHAMS7 345.00 345KV	0.959373	0.933596	0.025777	0.97613	0.95	1.05	0.09748	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	16WP	G16_022	LATHAMS7 345.00 345KV	0.968632	0.945971	0.0226614	0.97613	0.95	1.05	0.09748	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	20L	G16_022	LATHAMS7 345.00 345KV	0.964107	0.943001	0.0211062	0.97344	0.95	1.05	0.63632	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_022	LATHAMS7 345.00 345KV	0.955495	0.930404	0.0250909	0.97344	0.95	1.05	0.08725	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_022	LATHAMS7 345.00 345KV	0.964534	0.944871	0.0196626	0.97344	0.95	1.05	0.08725	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	20WP	G16_022	LATHAMS7 345.00 345KV	0.965171	0.943586	0.0215849	0.973	0.95	1.05	0.62236	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	3	20WP	G16_022	LATHAMS7 345.00 345KV	0.957222	0.930345	0.0268775	0.973	0.95	1.05	0.09672	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	20WP	G16_022	LATHAMS7 345.00 345KV	0.965815	0.943574	0.0222406	0.973	0.95	1.05	0.09672	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_022	NEOSHO 345KV	0.971991	0.947824	0.0241665	0.98191	0.95	1.05	0.08725	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	09ALL	4	25SP	G16_023	ATWOOD 115KV	0.937465	0.89625	0.0412151	0.93305	0.9	1.05	0.13114	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G16_023	ATWOOD SWITCH 115KV	0.936343	0.896664	0.0396796	0.93238	0.9	1.05	0.13114	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G16_023	BVERVLLY 115.00 115KV	0.94028	0.89886	0.0414202	0.9356	0.9	1.05	0.13114	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	00	0	16WP	G16_023	GEN-2016-045345.00 345KV	1.302275	1.283203	0.0190725	1.27699	0.9	1.05	0.05375	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_023	GEN-2016-045345.00 345KV	1.327337	1.307744	0.0195928	1.30141	0.9	1.05	0.05375	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_023	GEN-2016-045345.00 345KV	1.328225	1.308855	0.01937	1.27699	0.9	1.05	0.03920	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_023	GEN-2016-045345.00 345KV	1.353786	1.333895	0.0198903	1.30141	0.9	1.05	0.03920	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_023	GEN-2016-045345.00 345KV	1.303982	1.283132	0.0208503	1.27799	0.9	1.05	0.05183	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_023	GEN-2016-045345.00 345KV	1.329077	1.307672	0.0214047	1.30243	0.9	1.05	0.05183	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	00	0	17SP	G16_023	GEN-2016-045345.00 345KV	1.333544	1.311597	0.021947	1.27799	0.9	1.05	0.03644	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_023	GEN-2016-045345.00 345KV	1.359207	1.336691	0.0225165	1.30243	0.9	1.05	0.03644	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_023	GEN-2016-045345.00 345KV	1.309628	1.288992	0.0206367	1.28029	0.9	1.05	0.06972	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_023	GEN-2016-045345.00 345KV	1.334832	1.313646	0.0211858	1.30477	0.9	1.05	0.06972	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_023	GEN-2016-045345.00 345KV	1.33437	1.312243	0.0221272	1.28029	0.9	1.05	0.04060	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_023	GEN-2016-045345.00 345KV	1.360049	1.33735	0.0226998	1.30477	0.9	1.05	0.04060	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_023	GEN-2016-045345.00 345KV	1.305864	1.28671	0.0191541	1.27615	0.9	1.05	0.06727	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_023	GEN-2016-045345.00 345KV	1.330995	1.31132	0.019675	1.30055	0.9	1.05	0.06727	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_023	GEN-2016-045345.00 345KV	1.323208	1.303765	0.0194432	1.27615	0.9	1.05	0.04021	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_023	GEN-2016-045345.00 345KV	1.348673	1.328706	0.0199662	1.30055	0.9	1.05	0.04021	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_023	GEN-2016-045345.00 345KV	1.324474	1.304677	0.0197963	1.27732	0.9	1.05	0.04190	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_023	GEN-2016-045345.00 345KV	1.349963	1.329637	0.0203258	1.30175	0.9	1.05	0.04190	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_023	GEN-2016-045345.00 345KV	1.303018	1.283173	0.019845	1.27732	0.9	1.05	0.03166	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_023	GEN-2016-045345.00 345KV	1.328094	1.307714	0.0203803	1.30175	0.9	1.05	0.03166	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_023	GEN-2016-057345.00 345KV	1.315324	1.295967	0.0193568	1.28969	0.9	1.05	0.05375	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_023	GEN-2016-057345.00 345KV	1.341534	1.32188	0.019654	1.28969	0.9	1.05	0.03920	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_023	GEN-2016-057345.00 345KV	1.317048	1.295896	0.0211525	1.2907	0.9	1.05	0.05183	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_023	GEN-2016-057345.00 345KV	1.346906	1.32465	0.0222567	1.2907	0.9	1.05	0.03644	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_023	GEN-2016-057345.00 345KV	1.322751	1.301815	0.0209361	1.29302	0.9	1.05	0.06972	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_023	GEN-2016-057345.00 345KV	1.347741	1.325302	0.0224383	1.29302	0.9	1.05	0.04060	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_023	GEN-2016-057345.00 345KV	1.318949	1.29951	0.0194386	1.28884	0.9	1.05	0.06727	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_023	GEN-2016-057345.00 345KV	1.336467	1.316738	0.0197288	1.28884	0.9	1.05	0.04021	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_023	GEN-2016-057345.00 345KV	1.337745	1.31766	0.0200852	1.29003	0.9	1.05	0.04190	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_023	GEN-2016-057345.00 345KV	1.316075	1.295937	0.0201374	1.29003	0.9	1.05	0.03166	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	09ALL	4	25SP	G16_023	LUDELL 3 115.00 115KV	0.938739	0.899773	0.0389661	0.93227	0.9	1.05	0.17800	MINGO - SETAB 345KV CKT 1
FDNS	09ALL	4	25SP	G16_023	LUDELL 3 115.00 115KV	0.936082	0.897028	0.0390532	0.93227	0.9	1.05	0.13114	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G16_023	LUDELLT3 115.00 115KV	0.938755	0.89979	0.0389654	0.93229	0.9	1.05	0.17800	MINGO - SETAB 345KV CKT 1
FDNS	09ALL	4	25SP	G16_023	LUDELLT3 115.00 115KV	0.936098	0.897045	0.0390525	0.93229	0.9	1.05	0.13114	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	02ALL	2	17G	G16_023	MATHWSN7 345.00 345KV	1	1.057966	0.0579665	1.05205	0.9	1.05	0.05398	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL	2	17G	G16_023	MATHWSN7 345.00 345KV	1	1.060389	0.0603888	1.05205	0.9	1.05	0.05398	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	09ALL	4	25SP	G16_023	MCDONLD3 115.00 115KV	0.940883	0.899428	0.041455	0.93614	0.9	1.05	0.13114	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G16_023	NORTH ATWOOD 115KV	0.939221	0.899939	0.0392824	0.93228	0.9	1.05	0.17800	MINGO - SETAB 345KV CKT 1
FDNS	09ALL	4	25SP	G16_023	NORTH ATWOOD 115KV	0.936247	0.896563	0.0396842	0.93228	0.9	1.05	0.13114	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G16_023	ONEOK 3 115.00 115KV	0.940149	0.898709	0.0414398	0.93547	0.9	1.05	0.13114	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	00	0	20SP	G16_028	GEN-2016-045345.00 345KV	1.309935	1.288951	0.0209841	1.28029	0.9	1.05	0.04197	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_028	GEN-2016-045345.00 345KV	1.335144	1.313604	0.0215397	1.30477	0.9	1.05	0.04197	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_028	GEN-2016-045345.00 345KV	1.310007	1.288969	0.0210375	1.28029	0.9	1.05	0.04197	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G16_028	GEN-2016-045345.00 345KV	1.335217	1.313623	0.0215942	1.30477	0.9	1.05	0.04197	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	G16_028	GEN-2016-045345.00 345KV	1.326278	1.306902	0.0193765	1.30055	0.9	1.05	0.04340	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_028	GEN-2016-045345.00 345KV	1.326357	1.306911	0.0194464	1.30055	0.9	1.05	0.04340	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_028	GEN-2016-045345.00 345KV	1.303669	1.284397	0.019272	1.27732	0.9	1.05	0.06150	DBL-WWRD-TGA
FDNS	00	0	25SP	G16_028	GEN-2016-045345.00 345KV	1.328758	1.308962	0.0197957	1.30175	0.9	1.05	0.06150	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_028	GEN-2016-057345.00 345KV	1.323061	1.301774	0.0212868	1.29302	0.9	1.05	0.04197	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_028	GEN-2016-057345.00 345KV	1.323133	1.301793	0.0213408	1.29302	0.9	1.05	0.04197	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	G16_028	GEN-2016-057345.00 345KV	1.314275	1.295132	0.0191426	1.28884	0.9	1.05	0.04340	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_028	GEN-2016-057345.00 345KV	1.314354	1.295142	0.019212	1.28884	0.9	1.05	0.04340	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_028	GEN-2016-057345.00 345KV	1.316732	1.297174	0.0195582	1.29003	0.9	1.05	0.06150	DBL-WWRD-TGA
FDNS	09ALL	4	25SP	G16_029	ATWOOD 115KV	0.937465	0.89625	0.0412151	0.93305	0.9	1.05	0.13114	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G16_029	ATWOOD SWITCH 115KV	0.936343	0.896664	0.0396796	0.93238	0.9	1.05	0.13114	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G16_029	BVERVLLY 115.00 115KV	0.94028	0.89886	0.0414202	0.9356	0.9	1.05	0.13114	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	00	0	16WP	G16_029	GEN-2016-045345.00 345KV	1.302275	1.283203	0.0190725	1.27699	0.9	1.05	0.05375	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_029	GEN-2016-045345.00 345KV	1.327337	1.307744	0.0195928	1.30141	0.9	1.05	0.05375	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_029	GEN-2016-045345.00 345KV	1.328225	1.308855	0.01937	1.27699	0.9	1.05	0.03920	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_029	GEN-2016-045345.00 345KV	1.353786	1.333895	0.0198903	1.30141	0.9	1.05	0.03920	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_029	GEN-2016-045345.00 345KV	1.303982	1.283132	0.0208503	1.27799	0.9	1.05	0.05183	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_029	GEN-2016-045345.00 345KV	1.329077	1.307672	0.0214047	1.30243	0.9	1.05	0.05183	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_029	GEN-2016-045345.00 345KV	1.333544	1.311597	0.021947	1.27799	0.9	1.05	0.03644	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_029	GEN-2016-045345.00 345KV	1.359207	1.336691	0.0225165	1.30243	0.9	1.05	0.03644	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_029	GEN-2016-045345.00 345KV	1.309628	1.288992	0.0206367	1.28029	0.9	1.05	0.06972	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_029	GEN-2016-045345.00 345KV	1.334832	1.313646	0.0211858	1.30477	0.9	1.05	0.06972	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_029	GEN-2016-045345.00 345KV	1.33437	1.312243	0.0221272	1.28029	0.9	1.05	0.04060	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_029	GEN-2016-045345.00 345KV	1.360049	1.33735	0.0226998	1.30477	0.9	1.05	0.04060	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_029	GEN-2016-045345.00 345KV	1.305864	1.28671	0.0191541	1.27615	0.9	1.05	0.06727	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_029	GEN-2016-045345.00 345KV	1.330995	1.31132	0.019675	1.30055	0.9	1.05	0.06727	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_029	GEN-2016-045345.00 345KV	1.323208	1.303765	0.0194432	1.27615	0.9	1.05	0.04021	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_029	GEN-2016-045345.00 345KV	1.348673	1.328706	0.0199662	1.30055	0.9	1.05	0.04021	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_029	GEN-2016-045345.00 345KV	1.324474	1.304677	0.0197963	1.27732	0.9	1.05	0.04190	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_029	GEN-2016-045345.00 345KV	1.349963	1.329637	0.0203258	1.30175	0.9	1.05	0.04190	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_029	GEN-2016-045345.00 345KV	1.303018	1.283173	0.019845	1.27732	0.9	1.05	0.03166	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_029	GEN-2016-045345.00 345KV	1.328094	1.307714	0.0203803	1.30175	0.9	1.05	0.03166	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_029	GEN-2016-057345.00 345KV	1.315324	1.295967	0.0193568	1.28969	0.9	1.05	0.05375	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_029	GEN-2016-057345.00 345KV	1.341534	1.32188	0.019654	1.28969	0.9	1.05	0.03920	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_029	GEN-2016-057345.00 345KV	1.317048	1.295896	0.0211525	1.2907	0.9	1.05	0.05183	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	00	0	17SP	G16_029	GEN-2016-057345.00 345KV	1.346906	1.32465	0.0222567	1.2907	0.9	1.05	0.03644	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_029	GEN-2016-057345.00 345KV	1.322751	1.301815	0.0209361	1.29302	0.9	1.05	0.06972	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_029	GEN-2016-057345.00 345KV	1.347741	1.325302	0.0224383	1.29302	0.9	1.05	0.04060	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_029	GEN-2016-057345.00 345KV	1.318949	1.29951	0.0194386	1.28884	0.9	1.05	0.06727	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_029	GEN-2016-057345.00 345KV	1.336467	1.316738	0.0197288	1.28884	0.9	1.05	0.04021	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_029	GEN-2016-057345.00 345KV	1.337745	1.31766	0.0200852	1.29003	0.9	1.05	0.04190	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_029	GEN-2016-057345.00 345KV	1.316075	1.295937	0.0201374	1.29003	0.9	1.05	0.03166	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	09ALL	4	25SP	G16_029	LUDELL 3 115.00 115KV	0.938739	0.899773	0.0389661	0.93227	0.9	1.05	0.17800	MINGO - SETAB 345KV CKT 1
FDNS	09ALL	4	25SP	G16_029	LUDELL 3 115.00 115KV	0.936082	0.897028	0.0390532	0.93227	0.9	1.05	0.13114	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G16_029	LUDELLT3 115.00 115KV	0.938755	0.89979	0.0389654	0.93229	0.9	1.05	0.17800	MINGO - SETAB 345KV CKT 1
FDNS	09ALL	4	25SP	G16_029	LUDELLT3 115.00 115KV	0.936098	0.897045	0.0390525	0.93229	0.9	1.05	0.13114	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	02ALL	2	17G	G16_029	MATHWSN7 345.00 345KV	1	1.057966	0.0579665	1.05205	0.9	1.05	0.05398	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL	2	17G	G16_029	MATHWSN7 345.00 345KV	1	1.060389	0.0603888	1.05205	0.9	1.05	0.05398	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	09ALL	4	25SP	G16_029	MCDONLD3 115.00 115KV	0.940883	0.899428	0.041455	0.93614	0.9	1.05	0.13114	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G16_029	NORTH ATWOOD 115KV	0.939221	0.899939	0.0392824	0.93228	0.9	1.05	0.17800	MINGO - SETAB 345KV CKT 1
FDNS	09ALL	4	25SP	G16_029	NORTH ATWOOD 115KV	0.936247	0.896563	0.0396842	0.93228	0.9	1.05	0.13114	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G16_029	ONEOK 3 115.00 115KV	0.940149	0.898709	0.0414398	0.93547	0.9	1.05	0.13114	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	00	0	20SP	G16_030	GEN-2016-045345.00 345KV	1.309935	1.288951	0.0209841	1.28029	0.9	1.05	0.06795	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_030	GEN-2016-045345.00 345KV	1.335144	1.313604	0.0215397	1.30477	0.9	1.05	0.06795	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_030	GEN-2016-045345.00 345KV	1.310007	1.288969	0.0210375	1.28029	0.9	1.05	0.06795	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G16_030	GEN-2016-045345.00 345KV	1.335217	1.313623	0.0215942	1.30477	0.9	1.05	0.06795	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	G16_030	GEN-2016-045345.00 345KV	1.326278	1.306902	0.0193765	1.30055	0.9	1.05	0.06939	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_030	GEN-2016-045345.00 345KV	1.326357	1.306911	0.0194464	1.30055	0.9	1.05	0.06939	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_030	GEN-2016-045345.00 345KV	1.303669	1.284397	0.019272	1.27732	0.9	1.05	0.06528	DBL-WWRD-TGA
FDNS	00	0	25SP	G16_030	GEN-2016-045345.00 345KV	1.328758	1.308962	0.0197957	1.30175	0.9	1.05	0.06528	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_030	GEN-2016-057345.00 345KV	1.323061	1.301774	0.0212868	1.29302	0.9	1.05	0.06795	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_030	GEN-2016-057345.00 345KV	1.323133	1.301793	0.0213408	1.29302	0.9	1.05	0.06795	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	G16_030	GEN-2016-057345.00 345KV	1.314275	1.295132	0.0191426	1.28884	0.9	1.05	0.06939	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_030	GEN-2016-057345.00 345KV	1.314354	1.295142	0.019212	1.28884	0.9	1.05	0.06939	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_030	GEN-2016-057345.00 345KV	1.316732	1.297174	0.0195582	1.29003	0.9	1.05	0.06528	DBL-WWRD-TGA
FDNS	08ALL	3	16WP	G16_031	CANEYRV7 345.00 345KV	0.968493	0.947728	0.0207649	0.97454	0.95	1.05	0.62286	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	3	16WP	G16_031	CANEYRV7 345.00 345KV	0.957889	0.930216	0.0276732	0.97454	0.95	1.05	0.09748	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	16WP	G16_031	CANEYRV7 345.00 345KV	0.967302	0.942965	0.0243372	0.97454	0.95	1.05	0.09748	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	17G	G16_031	CANEYRV7 345.00 345KV	0.971453	0.94816	0.0232931	0.98427	0.95	1.05	0.09268	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	20L	G16_031	CANEYRV7 345.00 345KV	0.961378	0.939471	0.0219065	0.97036	0.95	1.05	0.63632	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_031	CANEYRV7 345.00 345KV	0.951442	0.924033	0.0274088	0.97036	0.95	1.05	0.08725	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_031	CANEYRV7 345.00 345KV	0.961057	0.939411	0.0216459	0.97036	0.95	1.05	0.08725	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	20WP	G16_031	CANEYRV7 345.00 345KV	0.96391	0.941114	0.0227962	0.97062	0.95	1.05	0.62236	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	3	20WP	G16_031	CANEYRV7 345.00 345KV	0.955032	0.926187	0.0288444	0.97062	0.95	1.05	0.09672	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	20WP	G16_031	CANEYRV7 345.00 345KV	0.963877	0.939795	0.0240821	0.97062	0.95	1.05	0.09672	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	16WP	G16_031	ELKRVR17 345.00 345KV	0.968943	0.94939	0.0195534	0.97593	0.95	1.05	0.62286	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	3	16WP	G16_031	ELKRVR17 345.00 345KV	0.959343	0.93365	0.0256935	0.97593	0.95	1.05	0.09748	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	16WP	G16_031	ELKRVR17 345.00 345KV	0.968505	0.946079	0.0224264	0.97593	0.95	1.05	0.09748	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	20L	G16_031	ELKRVR17 345.00 345KV	0.964027	0.943097	0.0209303	0.97326	0.95	1.05	0.63632	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_031	ELKRVR17 345.00 345KV	0.955506	0.930443	0.0250634	0.97326	0.95	1.05	0.08725	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_031	ELKRVR17 345.00 345KV	0.96445	0.944976	0.0194742	0.97326	0.95	1.05	0.08725	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	20WP	G16_031	ELKRVR17 345.00 345KV	0.96508	0.943685	0.0213954	0.97282	0.95	1.05	0.62236	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	3	20WP	G16_031	ELKRVR17 345.00 345KV	0.957215	0.930383	0.026832	0.97282	0.95	1.05	0.09672	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	20WP	G16_031	ELKRVR17 345.00 345KV	0.965717	0.943673	0.0220444	0.97282	0.95	1.05	0.09672	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	00	0	16WP	G16_031	GEN-2016-045345.00 345KV	1.327852	1.308625	0.0192273	1.30141	0.9	1.05	0.10337	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_031	GEN-2016-045345.00 345KV	1.328063	1.308725	0.0193386	1.30141	0.9	1.05	0.10337	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	16WP	G16_031	GEN-2016-045345.00 345KV	1.303159	1.284075	0.0190835	1.27699	0.9	1.05	0.05365	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_031	GEN-2016-045345.00 345KV	1.328238	1.308634	0.0196037	1.30141	0.9	1.05	0.05365	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_031	GEN-2016-045345.00 345KV	1.330992	1.311745	0.0192469	1.30141	0.9	1.05	0.04109	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_031	GEN-2016-045345.00 345KV	1.330992	1.311745	0.0192469	1.30141	0.9	1.05	0.04109	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_031	GEN-2016-045345.00 345KV	1.307321	1.286507	0.0208138	1.27799	0.9	1.05	0.10547	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_031	GEN-2016-045345.00 345KV	1.33248	1.311113	0.0213668	1.30243	0.9	1.05	0.10547	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_031	GEN-2016-045345.00 345KV	1.307442	1.286574	0.0208676	1.27799	0.9	1.05	0.10547	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_031	GEN-2016-045345.00 345KV	1.332603	1.311181	0.0214216	1.30243	0.9	1.05	0.10547	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_031	GEN-2016-045345.00 345KV	1.307155	1.285756	0.0213988	1.27799	0.9	1.05	0.05304	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_031	GEN-2016-045345.00 345KV	1.33231	1.310347	0.0219632	1.30243	0.9	1.05	0.05304	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_031	GEN-2016-045345.00 345KV	1.307585	1.287215	0.0203704	1.27799	0.9	1.05	0.04242	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_031	GEN-2016-045345.00 345KV	1.332749	1.311835	0.0209147	1.30243	0.9	1.05	0.04242	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_031	GEN-2016-045345.00 345KV	1.307585	1.287215	0.0203704	1.27799	0.9	1.05	0.04242	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_031	GEN-2016-045345.00 345KV	1.332749	1.311835	0.0209147	1.30243	0.9	1.05	0.04242	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_031	GEN-2016-045345.00 345KV	1.308164	1.286876	0.0212878	1.28029	0.9	1.05	0.05213	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_031	GEN-2016-045345.00 345KV	1.333339	1.311489	0.0218499	1.30477	0.9	1.05	0.05213	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_031	GEN-2016-045345.00 345KV	1.309077	1.2882	0.020877	1.28029	0.9	1.05	0.03979	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_031	GEN-2016-045345.00 345KV	1.334269	1.312838	0.0214309	1.30477	0.9	1.05	0.03979	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_031	GEN-2016-045345.00 345KV	1.309077	1.2882	0.0208769	1.28029	0.9	1.05	0.03979	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_031	GEN-2016-045345.00 345KV	1.334269	1.312838	0.021431	1.30477	0.9	1.05	0.03979	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G16_031	GEN-2016-045345.00 345KV	1.325717	1.30636	0.0193567	1.30055	0.9	1.05	0.04990	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_031	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.03805	CIMARRON - MATHWSN7 345.00 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	00	0	20WP	G16_031	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.03805	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	25SP	G16_031	GEN-2016-045345.00 345KV	1.30271	1.283473	0.0192374	1.27732	0.9	1.05	0.10864	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	G16_031	GEN-2016-045345.00 345KV	1.327781	1.30802	0.0197607	1.30175	0.9	1.05	0.10864	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	G16_031	GEN-2016-045345.00 345KV	1.302807	1.2835	0.0193068	1.27732	0.9	1.05	0.10864	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_031	GEN-2016-045345.00 345KV	1.327879	1.308047	0.0198315	1.30175	0.9	1.05	0.10864	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_031	GEN-2016-045345.00 345KV	1.303018	1.283173	0.019845	1.27732	0.9	1.05	0.05592	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_031	GEN-2016-045345.00 345KV	1.328094	1.307714	0.0203803	1.30175	0.9	1.05	0.05592	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_031	GEN-2016-045345.00 345KV	1.303669	1.284397	0.019272	1.27732	0.9	1.05	0.03730	DBL-WWRD-TGA
FDNS	00	0	25SP	G16_031	GEN-2016-045345.00 345KV	1.328758	1.308962	0.0197957	1.30175	0.9	1.05	0.03730	DBL-WWRD-TGA
FDNS	00	0	16WP	G16_031	GEN-2016-057345.00 345KV	1.316044	1.296939	0.0191053	1.28969	0.9	1.05	0.10337	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	16WP	G16_031	GEN-2016-057345.00 345KV	1.316217	1.296849	0.0193679	1.28969	0.9	1.05	0.05365	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_031	GEN-2016-057345.00 345KV	1.318946	1.299931	0.0190147	1.28969	0.9	1.05	0.04109	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_031	GEN-2016-057345.00 345KV	1.318946	1.299931	0.0190147	1.28969	0.9	1.05	0.04109	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_031	GEN-2016-057345.00 345KV	1.320421	1.299306	0.0211154	1.2907	0.9	1.05	0.10547	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_031	GEN-2016-057345.00 345KV	1.320542	1.299373	0.0211695	1.2907	0.9	1.05	0.10547	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_031	GEN-2016-057345.00 345KV	1.320253	1.298546	0.0217063	1.2907	0.9	1.05	0.05304	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_031	GEN-2016-057345.00 345KV	1.320688	1.30002	0.0206672	1.2907	0.9	1.05	0.04242	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_031	GEN-2016-057345.00 345KV	1.320688	1.30002	0.0206672	1.2907	0.9	1.05	0.04242	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_031	GEN-2016-057345.00 345KV	1.321272	1.299678	0.0215942	1.29302	0.9	1.05	0.05213	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_031	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.03979	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_031	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.03979	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G16_031	GEN-2016-057345.00 345KV	1.313719	1.294596	0.019123	1.28884	0.9	1.05	0.04990	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_031	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.03805	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_031	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.03805	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	25SP	G16_031	GEN-2016-057345.00 345KV	1.315764	1.29624	0.0195235	1.29003	0.9	1.05	0.10864	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	G16_031	GEN-2016-057345.00 345KV	1.315861	1.296268	0.0195937	1.29003	0.9	1.05	0.10864	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_031	GEN-2016-057345.00 345KV	1.316075	1.295937	0.0201374	1.29003	0.9	1.05	0.05592	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_031	GEN-2016-057345.00 345KV	1.316732	1.297174	0.0195582	1.29003	0.9	1.05	0.03730	DBL-WWRD-TGA
FDNS	08ALL	3	16WP	G16_031	LATHAMS7 345.00 345KV	0.969075	0.949315	0.01976	0.97613	0.95	1.05	0.62286	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	3	16WP	G16_031	LATHAMS7 345.00 345KV	0.959373	0.933596	0.025777	0.97613	0.95	1.05	0.09748	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	16WP	G16_031	LATHAMS7 345.00 345KV	0.968632	0.945971	0.0226614	0.97613	0.95	1.05	0.09748	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	20L	G16_031	LATHAMS7 345.00 345KV	0.964107	0.943001	0.0211062	0.97344	0.95	1.05	0.63632	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_031	LATHAMS7 345.00 345KV	0.955495	0.930404	0.0250909	0.97344	0.95	1.05	0.08725	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_031	LATHAMS7 345.00 345KV	0.964534	0.944871	0.0196626	0.97344	0.95	1.05	0.08725	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	20WP	G16_031	LATHAMS7 345.00 345KV	0.965171	0.943586	0.0215849	0.973	0.95	1.05	0.62236	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	3	20WP	G16_031	LATHAMS7 345.00 345KV	0.957222	0.930345	0.0268775	0.973	0.95	1.05	0.09672	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	20WP	G16_031	LATHAMS7 345.00 345KV	0.965815	0.943574	0.0222406	0.973	0.95	1.05	0.09672	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_031	NEOSHO 345KV	0.971991	0.947824	0.0241665	0.98191	0.95	1.05	0.08725	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	16WP	G16_032	CANEYRV7 345.00 345KV	0.957889	0.930216	0.0276732	0.97454	0.95	1.05	0.05599	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	16WP	G16_032	CANEYRV7 345.00 345KV	0.967302	0.942965	0.0243372	0.97454	0.95	1.05	0.05599	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	17G	G16_032	CANEYRV7 345.00 345KV	0.971453	0.94816	0.0232931	0.98427	0.95	1.05	0.05120	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_032	CANEYRV7 345.00 345KV	0.951442	0.924033	0.0274088	0.97036	0.95	1.05	0.04657	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_032	CANEYRV7 345.00 345KV	0.961057	0.939411	0.0216459	0.97036	0.95	1.05	0.04657	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	20WP	G16_032	CANEYRV7 345.00 345KV	0.955032	0.926187	0.0288444	0.97062	0.95	1.05	0.05603	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	20WP	G16_032	CANEYRV7 345.00 345KV	0.963877	0.939795	0.0240821	0.97062	0.95	1.05	0.05603	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	16WP	G16_032	ELKRVR17 345.00 345KV	0.959343	0.93365	0.0256935	0.97593	0.95	1.05	0.05599	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	16WP	G16_032	ELKRVR17 345.00 345KV	0.968505	0.946079	0.0224264	0.97593	0.95	1.05	0.05599	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_032	ELKRVR17 345.00 345KV	0.955506	0.930443	0.0250634	0.97326	0.95	1.05	0.04657	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_032	ELKRVR17 345.00 345KV	0.96445	0.944976	0.0194742	0.97326	0.95	1.05	0.04657	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	20WP	G16_032	ELKRVR17 345.00 345KV	0.957215	0.930383	0.026832	0.97282	0.95	1.05	0.05603	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	20WP	G16_032	ELKRVR17 345.00 345KV	0.965717	0.943673	0.0220444	0.97282	0.95	1.05	0.05603	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	00	0	16WP	G16_032	GEN-2016-045345.00 345KV	1.303159	1.284075	0.0190835	1.27699	0.9	1.05	0.04024	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_032	GEN-2016-045345.00 345KV	1.328238	1.308634	0.0196037	1.30141	0.9	1.05	0.04024	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_032	GEN-2016-045345.00 345KV	1.327852	1.308625	0.0192273	1.30141	0.9	1.05	0.03826	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_032	GEN-2016-045345.00 345KV	1.328063	1.308725	0.0193386	1.30141	0.9	1.05	0.03826	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	16WP	G16_032	GEN-2016-045345.00 345KV	1.30981	1.288669	0.0211409	1.27699	0.9	1.05	0.03408	ARCADIA - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_032	GEN-2016-045345.00 345KV	1.335017	1.313317	0.0216999	1.30141	0.9	1.05	0.03408	ARCADIA - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_032	GEN-2016-045345.00 345KV	1.311585	1.289901	0.0216841	1.27799	0.9	1.05	0.04268	ARCADIA - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_032	GEN-2016-045345.00 345KV	1.336825	1.314573	0.0222529	1.30243	0.9	1.05	0.04268	ARCADIA - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_032	GEN-2016-045345.00 345KV	1.307321	1.286507	0.0208138	1.27799	0.9	1.05	0.04048	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_032	GEN-2016-045345.00 345KV	1.33248	1.311113	0.0213668	1.30243	0.9	1.05	0.04048	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_032	GEN-2016-045345.00 345KV	1.307442	1.286574	0.0208676	1.27799	0.9	1.05	0.04048	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_032	GEN-2016-045345.00 345KV	1.332603	1.311181	0.0214216	1.30243	0.9	1.05	0.04048	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_032	GEN-2016-045345.00 345KV	1.307155	1.285756	0.0213988	1.27799	0.9	1.05	0.03958	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_032	GEN-2016-045345.00 345KV	1.33231	1.310347	0.0219632	1.30243	0.9	1.05	0.03958	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_032	GEN-2016-045345.00 345KV	1.313974	1.292258	0.0217154	1.28029	0.9	1.05	0.04702	ARCADIA - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_032	GEN-2016-045345.00 345KV	1.339261	1.316976	0.0222845	1.30477	0.9	1.05	0.04702	ARCADIA - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_032	GEN-2016-045345.00 345KV	1.308164	1.286876	0.0212878	1.28029	0.9	1.05	0.03670	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_032	GEN-2016-045345.00 345KV	1.333339	1.311489	0.0218499	1.30477	0.9	1.05	0.03670	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_032	GEN-2016-045345.00 345KV	1.307173	1.285948	0.0212249	1.27615	0.9	1.05	0.04220	ARCADIA - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_032	GEN-2016-045345.00 345KV	1.332329	1.310543	0.0217859	1.30055	0.9	1.05	0.04220	ARCADIA - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_032	GEN-2016-045345.00 345KV	1.325717	1.30636	0.0193567	1.30055	0.9	1.05	0.03448	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_032	GEN-2016-045345.00 345KV	1.303669	1.284397	0.019272	1.27732	0.9	1.05	0.08188	DBL-WWRD-TGA

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	00	0	25SP	G16_032	GEN-2016-045345.00 345KV	1.328758	1.308962	0.0197957	1.30175	0.9	1.05	0.08188	DBL-WWRD-TGA
FDNS	00	0	25SP	G16_032	GEN-2016-045345.00 345KV	1.305964	1.286308	0.0196567	1.27732	0.9	1.05	0.04525	ARCADIA - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_032	GEN-2016-045345.00 345KV	1.331097	1.31091	0.0201875	1.30175	0.9	1.05	0.04525	ARCADIA - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_032	GEN-2016-045345.00 345KV	1.30271	1.283473	0.0192374	1.27732	0.9	1.05	0.04486	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	G16_032	GEN-2016-045345.00 345KV	1.327781	1.30802	0.0197607	1.30175	0.9	1.05	0.04486	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	G16_032	GEN-2016-045345.00 345KV	1.302807	1.2835	0.0193068	1.27732	0.9	1.05	0.04486	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_032	GEN-2016-045345.00 345KV	1.327879	1.308047	0.0198315	1.30175	0.9	1.05	0.04486	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_032	GEN-2016-045345.00 345KV	1.303018	1.283173	0.019845	1.27732	0.9	1.05	0.04036	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_032	GEN-2016-045345.00 345KV	1.328094	1.307714	0.0203803	1.30175	0.9	1.05	0.04036	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_032	GEN-2016-057345.00 345KV	1.316217	1.296849	0.0193679	1.28969	0.9	1.05	0.04024	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_032	GEN-2016-057345.00 345KV	1.316044	1.296939	0.0191053	1.28969	0.9	1.05	0.03826	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	16WP	G16_032	GEN-2016-057345.00 345KV	1.322935	1.301489	0.0214454	1.28969	0.9	1.05	0.03408	ARCADIA - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_032	GEN-2016-057345.00 345KV	1.324727	1.302733	0.0219938	1.2907	0.9	1.05	0.04268	ARCADIA - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_032	GEN-2016-057345.00 345KV	1.320421	1.299306	0.0211154	1.2907	0.9	1.05	0.04048	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_032	GEN-2016-057345.00 345KV	1.320542	1.299373	0.0211695	1.2907	0.9	1.05	0.04048	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_032	GEN-2016-057345.00 345KV	1.320253	1.298546	0.0217063	1.2907	0.9	1.05	0.03958	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_032	GEN-2016-057345.00 345KV	1.32714	1.305115	0.0220251	1.29302	0.9	1.05	0.04702	ARCADIA - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_032	GEN-2016-057345.00 345KV	1.321272	1.299678	0.0215942	1.29302	0.9	1.05	0.03670	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_032	GEN-2016-057345.00 345KV	1.320271	1.298741	0.0215305	1.28884	0.9	1.05	0.04220	ARCADIA - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_032	GEN-2016-057345.00 345KV	1.313719	1.294596	0.019123	1.28884	0.9	1.05	0.03448	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_032	GEN-2016-057345.00 345KV	1.316732	1.297174	0.0195582	1.29003	0.9	1.05	0.08188	DBL-WWRD-TGA
FDNS	00	0	25SP	G16_032	GEN-2016-057345.00 345KV	1.31905	1.299104	0.0199465	1.29003	0.9	1.05	0.04525	ARCADIA - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_032	GEN-2016-057345.00 345KV	1.315764	1.29624	0.0195235	1.29003	0.9	1.05	0.04486	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	G16_032	GEN-2016-057345.00 345KV	1.315861	1.296268	0.0195937	1.29003	0.9	1.05	0.04486	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_032	GEN-2016-057345.00 345KV	1.316075	1.295937	0.0201374	1.29003	0.9	1.05	0.04036	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	08ALL	3	16WP	G16_032	LATHAMS7 345.00 345KV	0.959373	0.933596	0.025777	0.97613	0.95	1.05	0.05599	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	16WP	G16_032	LATHAMS7 345.00 345KV	0.968632	0.945971	0.0226614	0.97613	0.95	1.05	0.05599	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_032	LATHAMS7 345.00 345KV	0.955495	0.930404	0.0250909	0.97344	0.95	1.05	0.04657	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_032	LATHAMS7 345.00 345KV	0.964534	0.944871	0.0196626	0.97344	0.95	1.05	0.04657	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	20WP	G16_032	LATHAMS7 345.00 345KV	0.957222	0.930345	0.0268775	0.973	0.95	1.05	0.05603	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	20WP	G16_032	LATHAMS7 345.00 345KV	0.965815	0.943574	0.0222406	0.973	0.95	1.05	0.05603	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_032	NEOSHO 345KV	0.971991	0.947824	0.0241665	0.98191	0.95	1.05	0.04657	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_037	GEN-2016-045345.00 345KV	1.303159	1.284075	0.0190835	1.27699	0.9	1.05	0.07802	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_037	GEN-2016-045345.00 345KV	1.328238	1.308634	0.0196037	1.30141	0.9	1.05	0.07802	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_037	GEN-2016-045345.00 345KV	1.328225	1.308855	0.01937	1.27699	0.9	1.05	0.06848	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_037	GEN-2016-045345.00 345KV	1.353786	1.333895	0.0198903	1.30141	0.9	1.05	0.06848	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_037	GEN-2016-045345.00 345KV	1.307155	1.285756	0.0213988	1.27799	0.9	1.05	0.07725	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_037	GEN-2016-045345.00 345KV	1.33231	1.310347	0.0219632	1.30243	0.9	1.05	0.07725	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_037	GEN-2016-045345.00 345KV	1.333544	1.311597	0.021947	1.27799	0.9	1.05	0.06523	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_037	GEN-2016-045345.00 345KV	1.359207	1.336691	0.0225165	1.30243	0.9	1.05	0.06523	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_037	GEN-2016-045345.00 345KV	1.309935	1.288951	0.0209841	1.28029	0.9	1.05	0.09582	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_037	GEN-2016-045345.00 345KV	1.335144	1.313604	0.0215397	1.30477	0.9	1.05	0.09582	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_037	GEN-2016-045345.00 345KV	1.310007	1.288969	0.0210375	1.28029	0.9	1.05	0.09582	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G16_037	GEN-2016-045345.00 345KV	1.335217	1.313623	0.0215942	1.30477	0.9	1.05	0.09582	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G16_037	GEN-2016-045345.00 345KV	1.308164	1.286876	0.0212878	1.28029	0.9	1.05	0.07969	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_037	GEN-2016-045345.00 345KV	1.333339	1.311489	0.0218499	1.30477	0.9	1.05	0.07969	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_037	GEN-2016-045345.00 345KV	1.33437	1.312243	0.0221272	1.28029	0.9	1.05	0.06830	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_037	GEN-2016-045345.00 345KV	1.360049	1.33735	0.0226998	1.30477	0.9	1.05	0.06830	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_037	GEN-2016-045345.00 345KV	1.309628	1.288992	0.0206367	1.28029	0.9	1.05	0.03586	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_037	GEN-2016-045345.00 345KV	1.334832	1.313646	0.0211858	1.30477	0.9	1.05	0.03586	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_037	GEN-2016-045345.00 345KV	1.326278	1.306902	0.0193765	1.30055	0.9	1.05	0.09726	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_037	GEN-2016-045345.00 345KV	1.326357	1.306911	0.0194464	1.30055	0.9	1.05	0.09726	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	G16_037	GEN-2016-045345.00 345KV	1.325717	1.30636	0.0193567	1.30055	0.9	1.05	0.07747	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_037	GEN-2016-045345.00 345KV	1.323208	1.303765	0.0194432	1.27615	0.9	1.05	0.06793	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_037	GEN-2016-045345.00 345KV	1.348673	1.328706	0.0199662	1.30055	0.9	1.05	0.06793	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_037	GEN-2016-045345.00 345KV	1.305864	1.28671	0.0191541	1.27615	0.9	1.05	0.03344	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_037	GEN-2016-045345.00 345KV	1.330995	1.31132	0.019675	1.30055	0.9	1.05	0.03344	DBL-WWRD-TGA
FDNS	00	0	25SP	G16_037	GEN-2016-045345.00 345KV	1.303018	1.283173	0.019845	1.27732	0.9	1.05	0.08303	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_037	GEN-2016-045345.00 345KV	1.328094	1.307714	0.0203803	1.30175	0.9	1.05	0.08303	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_037	GEN-2016-045345.00 345KV	1.324474	1.304677	0.0197963	1.27732	0.9	1.05	0.07217	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_037	GEN-2016-045345.00 345KV	1.349963	1.329637	0.0203258	1.30175	0.9	1.05	0.07217	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_037	GEN-2016-057345.00 345KV	1.316217	1.296849	0.0193679	1.28969	0.9	1.05	0.07802	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_037	GEN-2016-057345.00 345KV	1.341534	1.32188	0.019654	1.28969	0.9	1.05	0.06848	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_037	GEN-2016-057345.00 345KV	1.320253	1.298546	0.0217063	1.2907	0.9	1.05	0.07725	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_037	GEN-2016-057345.00 345KV	1.346906	1.32465	0.0222567	1.2907	0.9	1.05	0.06523	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_037	GEN-2016-057345.00 345KV	1.323061	1.301774	0.0212868	1.29302	0.9	1.05	0.09582	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_037	GEN-2016-057345.00 345KV	1.323133	1.301793	0.0213408	1.29302	0.9	1.05	0.09582	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G16_037	GEN-2016-057345.00 345KV	1.321272	1.299678	0.0215942	1.29302	0.9	1.05	0.07969	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_037	GEN-2016-057345.00 345KV	1.347741	1.325302	0.0224383	1.29302	0.9	1.05	0.06830	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_037	GEN-2016-057345.00 345KV	1.322751	1.301815	0.0209361	1.29302	0.9	1.05	0.03586	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_037	GEN-2016-057345.00 345KV	1.314275	1.295132	0.0191426	1.28884	0.9	1.05	0.09726	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_037	GEN-2016-057345.00 345KV	1.314354	1.295142	0.019212	1.28884	0.9	1.05	0.09726	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	G16_037	GEN-2016-057345.00 345KV	1.313719	1.294596	0.019123	1.28884	0.9	1.05	0.07747	CIMARRON - DRAPER LAKE 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	00	0	20WP	G16_037	GEN-2016-057345.00 345KV	1.336467	1.316738	0.0197288	1.28884	0.9	1.05	0.06793	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_037	GEN-2016-057345.00 345KV	1.318949	1.29951	0.0194386	1.28884	0.9	1.05	0.03344	DBL-WWRD-TGA
FDNS	00	0	25SP	G16_037	GEN-2016-057345.00 345KV	1.316075	1.295937	0.0201374	1.29003	0.9	1.05	0.08303	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_037	GEN-2016-057345.00 345KV	1.337745	1.31766	0.0200852	1.29003	0.9	1.05	0.07217	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	09ALL	4	25SP	G16_043	ATWOOD 115KV	0.937465	0.89625	0.0412151	0.93305	0.9	1.05	0.08872	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G16_043	ATWOOD SWITCH 115KV	0.936343	0.896664	0.0396796	0.93238	0.9	1.05	0.08872	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G16_043	BVERVLLY 115.00 115KV	0.94028	0.89886	0.0414202	0.9356	0.9	1.05	0.08872	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	00	0	17SP	G16_043	GEN-2016-045345.00 345KV	1.307321	1.286507	0.0208138	1.27799	0.9	1.05	0.03111	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_043	GEN-2016-045345.00 345KV	1.33248	1.311113	0.0213668	1.30243	0.9	1.05	0.03111	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_043	GEN-2016-045345.00 345KV	1.307442	1.286574	0.0208676	1.27799	0.9	1.05	0.03111	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_043	GEN-2016-045345.00 345KV	1.332603	1.311181	0.0214216	1.30243	0.9	1.05	0.03111	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G16_043	GEN-2016-045345.00 345KV	1.309628	1.288992	0.0206367	1.28029	0.9	1.05	0.03651	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_043	GEN-2016-045345.00 345KV	1.334832	1.313646	0.0211858	1.30477	0.9	1.05	0.03651	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_043	GEN-2016-045345.00 345KV	1.305864	1.28671	0.0191541	1.27615	0.9	1.05	0.03404	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_043	GEN-2016-045345.00 345KV	1.330995	1.31132	0.019675	1.30055	0.9	1.05	0.03404	DBL-WWRD-TGA
FDNS	00	0	17SP	G16_043	GEN-2016-057345.00 345KV	1.320421	1.299306	0.0211154	1.2907	0.9	1.05	0.03111	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_043	GEN-2016-057345.00 345KV	1.320542	1.299373	0.0211695	1.2907	0.9	1.05	0.03111	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G16_043	GEN-2016-057345.00 345KV	1.322751	1.301815	0.0209361	1.29302	0.9	1.05	0.03651	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_043	GEN-2016-057345.00 345KV	1.318949	1.29951	0.0194386	1.28884	0.9	1.05	0.03404	DBL-WWRD-TGA
FDNS	09ALL	4	25SP	G16_043	LUDELL 3 115.00 115KV	0.936082	0.897028	0.0390532	0.93227	0.9	1.05	0.08872	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G16_043	LUDELL 3 115.00 115KV	0.938739	0.899773	0.0389661	0.93227	0.9	1.05	0.06193	MINGO - SETAB 345KV CKT 1
FDNS	09ALL	4	25SP	G16_043	LUDELLT3 115.00 115KV	0.936098	0.897045	0.0390525	0.93229	0.9	1.05	0.08872	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G16_043	LUDELLT3 115.00 115KV	0.938755	0.89979	0.0389654	0.93229	0.9	1.05	0.06193	MINGO - SETAB 345KV CKT 1
FDNS	09ALL	4	25SP	G16_043	MCDONLD3 115.00 115KV	0.940883	0.899428	0.041455	0.93614	0.9	1.05	0.08872	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G16_043	NORTH ATWOOD 115KV	0.936247	0.896563	0.0396842	0.93228	0.9	1.05	0.08872	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G16_043	NORTH ATWOOD 115KV	0.939221	0.899939	0.0392824	0.93228	0.9	1.05	0.06193	MINGO - SETAB 345KV CKT 1
FDNS	09ALL	4	25SP	G16_043	ONEOK 3 115.00 115KV	0.940149	0.898709	0.0414398	0.93547	0.9	1.05	0.08872	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	00	0	16WP	G16_045	GEN-2016-045345.00 345KV	1.353786	1.333895	0.0198903	1.30141	0.9	1.05	0.31983	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_045	GEN-2016-045345.00 345KV	1.328225	1.308855	0.01937	1.27699	0.9	1.05	0.31983	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_045	GEN-2016-045345.00 345KV	1.330992	1.311745	0.0192469	1.30141	0.9	1.05	0.18367	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_045	GEN-2016-045345.00 345KV	1.330992	1.311745	0.0192469	1.30141	0.9	1.05	0.18367	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	16WP	G16_045	GEN-2016-045345.00 345KV	1.328238	1.308634	0.0196037	1.30141	0.9	1.05	0.13894	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_045	GEN-2016-045345.00 345KV	1.303159	1.284075	0.0190835	1.27699	0.9	1.05	0.13894	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_045	GEN-2016-045345.00 345KV	1.359207	1.336691	0.0225165	1.30243	0.9	1.05	0.31672	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_045	GEN-2016-045345.00 345KV	1.333544	1.311597	0.021947	1.27799	0.9	1.05	0.31672	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_045	GEN-2016-045345.00 345KV	1.323489	1.302429	0.0210598	1.30243	0.95	1.05	0.25000	BASE CASE
FDNS	00	0	17SP	G16_045	GEN-2016-045345.00 345KV	1.2985	1.277989	0.0205107	1.27799	0.95	1.05	0.25000	BASE CASE
FDNS	00	0	17SP	G16_045	GEN-2016-045345.00 345KV	1.332749	1.311835	0.0209147	1.30243	0.9	1.05	0.18503	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_045	GEN-2016-045345.00 345KV	1.307585	1.287215	0.0203704	1.27799	0.9	1.05	0.18503	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_045	GEN-2016-045345.00 345KV	1.332749	1.311835	0.0209147	1.30243	0.9	1.05	0.18503	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_045	GEN-2016-045345.00 345KV	1.307585	1.287215	0.0203704	1.27799	0.9	1.05	0.18503	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_045	GEN-2016-045345.00 345KV	1.33231	1.310347	0.0219632	1.30243	0.9	1.05	0.13826	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_045	GEN-2016-045345.00 345KV	1.307155	1.285756	0.0213988	1.27799	0.9	1.05	0.13826	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_045	GEN-2016-045345.00 345KV	1.330409	1.309006	0.0214026	1.30243	0.9	1.05	0.04066	CIMARRON (CIMARON2) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	00	0	17SP	G16_045	GEN-2016-045345.00 345KV	1.305289	1.284441	0.0208484	1.27799	0.9	1.05	0.04066	CIMARRON (CIMARON2) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	00	0	17SP	G16_045	GEN-2016-045345.00 345KV	1.329081	1.307674	0.0214071	1.30243	0.9	1.05	0.03960	CIMARRON (CIMARON1) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	00	0	17SP	G16_045	GEN-2016-045345.00 345KV	1.303987	1.283134	0.0208526	1.27799	0.9	1.05	0.03960	CIMARRON (CIMARON1) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	00	0	20SP	G16_045	GEN-2016-045345.00 345KV	1.360049	1.33735	0.0226998	1.30477	0.9	1.05	0.29811	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_045	GEN-2016-045345.00 345KV	1.33437	1.312243	0.0221272	1.28029	0.9	1.05	0.29811	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_045	GEN-2016-045345.00 345KV	1.325976	1.30477	0.0212057	1.30477	0.95	1.05	0.25000	BASE CASE
FDNS	00	0	20SP	G16_045	GEN-2016-045345.00 345KV	1.30094	1.280286	0.0206543	1.28029	0.95	1.05	0.25000	BASE CASE
FDNS	00	0	20SP	G16_045	GEN-2016-045345.00 345KV	1.335144	1.313604	0.0215397	1.30477	0.9	1.05	0.18075	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_045	GEN-2016-045345.00 345KV	1.309935	1.288951	0.0209841	1.28029	0.9	1.05	0.18075	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_045	GEN-2016-045345.00 345KV	1.335217	1.313623	0.0215942	1.30477	0.9	1.05	0.18075	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G16_045	GEN-2016-045345.00 345KV	1.310007	1.288969	0.0210375	1.28029	0.9	1.05	0.18075	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G16_045	GEN-2016-045345.00 345KV	1.334269	1.312838	0.0214309	1.30477	0.9	1.05	0.17319	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_045	GEN-2016-045345.00 345KV	1.309077	1.2882	0.020877	1.28029	0.9	1.05	0.17319	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_045	GEN-2016-045345.00 345KV	1.334269	1.312838	0.021431	1.30477	0.9	1.05	0.17319	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_045	GEN-2016-045345.00 345KV	1.309077	1.2882	0.0208769	1.28029	0.9	1.05	0.17319	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_045	GEN-2016-045345.00 345KV	1.333339	1.311489	0.0218499	1.30477	0.9	1.05	0.13376	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_045	GEN-2016-045345.00 345KV	1.308164	1.286876	0.0212878	1.28029	0.9	1.05	0.13376	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_045	GEN-2016-045345.00 345KV	1.332298	1.311058	0.0212395	1.30477	0.9	1.05	0.03786	CIMARRON (CIMARON2) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	00	0	20SP	G16_045	GEN-2016-045345.00 345KV	1.307142	1.286453	0.0206889	1.28029	0.9	1.05	0.03786	CIMARRON (CIMARON2) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	00	0	20SP	G16_045	GEN-2016-045345.00 345KV	1.331083	1.309855	0.021228	1.30477	0.9	1.05	0.03687	CIMARRON (CIMARON1) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	00	0	20WP	G16_045	GEN-2016-045345.00 345KV	1.348673	1.328706	0.0199662	1.30055	0.9	1.05	0.29774	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_045	GEN-2016-045345.00 345KV	1.323208	1.303765	0.0194432	1.27615	0.9	1.05	0.29774	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_045	GEN-2016-045345.00 345KV	1.319616	1.300555	0.0190609	1.30055	0.95	1.05	0.25000	BASE CASE
FDNS	00	0	20WP	G16_045	GEN-2016-045345.00 345KV	1.326278	1.306902	0.0193765	1.30055	0.9	1.05	0.18219	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_045	GEN-2016-045345.00 345KV	1.326357	1.306911	0.0194464	1.30055	0.9	1.05	0.18219	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	G16_045	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.17145	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_045	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.17145	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G16_045	GEN-2016-045345.00 345KV	1.325717	1.30636	0.0193567	1.30055	0.9	1.05	0.13153	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_045	GEN-2016-045345.00 345KV	1.349963	1.329637	0.0203258	1.30175	0.9	1.05	0.29483	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	00	0	25SP	G16_045	GEN-2016-045345.00 345KV	1.324474	1.304677	0.0197963	1.27732	0.9	1.05	0.29483	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_045	GEN-2016-045345.00 345KV	1.328758	1.308962	0.0197957	1.30175	0.9	1.05	0.16998	DBL-WWRD-TGA
FDNS	00	0	25SP	G16_045	GEN-2016-045345.00 345KV	1.303669	1.284397	0.019272	1.27732	0.9	1.05	0.16998	DBL-WWRD-TGA
FDNS	00	0	25SP	G16_045	GEN-2016-045345.00 345KV	1.328094	1.307714	0.0203803	1.30175	0.9	1.05	0.13818	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_045	GEN-2016-045345.00 345KV	1.303018	1.283173	0.019845	1.27732	0.9	1.05	0.13818	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	01ALL	2	16WP	G16_045	GEN-2016-045345.00 345KV	1.313152	1.061257	0.251895	1.06126	0.95	1.05	0.25000	BASE CASE
FDNS	01ALL	2	16WP	G16_045	GEN-2016-045345.00 345KV	1.288358	1.058622	0.229736	1.05862	0.95	1.05	0.25000	BASE CASE
FDNS	01ALL	2	17SP	G16_045	GEN-2016-045345.00 345KV	1.314283	1.063707	0.250576	1.06371	0.95	1.05	0.25000	BASE CASE
FDNS	01ALL	2	17SP	G16_045	GEN-2016-045345.00 345KV	1.289468	1.061119	0.228349	1.06112	0.95	1.05	0.25000	BASE CASE
FDNS	01ALL	2	20L	G16_045	GEN-2016-045345.00 345KV	1.317405	1.064602	0.252804	1.0646	0.95	1.05	0.25000	BASE CASE
FDNS	01ALL	2	20L	G16_045	GEN-2016-045345.00 345KV	1.292531	1.062031	0.2305	1.06203	0.95	1.05	0.25000	BASE CASE
FDNS	01ALL	2	20L	G16_045	GEN-2016-045345.00 345KV	1.317405	1.079075	0.23833	1.0646	0.9	1.05	0.25000	GEN-2016-045345.00 345/34.5KV TRANSFORMER CKT 1
FDNS	01ALL	2	20L	G16_045	GEN-2016-045345.00 345KV	1.292531	1.074886	0.217645	1.06203	0.9	1.05	0.25000	GEN-2016-045345.00 345/34.5KV TRANSFORMER CKT 1
FDNS	01ALL	2	20L	G16_045	GEN-2016-045345.00 345KV	1.317405	1.079075	0.23833	1.0646	0.9	1.05	0.25000	GEN-2016-045345.00 345/34.5KV TRANSFORMER CKT 2
FDNS	01ALL	2	20L	G16_045	GEN-2016-045345.00 345KV	1.292531	1.074886	0.217645	1.06203	0.9	1.05	0.25000	GEN-2016-045345.00 345/34.5KV TRANSFORMER CKT 2
FDNS	01ALL	2	20SP	G16_045	GEN-2016-045345.00 345KV	1.31365	1.0647	0.24895	1.0647	0.95	1.05	0.25000	BASE CASE
FDNS	01ALL	2	20SP	G16_045	GEN-2016-045345.00 345KV	1.288847	1.062132	0.226715	1.06213	0.95	1.05	0.25000	BASE CASE
FDNS	01ALL	2	20SP	G16_045	GEN-2016-045345.00 345KV	1.31365	1.079174	0.234476	1.0647	0.9	1.05	0.25000	GEN-2016-045345.00 345/34.5KV TRANSFORMER CKT 1
FDNS	01ALL	2	20SP	G16_045	GEN-2016-045345.00 345KV	1.288847	1.074991	0.213857	1.06213	0.9	1.05	0.25000	GEN-2016-045345.00 345/34.5KV TRANSFORMER CKT 1
FDNS	01ALL	2	20SP	G16_045	GEN-2016-045345.00 345KV	1.31365	1.079174	0.234476	1.0647	0.9	1.05	0.25000	GEN-2016-045345.00 345/34.5KV TRANSFORMER CKT 2
FDNS	01ALL	2	20SP	G16_045	GEN-2016-045345.00 345KV	1.288847	1.074991	0.213857	1.06213	0.9	1.05	0.25000	GEN-2016-045345.00 345/34.5KV TRANSFORMER CKT 2
FDNS	01ALL	2	20WP	G16_045	GEN-2016-045345.00 345KV	1.31184	1.062315	0.249525	1.06232	0.95	1.05	0.25000	BASE CASE
FDNS	01ALL	2	20WP	G16_045	GEN-2016-045345.00 345KV	1.287071	1.0597	0.227371	1.0597	0.95	1.05	0.25000	BASE CASE
FDNS	01ALL	2	20WP	G16_045	GEN-2016-045345.00 345KV	1.31184	1.075704	0.236137	1.06232	0.9	1.05	0.25000	GEN-2016-045345.00 345/34.5KV TRANSFORMER CKT 1
FDNS	01ALL	2	20WP	G16_045	GEN-2016-045345.00 345KV	1.287071	1.071472	0.215599	1.0597	0.9	1.05	0.25000	GEN-2016-045345.00 345/34.5KV TRANSFORMER CKT 1
FDNS	01ALL	2	20WP	G16_045	GEN-2016-045345.00 345KV	1.31184	1.075704	0.236137	1.06232	0.9	1.05	0.25000	GEN-2016-045345.00 345/34.5KV TRANSFORMER CKT 2
FDNS	01ALL	2	20WP	G16_045	GEN-2016-045345.00 345KV	1.287071	1.071472	0.215599	1.0597	0.9	1.05	0.25000	GEN-2016-045345.00 345/34.5KV TRANSFORMER CKT 2
FDNS	01ALL	2	20WP	G16_045	GEN-2016-045345.00 345KV	1.287071	1.255685	0.0313865	1.0597	0.9	1.05	0.03799	GEN587303 1-G16-045-GEN10.6900
FDNS	01ALL	2	20WP	G16_045	GEN-2016-045345.00 345KV	1.31184	1.280449	0.031391	1.06232	0.9	1.05	0.03799	GEN587307 1-G16-045-GEN20.6900
FDNS	01ALL	2	25SP	G16_045	GEN-2016-045345.00 345KV	1.314261	1.064686	0.249576	1.06469	0.95	1.05	0.25000	BASE CASE
FDNS	01ALL	2	25SP	G16_045	GEN-2016-045345.00 345KV	1.289447	1.062117	0.227329	1.06212	0.95	1.05	0.25000	BASE CASE
FDNS	01ALL	2	25SP	G16_045	GEN-2016-045345.00 345KV	1.314261	1.079158	0.235104	1.06469	0.9	1.05	0.25000	GEN-2016-045345.00 345/34.5KV TRANSFORMER CKT 1
FDNS	01ALL	2	25SP	G16_045	GEN-2016-045345.00 345KV	1.289446	1.074973	0.214473	1.06212	0.9	1.05	0.25000	GEN-2016-045345.00 345/34.5KV TRANSFORMER CKT 1
FDNS	01ALL	2	25SP	G16_045	GEN-2016-045345.00 345KV	1.314261	1.079158	0.235104	1.06469	0.9	1.05	0.25000	GEN-2016-045345.00 345/34.5KV TRANSFORMER CKT 2
FDNS	01ALL	2	25SP	G16_045	GEN-2016-045345.00 345KV	1.289446	1.074973	0.214473	1.06212	0.9	1.05	0.25000	GEN-2016-045345.00 345/34.5KV TRANSFORMER CKT 2
FDNS	00	0	16WP	G16_045	GEN-2016-057345.00 345KV	1.341534	1.32188	0.019654	1.28969	0.9	1.05	0.31983	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_045	GEN-2016-057345.00 345KV	1.318946	1.299931	0.0190147	1.28969	0.9	1.05	0.18367	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_045	GEN-2016-057345.00 345KV	1.318946	1.299931	0.0190147	1.28969	0.9	1.05	0.18367	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	16WP	G16_045	GEN-2016-057345.00 345KV	1.316217	1.296849	0.0193679	1.28969	0.9	1.05	0.13894	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_045	GEN-2016-057345.00 345KV	1.346906	1.32465	0.0222567	1.2907	0.9	1.05	0.31672	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_045	GEN-2016-057345.00 345KV	1.320688	1.30002	0.0206672	1.2907	0.9	1.05	0.18503	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_045	GEN-2016-057345.00 345KV	1.320688	1.30002	0.0206672	1.2907	0.9	1.05	0.18503	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_045	GEN-2016-057345.00 345KV	1.320253	1.298546	0.0217063	1.2907	0.9	1.05	0.13826	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_045	GEN-2016-057345.00 345KV	1.318368	1.297218	0.0211505	1.2907	0.9	1.05	0.04066	CIMARRON (CIMARON2) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	00	0	17SP	G16_045	GEN-2016-057345.00 345KV	1.317053	1.295898	0.0211549	1.2907	0.9	1.05	0.03960	CIMARRON (CIMARON1) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	00	0	20SP	G16_045	GEN-2016-057345.00 345KV	1.347741	1.325302	0.0224383	1.29302	0.9	1.05	0.29811	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_045	GEN-2016-057345.00 345KV	1.323061	1.301774	0.0212868	1.29302	0.9	1.05	0.18075	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_045	GEN-2016-057345.00 345KV	1.323133	1.301793	0.0213408	1.29302	0.9	1.05	0.18075	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G16_045	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.17319	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_045	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.17319	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_045	GEN-2016-057345.00 345KV	1.321272	1.299678	0.0215942	1.29302	0.9	1.05	0.13376	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_045	GEN-2016-057345.00 345KV	1.32024	1.299251	0.0209891	1.29302	0.9	1.05	0.03786	CIMARRON (CIMARON2) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	00	0	20SP	G16_045	GEN-2016-057345.00 345KV	1.319036	1.298059	0.0209775	1.29302	0.9	1.05	0.03687	CIMARRON (CIMARON1) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	00	0	20WP	G16_045	GEN-2016-057345.00 345KV	1.336467	1.316738	0.0197288	1.28884	0.9	1.05	0.29774	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_045	GEN-2016-057345.00 345KV	1.314275	1.295132	0.0191426	1.28884	0.9	1.05	0.18219	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_045	GEN-2016-057345.00 345KV	1.314354	1.295142	0.019212	1.28884	0.9	1.05	0.18219	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	G16_045	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.17145	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_045	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.17145	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G16_045	GEN-2016-057345.00 345KV	1.313719	1.294596	0.019123	1.28884	0.9	1.05	0.13153	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_045	GEN-2016-057345.00 345KV	1.337745	1.31766	0.0200852	1.29003	0.9	1.05	0.29483	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_045	GEN-2016-057345.00 345KV	1.316732	1.297174	0.0195582	1.29003	0.9	1.05	0.16998	DBL-WWRD-TGA
FDNS	00	0	25SP	G16_045	GEN-2016-057345.00 345KV	1.316075	1.295937	0.0201374	1.29003	0.9	1.05	0.13818	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	01ALL	2	20WP	G16_045	GEN-2016-057345.00 345KV	1.299968	1.268578	0.03139	1.06107	0.9	1.05	0.03799	GEN587383 1-G16-045-GEN10.6900
FDNS	00	0	16WP	G16_046	GEN-2016-045345.00 345KV	1.302275	1.283203	0.0190725	1.27699	0.9	1.05	0.10499	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_046	GEN-2016-045345.00 345KV	1.327337	1.307744	0.0195928	1.30141	0.9	1.05	0.10499	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_046	GEN-2016-045345.00 345KV	1.328225	1.308855	0.01937	1.27699	0.9	1.05	0.06799	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_046	GEN-2016-045345.00 345KV	1.353786	1.333895	0.0198903	1.30141	0.9	1.05	0.06799	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_046	GEN-2016-045345.00 345KV	1.303159	1.284075	0.0190835	1.27699	0.9	1.05	0.05058	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_046	GEN-2016-045345.00 345KV	1.328238	1.308634	0.0196037	1.30141	0.9	1.05	0.05058	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_046	GEN-2016-045345.00 345KV	1.330992	1.311745	0.0192469	1.30141	0.9	1.05	0.03208	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_046	GEN-2016-045345.00 345KV	1.330992	1.311745	0.0192469	1.30141	0.9	1.05	0.03208	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_046	GEN-2016-045345.00 345KV	1.303982	1.283132	0.0208503	1.27799	0.9	1.05	0.10315	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_046	GEN-2016-045345.00 345KV	1.329077	1.307672	0.0214047	1.30243	0.9	1.05	0.10315	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	00	0	17SP	G16_046	GEN-2016-045345.00 345KV	1.333544	1.311597	0.021947	1.27799	0.9	1.05	0.06526	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_046	GEN-2016-045345.00 345KV	1.359207	1.336691	0.0225165	1.30243	0.9	1.05	0.06526	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_046	GEN-2016-045345.00 345KV	1.307155	1.285756	0.0213988	1.27799	0.9	1.05	0.05016	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_046	GEN-2016-045345.00 345KV	1.33231	1.310347	0.0219632	1.30243	0.9	1.05	0.05016	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_046	GEN-2016-045345.00 345KV	1.307585	1.287215	0.0203704	1.27799	0.9	1.05	0.03331	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_046	GEN-2016-045345.00 345KV	1.332749	1.311835	0.0209147	1.30243	0.9	1.05	0.03331	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_046	GEN-2016-045345.00 345KV	1.307585	1.287215	0.0203704	1.27799	0.9	1.05	0.03331	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_046	GEN-2016-045345.00 345KV	1.332749	1.311835	0.0209147	1.30243	0.9	1.05	0.03331	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_046	GEN-2016-045345.00 345KV	1.309628	1.288992	0.0206367	1.28029	0.9	1.05	0.14953	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_046	GEN-2016-045345.00 345KV	1.334832	1.313646	0.0211858	1.30477	0.9	1.05	0.14953	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_046	GEN-2016-045345.00 345KV	1.33437	1.312243	0.0221272	1.28029	0.9	1.05	0.07920	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_046	GEN-2016-045345.00 345KV	1.360049	1.33735	0.0226998	1.30477	0.9	1.05	0.07920	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_046	GEN-2016-045345.00 345KV	1.308164	1.286876	0.0212878	1.28029	0.9	1.05	0.05539	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_046	GEN-2016-045345.00 345KV	1.333339	1.311489	0.0218499	1.30477	0.9	1.05	0.05539	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_046	GEN-2016-045345.00 345KV	1.309077	1.2882	0.020877	1.28029	0.9	1.05	0.04462	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_046	GEN-2016-045345.00 345KV	1.334269	1.312838	0.0214309	1.30477	0.9	1.05	0.04462	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_046	GEN-2016-045345.00 345KV	1.309077	1.2882	0.0208769	1.28029	0.9	1.05	0.04462	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_046	GEN-2016-045345.00 345KV	1.334269	1.312838	0.021431	1.30477	0.9	1.05	0.04462	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G16_046	GEN-2016-045345.00 345KV	1.305864	1.28671	0.0191541	1.27615	0.9	1.05	0.14710	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_046	GEN-2016-045345.00 345KV	1.330995	1.31132	0.019675	1.30055	0.9	1.05	0.14710	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_046	GEN-2016-045345.00 345KV	1.323208	1.303765	0.0194432	1.27615	0.9	1.05	0.07882	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_046	GEN-2016-045345.00 345KV	1.348673	1.328706	0.0199662	1.30055	0.9	1.05	0.07882	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_046	GEN-2016-045345.00 345KV	1.325717	1.30636	0.0193567	1.30055	0.9	1.05	0.05315	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_046	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.04287	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_046	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.04287	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	25SP	G16_046	GEN-2016-045345.00 345KV	1.324474	1.304677	0.0197963	1.27732	0.9	1.05	0.07994	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_046	GEN-2016-045345.00 345KV	1.349963	1.329637	0.0203258	1.30175	0.9	1.05	0.07994	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_046	GEN-2016-045345.00 345KV	1.303018	1.283173	0.019845	1.27732	0.9	1.05	0.05921	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_046	GEN-2016-045345.00 345KV	1.328094	1.307714	0.0203803	1.30175	0.9	1.05	0.05921	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_046	GEN-2016-057345.00 345KV	1.315324	1.295967	0.0193568	1.28969	0.9	1.05	0.10499	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_046	GEN-2016-057345.00 345KV	1.341534	1.32188	0.019654	1.28969	0.9	1.05	0.06799	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_046	GEN-2016-057345.00 345KV	1.316217	1.296849	0.0193679	1.28969	0.9	1.05	0.05058	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_046	GEN-2016-057345.00 345KV	1.318946	1.299931	0.0190147	1.28969	0.9	1.05	0.03208	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_046	GEN-2016-057345.00 345KV	1.318946	1.299931	0.0190147	1.28969	0.9	1.05	0.03208	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_046	GEN-2016-057345.00 345KV	1.317048	1.295896	0.0211525	1.2907	0.9	1.05	0.10315	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_046	GEN-2016-057345.00 345KV	1.346906	1.32465	0.0222567	1.2907	0.9	1.05	0.06526	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_046	GEN-2016-057345.00 345KV	1.320253	1.298546	0.0217063	1.2907	0.9	1.05	0.05016	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_046	GEN-2016-057345.00 345KV	1.320688	1.30002	0.0206672	1.2907	0.9	1.05	0.03331	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_046	GEN-2016-057345.00 345KV	1.320688	1.30002	0.0206672	1.2907	0.9	1.05	0.03331	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_046	GEN-2016-057345.00 345KV	1.322751	1.301815	0.0209361	1.29302	0.9	1.05	0.14953	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_046	GEN-2016-057345.00 345KV	1.347741	1.325302	0.0224383	1.29302	0.9	1.05	0.07920	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_046	GEN-2016-057345.00 345KV	1.321272	1.299678	0.0215942	1.29302	0.9	1.05	0.05539	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_046	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.04462	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_046	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.04462	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G16_046	GEN-2016-057345.00 345KV	1.318949	1.29951	0.0194386	1.28884	0.9	1.05	0.14710	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_046	GEN-2016-057345.00 345KV	1.336467	1.316738	0.0197288	1.28884	0.9	1.05	0.07882	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_046	GEN-2016-057345.00 345KV	1.313719	1.294596	0.019123	1.28884	0.9	1.05	0.05315	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_046	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.04287	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_046	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.04287	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	25SP	G16_046	GEN-2016-057345.00 345KV	1.337745	1.31766	0.0200852	1.29003	0.9	1.05	0.07994	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_046	GEN-2016-057345.00 345KV	1.316075	1.295937	0.0201374	1.29003	0.9	1.05	0.05921	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	02ALL	2	17G	G16_046	MATHWSN7 345.00 345KV	1	1.057966	0.0579665	1.05205	0.9	1.05	0.10518	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL	2	17G	G16_046	MATHWSN7 345.00 345KV	1	1.060389	0.0603888	1.05205	0.9	1.05	0.10518	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	20SP	G16_047_SP	GEN-2016-045345.00 345KV	1.309935	1.288951	0.0209841	1.28029	0.9	1.05	0.10613	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_047_SP	GEN-2016-045345.00 345KV	1.335144	1.313604	0.0215397	1.30477	0.9	1.05	0.10613	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_047_SP	GEN-2016-045345.00 345KV	1.310007	1.288969	0.0210375	1.28029	0.9	1.05	0.10613	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G16_047_SP	GEN-2016-045345.00 345KV	1.335217	1.313623	0.0215942	1.30477	0.9	1.05	0.10613	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_047_SP	GEN-2016-045345.00 345KV	1.303669	1.284397	0.019272	1.27732	0.9	1.05	0.11224	DBL-WWRD-TGA
FDNS	00	0	25SP	G16_047_SP	GEN-2016-045345.00 345KV	1.328758	1.308962	0.0197957	1.30175	0.9	1.05	0.11224	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_047_SP	GEN-2016-057345.00 345KV	1.323061	1.301774	0.0212868	1.29302	0.9	1.05	0.10613	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_047_SP	GEN-2016-057345.00 345KV	1.323133	1.301793	0.0213408	1.29302	0.9	1.05	0.10613	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_047_SP	GEN-2016-057345.00 345KV	1.316732	1.297174	0.0195582	1.29003	0.9	1.05	0.11224	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_047_WP	GEN-2016-045345.00 345KV	1.326278	1.306902	0.0193765	1.30055	0.9	1.05	0.10757	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_047_WP	GEN-2016-045345.00 345KV	1.326357	1.306911	0.0194464	1.30055	0.9	1.05	0.10757	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	G16_047_WP	GEN-2016-057345.00 345KV	1.314275	1.295132	0.0191426	1.28884	0.9	1.05	0.10757	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_047_WP	GEN-2016-057345.00 345KV	1.314354	1.295142	0.019212	1.28884	0.9	1.05	0.10757	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	08ALL	3	16WP	G16_048	CANEYRV7 345.00 345KV	0.957889	0.930216	0.0276732	0.97454	0.95	1.05	0.06649	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	16WP	G16_048	CANEYRV7 345.00 345KV	0.967302	0.942965	0.0243372	0.97454	0.95	1.05	0.06649	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	17G	G16_048	CANEYRV7 345.00 345KV	0.971453	0.94816	0.0232931	0.98427	0.95	1.05	0.06170	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_048	CANEYRV7 345.00 345KV	0.951442	0.924033	0.0274088	0.97036	0.95	1.05	0.05654	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_048	CANEYRV7 345.00 345KV	0.961057	0.939411	0.0216459	0.97036	0.95	1.05	0.05654	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	20WP	G16_048	CANEYRV7 345.00 345KV	0.955032	0.926187	0.0288444	0.97062	0.95	1.05	0.06601	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	20WP	G16_048	CANEYRV7 345.00 345KV	0.963877	0.939795	0.0240821	0.97062	0.95	1.05	0.06601	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	08ALL	3	16WP	G16_048	ELKRVR17 345.00 345KV	0.959343	0.93365	0.0256935	0.97593	0.95	1.05	0.06649	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	16WP	G16_048	ELKRVR17 345.00 345KV	0.968505	0.946079	0.0224264	0.97593	0.95	1.05	0.06649	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_048	ELKRVR17 345.00 345KV	0.955506	0.930443	0.0250634	0.97326	0.95	1.05	0.05654	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_048	ELKRVR17 345.00 345KV	0.96445	0.944976	0.0194742	0.97326	0.95	1.05	0.05654	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	20WP	G16_048	ELKRVR17 345.00 345KV	0.957215	0.930383	0.026832	0.97282	0.95	1.05	0.06601	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	20WP	G16_048	ELKRVR17 345.00 345KV	0.965717	0.943673	0.0220444	0.97282	0.95	1.05	0.06601	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	00	0	16WP	G16_048	GEN-2016-045345.00 345KV	1.327852	1.308625	0.0192273	1.30141	0.9	1.05	0.11268	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_048	GEN-2016-045345.00 345KV	1.328063	1.308725	0.0193386	1.30141	0.9	1.05	0.11268	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	16WP	G16_048	GEN-2016-045345.00 345KV	1.303159	1.284075	0.0190835	1.27699	0.9	1.05	0.05127	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_048	GEN-2016-045345.00 345KV	1.328238	1.308634	0.0196037	1.30141	0.9	1.05	0.05127	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_048	GEN-2016-045345.00 345KV	1.330992	1.311745	0.0192469	1.30141	0.9	1.05	0.03979	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_048	GEN-2016-045345.00 345KV	1.330992	1.311745	0.0192469	1.30141	0.9	1.05	0.03979	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_048	GEN-2016-045345.00 345KV	1.307321	1.286507	0.0208138	1.27799	0.9	1.05	0.11483	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_048	GEN-2016-045345.00 345KV	1.33248	1.311113	0.0213668	1.30243	0.9	1.05	0.11483	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_048	GEN-2016-045345.00 345KV	1.307442	1.286574	0.0208676	1.27799	0.9	1.05	0.11483	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_048	GEN-2016-045345.00 345KV	1.332603	1.311181	0.0214216	1.30243	0.9	1.05	0.11483	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_048	GEN-2016-045345.00 345KV	1.307155	1.285756	0.0213988	1.27799	0.9	1.05	0.05063	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_048	GEN-2016-045345.00 345KV	1.33231	1.310347	0.0219632	1.30243	0.9	1.05	0.05063	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_048	GEN-2016-045345.00 345KV	1.307585	1.287215	0.0203704	1.27799	0.9	1.05	0.04113	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_048	GEN-2016-045345.00 345KV	1.332749	1.311835	0.0209147	1.30243	0.9	1.05	0.04113	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_048	GEN-2016-045345.00 345KV	1.307585	1.287215	0.0203704	1.27799	0.9	1.05	0.04113	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_048	GEN-2016-045345.00 345KV	1.332749	1.311835	0.0209147	1.30243	0.9	1.05	0.04113	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_048	GEN-2016-045345.00 345KV	1.308164	1.286876	0.0212878	1.28029	0.9	1.05	0.04730	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_048	GEN-2016-045345.00 345KV	1.333339	1.311489	0.0218499	1.30477	0.9	1.05	0.04730	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_048	GEN-2016-045345.00 345KV	1.309077	1.2882	0.020877	1.28029	0.9	1.05	0.03549	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_048	GEN-2016-045345.00 345KV	1.334269	1.312838	0.0214309	1.30477	0.9	1.05	0.03549	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_048	GEN-2016-045345.00 345KV	1.309077	1.2882	0.0208769	1.28029	0.9	1.05	0.03549	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_048	GEN-2016-045345.00 345KV	1.334269	1.312838	0.021431	1.30477	0.9	1.05	0.03549	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G16_048	GEN-2016-045345.00 345KV	1.325717	1.30636	0.0193567	1.30055	0.9	1.05	0.04508	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_048	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.03375	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_048	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.03375	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	25SP	G16_048	GEN-2016-045345.00 345KV	1.30271	1.283473	0.0192374	1.27732	0.9	1.05	0.11559	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	G16_048	GEN-2016-045345.00 345KV	1.327781	1.30802	0.0197607	1.30175	0.9	1.05	0.11559	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	G16_048	GEN-2016-045345.00 345KV	1.302807	1.2835	0.0193068	1.27732	0.9	1.05	0.11559	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_048	GEN-2016-045345.00 345KV	1.327879	1.308047	0.0198315	1.30175	0.9	1.05	0.11559	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_048	GEN-2016-045345.00 345KV	1.303669	1.284397	0.019272	1.27732	0.9	1.05	0.05977	DBL-WWRD-TGA
FDNS	00	0	25SP	G16_048	GEN-2016-045345.00 345KV	1.328758	1.308962	0.0197957	1.30175	0.9	1.05	0.05977	DBL-WWRD-TGA
FDNS	00	0	25SP	G16_048	GEN-2016-045345.00 345KV	1.303018	1.283173	0.019845	1.27732	0.9	1.05	0.05108	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_048	GEN-2016-045345.00 345KV	1.328094	1.307714	0.0203803	1.30175	0.9	1.05	0.05108	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_048	GEN-2016-057345.00 345KV	1.316044	1.296939	0.0191053	1.28969	0.9	1.05	0.11268	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	16WP	G16_048	GEN-2016-057345.00 345KV	1.316217	1.296849	0.0193679	1.28969	0.9	1.05	0.05127	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_048	GEN-2016-057345.00 345KV	1.318946	1.299931	0.0190147	1.28969	0.9	1.05	0.03979	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_048	GEN-2016-057345.00 345KV	1.318946	1.299931	0.0190147	1.28969	0.9	1.05	0.03979	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_048	GEN-2016-057345.00 345KV	1.320421	1.299306	0.0211154	1.2907	0.9	1.05	0.11483	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_048	GEN-2016-057345.00 345KV	1.320542	1.299373	0.0211695	1.2907	0.9	1.05	0.11483	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_048	GEN-2016-057345.00 345KV	1.320253	1.298546	0.0217063	1.2907	0.9	1.05	0.05063	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_048	GEN-2016-057345.00 345KV	1.320688	1.30002	0.0206672	1.2907	0.9	1.05	0.04113	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_048	GEN-2016-057345.00 345KV	1.320688	1.30002	0.0206672	1.2907	0.9	1.05	0.04113	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_048	GEN-2016-057345.00 345KV	1.321272	1.299678	0.0215942	1.29302	0.9	1.05	0.04730	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_048	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.03549	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_048	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.03549	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G16_048	GEN-2016-057345.00 345KV	1.313719	1.294596	0.019123	1.28884	0.9	1.05	0.04508	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_048	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.03375	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_048	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.03375	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	25SP	G16_048	GEN-2016-057345.00 345KV	1.315764	1.29624	0.0195235	1.29003	0.9	1.05	0.11559	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	G16_048	GEN-2016-057345.00 345KV	1.315861	1.296268	0.0195937	1.29003	0.9	1.05	0.11559	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_048	GEN-2016-057345.00 345KV	1.316732	1.297174	0.0195582	1.29003	0.9	1.05	0.05977	DBL-WWRD-TGA
FDNS	00	0	25SP	G16_048	GEN-2016-057345.00 345KV	1.316075	1.295937	0.0201374	1.29003	0.9	1.05	0.05108	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	08ALL	3	16WP	G16_048	LATHAMS7 345.00 345KV	0.959373	0.933596	0.025777	0.97613	0.95	1.05	0.06649	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	16WP	G16_048	LATHAMS7 345.00 345KV	0.968632	0.945971	0.0226614	0.97613	0.95	1.05	0.06649	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_048	LATHAMS7 345.00 345KV	0.955495	0.930404	0.0250909	0.97344	0.95	1.05	0.05654	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_048	LATHAMS7 345.00 345KV	0.964534	0.944871	0.0196626	0.97344	0.95	1.05	0.05654	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	20WP	G16_048	LATHAMS7 345.00 345KV	0.957222	0.930345	0.0268775	0.973	0.95	1.05	0.06601	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	20WP	G16_048	LATHAMS7 345.00 345KV	0.965815	0.943574	0.0222406	0.973	0.95	1.05	0.06601	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_048	NEOSHO 345KV	0.971991	0.947824	0.0241665	0.98191	0.95	1.05	0.05654	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_049	GEN-2016-045345.00 345KV	1.302275	1.283203	0.0190725	1.27699	0.9	1.05	0.08675	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_049	GEN-2016-045345.00 345KV	1.327337	1.307744	0.0195928	1.30141	0.9	1.05	0.08675	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_049	GEN-2016-045345.00 345KV	1.328225	1.308855	0.01937	1.27699	0.9	1.05	0.05882	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_049	GEN-2016-045345.00 345KV	1.353786	1.333895	0.0198903	1.30141	0.9	1.05	0.05882	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_049	GEN-2016-045345.00 345KV	1.303159	1.284075	0.0190835	1.27699	0.9	1.05	0.04401	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_049	GEN-2016-045345.00 345KV	1.328238	1.308634	0.0196037	1.30141	0.9	1.05	0.04401	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_049	GEN-2016-045345.00 345KV	1.327852	1.308625	0.0192273	1.30141	0.9	1.05	0.03015	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_049	GEN-2016-045345.00 345KV	1.328063	1.308725	0.0193386	1.30141	0.9	1.05	0.03015	G15063_T 345.00 - WOODRING 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	00	0	17SP	G16_049	GEN-2016-045345.00 345KV	1.303982	1.283132	0.0208503	1.27799	0.9	1.05	0.08500	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_049	GEN-2016-045345.00 345KV	1.329077	1.307672	0.0214047	1.30243	0.9	1.05	0.08500	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_049	GEN-2016-045345.00 345KV	1.333544	1.311597	0.021947	1.27799	0.9	1.05	0.05613	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_049	GEN-2016-045345.00 345KV	1.359207	1.336691	0.0225165	1.30243	0.9	1.05	0.05613	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_049	GEN-2016-045345.00 345KV	1.307155	1.285756	0.0213988	1.27799	0.9	1.05	0.04361	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_049	GEN-2016-045345.00 345KV	1.33231	1.310347	0.0219632	1.30243	0.9	1.05	0.04361	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_049	GEN-2016-045345.00 345KV	1.307321	1.286507	0.0208138	1.27799	0.9	1.05	0.03169	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_049	GEN-2016-045345.00 345KV	1.33248	1.311113	0.0213668	1.30243	0.9	1.05	0.03169	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_049	GEN-2016-045345.00 345KV	1.307442	1.286574	0.0208676	1.27799	0.9	1.05	0.03169	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_049	GEN-2016-045345.00 345KV	1.332603	1.311181	0.0214216	1.30243	0.9	1.05	0.03169	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_049	GEN-2016-045345.00 345KV	1.307585	1.287215	0.0203704	1.27799	0.9	1.05	0.03028	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_049	GEN-2016-045345.00 345KV	1.332749	1.311835	0.0209147	1.30243	0.9	1.05	0.03028	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_049	GEN-2016-045345.00 345KV	1.307585	1.287215	0.0203704	1.27799	0.9	1.05	0.03028	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_049	GEN-2016-045345.00 345KV	1.332749	1.311835	0.0209147	1.30243	0.9	1.05	0.03028	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_049	GEN-2016-045345.00 345KV	1.309628	1.288992	0.0206367	1.28029	0.9	1.05	0.12237	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_049	GEN-2016-045345.00 345KV	1.334832	1.313646	0.0211858	1.30477	0.9	1.05	0.12237	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_049	GEN-2016-045345.00 345KV	1.33437	1.312243	0.0221272	1.28029	0.9	1.05	0.06713	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_049	GEN-2016-045345.00 345KV	1.360049	1.33735	0.0226998	1.30477	0.9	1.05	0.06713	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_049	GEN-2016-045345.00 345KV	1.308164	1.286876	0.0212878	1.28029	0.9	1.05	0.04779	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_049	GEN-2016-045345.00 345KV	1.333339	1.311489	0.0218499	1.30477	0.9	1.05	0.04779	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_049	GEN-2016-045345.00 345KV	1.309077	1.2882	0.020877	1.28029	0.9	1.05	0.03954	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_049	GEN-2016-045345.00 345KV	1.334269	1.312838	0.0214309	1.30477	0.9	1.05	0.03954	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_049	GEN-2016-045345.00 345KV	1.309077	1.2882	0.0208769	1.28029	0.9	1.05	0.03954	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_049	GEN-2016-045345.00 345KV	1.334269	1.312838	0.021431	1.30477	0.9	1.05	0.03954	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G16_049	GEN-2016-045345.00 345KV	1.305864	1.28671	0.0191541	1.27615	0.9	1.05	0.11993	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_049	GEN-2016-045345.00 345KV	1.330995	1.31132	0.019675	1.30055	0.9	1.05	0.11993	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_049	GEN-2016-045345.00 345KV	1.323208	1.303765	0.0194432	1.27615	0.9	1.05	0.06675	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_049	GEN-2016-045345.00 345KV	1.348673	1.328706	0.0199662	1.30055	0.9	1.05	0.06675	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_049	GEN-2016-045345.00 345KV	1.325717	1.30636	0.0193567	1.30055	0.9	1.05	0.04554	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_049	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.03778	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_049	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.03778	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	25SP	G16_049	GEN-2016-045345.00 345KV	1.324474	1.304677	0.0197963	1.27732	0.9	1.05	0.06803	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_049	GEN-2016-045345.00 345KV	1.349963	1.329637	0.0203258	1.30175	0.9	1.05	0.06803	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_049	GEN-2016-045345.00 345KV	1.303018	1.283173	0.019845	1.27732	0.9	1.05	0.05158	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_049	GEN-2016-045345.00 345KV	1.328094	1.307714	0.0203803	1.30175	0.9	1.05	0.05158	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_049	GEN-2016-057345.00 345KV	1.315324	1.295967	0.0193568	1.28969	0.9	1.05	0.08675	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_049	GEN-2016-057345.00 345KV	1.341534	1.32188	0.019654	1.28969	0.9	1.05	0.05882	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_049	GEN-2016-057345.00 345KV	1.316217	1.296849	0.0193679	1.28969	0.9	1.05	0.04401	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_049	GEN-2016-057345.00 345KV	1.316044	1.296939	0.0191053	1.28969	0.9	1.05	0.03015	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_049	GEN-2016-057345.00 345KV	1.317048	1.295896	0.0211525	1.2907	0.9	1.05	0.08500	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_049	GEN-2016-057345.00 345KV	1.346906	1.32465	0.0222567	1.2907	0.9	1.05	0.05613	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_049	GEN-2016-057345.00 345KV	1.320253	1.298546	0.0217063	1.2907	0.9	1.05	0.04361	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_049	GEN-2016-057345.00 345KV	1.320421	1.299306	0.0211154	1.2907	0.9	1.05	0.03169	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_049	GEN-2016-057345.00 345KV	1.320542	1.299373	0.0211695	1.2907	0.9	1.05	0.03169	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_049	GEN-2016-057345.00 345KV	1.320688	1.30002	0.0206672	1.2907	0.9	1.05	0.03028	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_049	GEN-2016-057345.00 345KV	1.320688	1.30002	0.0206672	1.2907	0.9	1.05	0.03028	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_049	GEN-2016-057345.00 345KV	1.322751	1.301815	0.0209361	1.29302	0.9	1.05	0.12237	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_049	GEN-2016-057345.00 345KV	1.347741	1.325302	0.0224383	1.29302	0.9	1.05	0.06713	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_049	GEN-2016-057345.00 345KV	1.321272	1.299678	0.0215942	1.29302	0.9	1.05	0.04779	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_049	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.03954	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_049	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.03954	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G16_049	GEN-2016-057345.00 345KV	1.318949	1.29951	0.0194386	1.28884	0.9	1.05	0.11993	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_049	GEN-2016-057345.00 345KV	1.336467	1.316738	0.0197288	1.28884	0.9	1.05	0.06675	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_049	GEN-2016-057345.00 345KV	1.313719	1.294596	0.019123	1.28884	0.9	1.05	0.04554	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_049	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.03778	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_049	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.03778	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	25SP	G16_049	GEN-2016-057345.00 345KV	1.337745	1.31766	0.0200852	1.29003	0.9	1.05	0.06803	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_049	GEN-2016-057345.00 345KV	1.316075	1.295937	0.0201374	1.29003	0.9	1.05	0.05158	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	02ALL	2	17G	G16_049	MATHWSN7 345.00 345KV	1	1.057966	0.0579665	1.05205	0.9	1.05	0.08695	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL	2	17G	G16_049	MATHWSN7 345.00 345KV	1	1.060389	0.0603888	1.05205	0.9	1.05	0.08695	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	09ALL	4	25SP	G16_050	ATWOOD 115KV	0.937465	0.89625	0.0412151	0.93305	0.9	1.05	0.37159	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G16_050	ATWOOD SWITCH 115KV	0.936343	0.896664	0.0396796	0.93238	0.9	1.05	0.37159	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G16_050	BVERVLLY 115.00 115KV	0.94028	0.89886	0.0414202	0.9356	0.9	1.05	0.37159	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	00	0	16WP	G16_050	GEN-2016-045345.00 345KV	1.302275	1.283203	0.0190725	1.27699	0.9	1.05	0.05860	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_050	GEN-2016-045345.00 345KV	1.327337	1.307744	0.0195928	1.30141	0.9	1.05	0.05860	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_050	GEN-2016-045345.00 345KV	1.328225	1.308855	0.01937	1.27699	0.9	1.05	0.04286	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_050	GEN-2016-045345.00 345KV	1.353786	1.333895	0.0198903	1.30141	0.9	1.05	0.04286	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_050	GEN-2016-045345.00 345KV	1.303159	1.284075	0.0190835	1.27699	0.9	1.05	0.03107	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_050	GEN-2016-045345.00 345KV	1.328238	1.308634	0.0196037	1.30141	0.9	1.05	0.03107	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_050	GEN-2016-045345.00 345KV	1.327852	1.308625	0.0192273	1.30141	0.9	1.05	0.03036	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_050	GEN-2016-045345.00 345KV	1.328063	1.308725	0.0193386	1.30141	0.9	1.05	0.03036	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_050	GEN-2016-045345.00 345KV	1.303982	1.283132	0.0208503	1.27799	0.9	1.05	0.05674	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_049	GEN-2016-045345.00 345KV	1.329077	1.307672	0.0214047	1.30243	0.9	1.05	0.05674	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	00	0	17SP	G16_050	GEN-2016-045345.00 345KV	1.333544	1.311597	0.021947	1.27799	0.9	1.05	0.04013	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_050	GEN-2016-045345.00 345KV	1.359207	1.336691	0.0225165	1.30243	0.9	1.05	0.04013	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_050	GEN-2016-045345.00 345KV	1.307321	1.286507	0.0208138	1.27799	0.9	1.05	0.03208	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_050	GEN-2016-045345.00 345KV	1.33248	1.311113	0.0213668	1.30243	0.9	1.05	0.03208	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_050	GEN-2016-045345.00 345KV	1.307442	1.286574	0.0208676	1.27799	0.9	1.05	0.03208	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_050	GEN-2016-045345.00 345KV	1.332603	1.311181	0.0214216	1.30243	0.9	1.05	0.03208	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_050	GEN-2016-045345.00 345KV	1.307155	1.285756	0.0213988	1.27799	0.9	1.05	0.03068	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_050	GEN-2016-045345.00 345KV	1.33231	1.310347	0.0219632	1.30243	0.9	1.05	0.03068	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_050	GEN-2016-045345.00 345KV	1.309628	1.288992	0.0206367	1.28029	0.9	1.05	0.08002	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_050	GEN-2016-045345.00 345KV	1.334832	1.313646	0.0211858	1.30477	0.9	1.05	0.08002	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_050	GEN-2016-045345.00 345KV	1.33437	1.312243	0.0221272	1.28029	0.9	1.05	0.04652	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_050	GEN-2016-045345.00 345KV	1.360049	1.33735	0.0226998	1.30477	0.9	1.05	0.04652	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_050	GEN-2016-045345.00 345KV	1.308164	1.286876	0.0212878	1.28029	0.9	1.05	0.03313	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_050	GEN-2016-045345.00 345KV	1.333339	1.311489	0.0218499	1.30477	0.9	1.05	0.03313	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_050	GEN-2016-045345.00 345KV	1.309077	1.2882	0.020877	1.28029	0.9	1.05	0.03036	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_050	GEN-2016-045345.00 345KV	1.334269	1.312838	0.0214309	1.30477	0.9	1.05	0.03036	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_050	GEN-2016-045345.00 345KV	1.309077	1.2882	0.0208769	1.28029	0.9	1.05	0.03036	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_050	GEN-2016-045345.00 345KV	1.334269	1.312838	0.021431	1.30477	0.9	1.05	0.03036	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G16_050	GEN-2016-045345.00 345KV	1.305864	1.28671	0.0191541	1.27615	0.9	1.05	0.07758	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_050	GEN-2016-045345.00 345KV	1.330995	1.31132	0.019675	1.30055	0.9	1.05	0.07758	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_050	GEN-2016-045345.00 345KV	1.323208	1.303765	0.0194432	1.27615	0.9	1.05	0.04613	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_050	GEN-2016-045345.00 345KV	1.348673	1.328706	0.0199662	1.30055	0.9	1.05	0.04613	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_050	GEN-2016-045345.00 345KV	1.325717	1.30636	0.0193567	1.30055	0.9	1.05	0.03088	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_050	GEN-2016-045345.00 345KV	1.324474	1.304677	0.0197963	1.27732	0.9	1.05	0.04771	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_050	GEN-2016-045345.00 345KV	1.349963	1.329637	0.0203258	1.30175	0.9	1.05	0.04771	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_050	GEN-2016-045345.00 345KV	1.303018	1.283173	0.019845	1.27732	0.9	1.05	0.03687	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_050	GEN-2016-045345.00 345KV	1.328094	1.307714	0.0203803	1.30175	0.9	1.05	0.03687	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_050	GEN-2016-057345.00 345KV	1.315324	1.295967	0.0193568	1.28969	0.9	1.05	0.05860	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_050	GEN-2016-057345.00 345KV	1.341534	1.32188	0.019654	1.28969	0.9	1.05	0.04286	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_050	GEN-2016-057345.00 345KV	1.316217	1.296849	0.0193679	1.28969	0.9	1.05	0.03107	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_050	GEN-2016-057345.00 345KV	1.316044	1.296939	0.0191053	1.28969	0.9	1.05	0.03036	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_050	GEN-2016-057345.00 345KV	1.317048	1.295896	0.0211525	1.2907	0.9	1.05	0.05674	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_050	GEN-2016-057345.00 345KV	1.346906	1.32465	0.0222567	1.2907	0.9	1.05	0.04013	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_050	GEN-2016-057345.00 345KV	1.320421	1.299306	0.0211154	1.2907	0.9	1.05	0.03208	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_050	GEN-2016-057345.00 345KV	1.320542	1.299373	0.0211695	1.2907	0.9	1.05	0.03208	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_050	GEN-2016-057345.00 345KV	1.320253	1.298546	0.0217063	1.2907	0.9	1.05	0.03068	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_050	GEN-2016-057345.00 345KV	1.322751	1.301815	0.0209361	1.29302	0.9	1.05	0.08002	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_050	GEN-2016-057345.00 345KV	1.347741	1.325302	0.0224383	1.29302	0.9	1.05	0.04652	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_050	GEN-2016-057345.00 345KV	1.321272	1.299678	0.0215942	1.29302	0.9	1.05	0.03313	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_050	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.03036	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_050	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.03036	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G16_050	GEN-2016-057345.00 345KV	1.318949	1.29951	0.0194386	1.28884	0.9	1.05	0.07758	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_050	GEN-2016-057345.00 345KV	1.336467	1.316738	0.0197288	1.28884	0.9	1.05	0.04613	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_050	GEN-2016-057345.00 345KV	1.313719	1.294596	0.019123	1.28884	0.9	1.05	0.03088	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_050	GEN-2016-057345.00 345KV	1.337745	1.31766	0.0200852	1.29003	0.9	1.05	0.04771	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_050	GEN-2016-057345.00 345KV	1.316075	1.295937	0.0201374	1.29003	0.9	1.05	0.03687	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	09ALL	4	25SP	G16_050	LUDELL 3 115.00 115KV	0.936082	0.897028	0.0390532	0.93227	0.9	1.05	0.37159	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G16_050	LUDELL 3 115.00 115KV	0.938739	0.899773	0.0389661	0.93227	0.9	1.05	0.06454	MINGO - SETAB 345KV CKT 1
FDNS	09ALL	4	25SP	G16_050	LUDELLT3 115.00 115KV	0.936098	0.897045	0.0390525	0.93229	0.9	1.05	0.37159	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G16_050	LUDELLT3 115.00 115KV	0.938755	0.89979	0.0389654	0.93229	0.9	1.05	0.06454	MINGO - SETAB 345KV CKT 1
FDNS	02ALL	2	17G	G16_050	MATHWSN7 345.00 345KV	1	1.057966	0.0579665	1.05205	0.9	1.05	0.05880	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL	2	17G	G16_050	MATHWSN7 345.00 345KV	1	1.060389	0.0603888	1.05205	0.9	1.05	0.05880	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	09ALL	4	25SP	G16_050	MCDONLD3 115.00 115KV	0.940883	0.899428	0.041455	0.93614	0.9	1.05	0.37159	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G16_050	NORTH ATWOOD 115KV	0.936247	0.896563	0.0396842	0.93228	0.9	1.05	0.37159	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G16_050	NORTH ATWOOD 115KV	0.939221	0.899939	0.0392824	0.93228	0.9	1.05	0.06454	MINGO - SETAB 345KV CKT 1
FDNS	09ALL	4	25SP	G16_050	ONEOK 3 115.00 115KV	0.940149	0.898709	0.0414398	0.93547	0.9	1.05	0.37159	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	00	0	16WP	G16_051	GEN-2016-045345.00 345KV	1.303159	1.284075	0.0190835	1.27699	0.9	1.05	0.06154	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_051	GEN-2016-045345.00 345KV	1.328238	1.308634	0.0196037	1.30141	0.9	1.05	0.06154	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_051	GEN-2016-045345.00 345KV	1.328225	1.308855	0.01937	1.27699	0.9	1.05	0.03999	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_051	GEN-2016-045345.00 345KV	1.353786	1.333895	0.0198903	1.30141	0.9	1.05	0.03999	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_051	GEN-2016-045345.00 345KV	1.307155	1.285756	0.0213988	1.27799	0.9	1.05	0.06073	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_051	GEN-2016-045345.00 345KV	1.33231	1.310347	0.0219632	1.30243	0.9	1.05	0.06073	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_051	GEN-2016-045345.00 345KV	1.333544	1.311597	0.021947	1.27799	0.9	1.05	0.03671	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_051	GEN-2016-045345.00 345KV	1.359207	1.336691	0.0225165	1.30243	0.9	1.05	0.03671	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_051	GEN-2016-045345.00 345KV	1.309935	1.288951	0.0209841	1.28029	0.9	1.05	0.08992	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_051	GEN-2016-045345.00 345KV	1.335144	1.313604	0.0215397	1.30477	0.9	1.05	0.08992	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_051	GEN-2016-045345.00 345KV	1.310007	1.288969	0.0210375	1.28029	0.9	1.05	0.08992	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G16_051	GEN-2016-045345.00 345KV	1.335217	1.313623	0.0215942	1.30477	0.9	1.05	0.08992	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G16_051	GEN-2016-045345.00 345KV	1.308164	1.286876	0.0212878	1.28029	0.9	1.05	0.06210	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_051	GEN-2016-045345.00 345KV	1.333339	1.311489	0.0218499	1.30477	0.9	1.05	0.06210	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_051	GEN-2016-045345.00 345KV	1.33437	1.312243	0.0221272	1.28029	0.9	1.05	0.03581	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_051	GEN-2016-045345.00 345KV	1.360049	1.33735	0.0226998	1.30477	0.9	1.05	0.03581	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_051	GEN-2016-045345.00 345KV	1.326278	1.306902	0.0193765	1.30055	0.9	1.05	0.09137	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	00	0	20WP	G16_051	GEN-2016-045345.00 345KV	1.326357	1.306911	0.0194464	1.30055	0.9	1.05	0.09137	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	G16_051	GEN-2016-045345.00 345KV	1.325717	1.30636	0.0193567	1.30055	0.9	1.05	0.05987	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_051	GEN-2016-045345.00 345KV	1.323208	1.303765	0.0194432	1.27615	0.9	1.05	0.03545	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_051	GEN-2016-045345.00 345KV	1.348673	1.328706	0.0199662	1.30055	0.9	1.05	0.03545	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_051	GEN-2016-045345.00 345KV	1.303018	1.283173	0.019845	1.27732	0.9	1.05	0.06543	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_051	GEN-2016-045345.00 345KV	1.328094	1.307714	0.0203803	1.30175	0.9	1.05	0.06543	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_051	GEN-2016-045345.00 345KV	1.324474	1.304677	0.0197963	1.27732	0.9	1.05	0.03975	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_051	GEN-2016-045345.00 345KV	1.349963	1.329637	0.0203258	1.30175	0.9	1.05	0.03975	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_051	GEN-2016-057345.00 345KV	1.316217	1.296849	0.0193679	1.28969	0.9	1.05	0.06154	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_051	GEN-2016-057345.00 345KV	1.341534	1.32188	0.019654	1.28969	0.9	1.05	0.03999	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_051	GEN-2016-057345.00 345KV	1.320253	1.298546	0.0217063	1.2907	0.9	1.05	0.06073	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_051	GEN-2016-057345.00 345KV	1.346906	1.32465	0.0222567	1.2907	0.9	1.05	0.03671	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_051	GEN-2016-057345.00 345KV	1.323061	1.301774	0.0212868	1.29302	0.9	1.05	0.08992	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_051	GEN-2016-057345.00 345KV	1.323133	1.301793	0.0213408	1.29302	0.9	1.05	0.08992	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G16_051	GEN-2016-057345.00 345KV	1.321272	1.299678	0.0215942	1.29302	0.9	1.05	0.06210	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_051	GEN-2016-057345.00 345KV	1.347741	1.325302	0.0224383	1.29302	0.9	1.05	0.03581	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_051	GEN-2016-057345.00 345KV	1.314275	1.295132	0.0191426	1.28884	0.9	1.05	0.09137	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_051	GEN-2016-057345.00 345KV	1.314354	1.295142	0.019212	1.28884	0.9	1.05	0.09137	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	G16_051	GEN-2016-057345.00 345KV	1.313719	1.294596	0.019123	1.28884	0.9	1.05	0.05987	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_051	GEN-2016-057345.00 345KV	1.336467	1.316738	0.0197288	1.28884	0.9	1.05	0.03545	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_051	GEN-2016-057345.00 345KV	1.316075	1.295937	0.0201374	1.29003	0.9	1.05	0.06543	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_051	GEN-2016-057345.00 345KV	1.337745	1.31766	0.0200852	1.29003	0.9	1.05	0.03975	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	16ALL	0	16WP	G16_052	G16-017-TAP 345.00 345KV	1.123772	1.097005	0.0267669	1.01172	0.9	1.05	0.23941	GEN-2016-017TAP-FTTHOMPSONREACTOR-FTTHOMPSON-CKT1
FDNS	16ALL	0	16WP	G16_052	G16-017-TAP 345.00 345KV	1.123674	1.096841	0.0268327	1.01172	0.9	1.05	0.11970	FTTHOM1-LNX3345.00 - G16-017-TAP 345.00 345KV CKT 1
FDNS	16ALL	0	17G	G16_052	G16-017-TAP 345.00 345KV	1.116778	1.089922	0.0268551	0.99101	0.9	1.05	0.23427	GEN-2016-017TAP-FTTHOMPSONREACTOR-FTTHOMPSON-CKT1
FDNS	16ALL	0	17G	G16_052	G16-017-TAP 345.00 345KV	1.116621	1.089741	0.0268803	0.99101	0.9	1.05	0.11714	FTTHOM1-LNX3345.00 - G16-017-TAP 345.00 345KV CKT 1
FDNS	16ALL	0	17SP	G16_052	G16-017-TAP 345.00 345KV	1.114908	1.0868	0.028108	0.96969	0.9	1.05	0.24118	GEN-2016-017TAP-FTTHOMPSONREACTOR-FTTHOMPSON-CKT1
FDNS	16ALL	0	17SP	G16_052	G16-017-TAP 345.00 345KV	1.114715	1.086619	0.028096	0.96969	0.9	1.05	0.12059	FTTHOM1-LNX3345.00 - G16-017-TAP 345.00 345KV CKT 1
FDNS	16ALL	0	20L	G16_052	G16-017-TAP 345.00 345KV	1.13037	1.104604	0.0257661	1.00752	0.9	1.05	0.21955	GEN-2016-017TAP-FTTHOMPSONREACTOR-FTTHOMPSON-CKT1
FDNS	16ALL	0	20L	G16_052	G16-017-TAP 345.00 345KV	1.130268	1.10449	0.0257777	1.00752	0.9	1.05	0.10977	FTTHOM1-LNX3345.00 - G16-017-TAP 345.00 345KV CKT 1
FDNS	16ALL	0	20SP	G16_052	G16-017-TAP 345.00 345KV	1.122036	1.094931	0.0271053	0.99251	0.9	1.05	0.23694	GEN-2016-017TAP-FTTHOMPSONREACTOR-FTTHOMPSON-CKT1
FDNS	16ALL	0	20SP	G16_052	G16-017-TAP 345.00 345KV	1.121957	1.094833	0.0271235	0.99251	0.9	1.05	0.11847	FTTHOM1-LNX3345.00 - G16-017-TAP 345.00 345KV CKT 1
FDNS	16ALL	0	20WP	G16_052	G16-017-TAP 345.00 345KV	1.12983	1.104317	0.0255128	1.0188	0.9	1.05	0.23412	GEN-2016-017TAP-FTTHOMPSONREACTOR-FTTHOMPSON-CKT1
FDNS	16ALL	0	20WP	G16_052	G16-017-TAP 345.00 345KV	1.129783	1.105048	0.0247344	1.0188	0.9	1.05	0.11706	FTTHOM1-LNX3345.00 - G16-017-TAP 345.00 345KV CKT 1
FDNS	16ALL	0	25SP	G16_052	G16-017-TAP 345.00 345KV	1.119728	1.092472	0.027256	0.98589	0.9	1.05	0.23764	GEN-2016-017TAP-FTTHOMPSONREACTOR-FTTHOMPSON-CKT1
FDNS	16ALL	0	25SP	G16_052	G16-017-TAP 345.00 345KV	1.119602	1.092728	0.0268749	0.98589	0.9	1.05	0.11882	FTTHOM1-LNX3345.00 - G16-017-TAP 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_052	GEN-2016-045345.00 345KV	1.309628	1.288992	0.0206367	1.28029	0.9	1.05	0.03136	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_052	GEN-2016-045345.00 345KV	1.334832	1.313646	0.0211858	1.30477	0.9	1.05	0.03136	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_052	GEN-2016-057345.00 345KV	1.322751	1.301815	0.0209361	1.29302	0.9	1.05	0.03136	DBL-WWRD-TGA
FDNS	16ALL	0	16WP	G16_053	G16-017-TAP 345.00 345KV	1.123772	1.097005	0.0267669	1.01172	0.9	1.05	0.23941	GEN-2016-017TAP-FTTHOMPSONREACTOR-FTTHOMPSON-CKT1
FDNS	16ALL	0	16WP	G16_053	G16-017-TAP 345.00 345KV	1.123674	1.096841	0.0268327	1.01172	0.9	1.05	0.11970	FTTHOM1-LNX3345.00 - G16-017-TAP 345.00 345KV CKT 1
FDNS	16ALL	0	17G	G16_053	G16-017-TAP 345.00 345KV	1.116778	1.089922	0.0268551	0.99101	0.9	1.05	0.23427	GEN-2016-017TAP-FTTHOMPSONREACTOR-FTTHOMPSON-CKT1
FDNS	16ALL	0	17G	G16_053	G16-017-TAP 345.00 345KV	1.116621	1.089741	0.0268803	0.99101	0.9	1.05	0.11714	FTTHOM1-LNX3345.00 - G16-017-TAP 345.00 345KV CKT 1
FDNS	16ALL	0	17SP	G16_053	G16-017-TAP 345.00 345KV	1.114908	1.0868	0.028108	0.96969	0.9	1.05	0.24118	GEN-2016-017TAP-FTTHOMPSONREACTOR-FTTHOMPSON-CKT1
FDNS	16ALL	0	17SP	G16_053	G16-017-TAP 345.00 345KV	1.114715	1.086619	0.028096	0.96969	0.9	1.05	0.12059	FTTHOM1-LNX3345.00 - G16-017-TAP 345.00 345KV CKT 1
FDNS	16ALL	0	20L	G16_053	G16-017-TAP 345.00 345KV	1.13037	1.104604	0.0257661	1.00752	0.9	1.05	0.21955	GEN-2016-017TAP-FTTHOMPSONREACTOR-FTTHOMPSON-CKT1
FDNS	16ALL	0	20L	G16_053	G16-017-TAP 345.00 345KV	1.130268	1.10449	0.0257777	1.00752	0.9	1.05	0.10977	FTTHOM1-LNX3345.00 - G16-017-TAP 345.00 345KV CKT 1
FDNS	16ALL	0	20SP	G16_053	G16-017-TAP 345.00 345KV	1.122036	1.094931	0.0271053	0.99251	0.9	1.05	0.23694	GEN-2016-017TAP-FTTHOMPSONREACTOR-FTTHOMPSON-CKT1
FDNS	16ALL	0	20SP	G16_053	G16-017-TAP 345.00 345KV	1.121957	1.094833	0.0271235	0.99251	0.9	1.05	0.11847	FTTHOM1-LNX3345.00 - G16-017-TAP 345.00 345KV CKT 1
FDNS	16ALL	0	20WP	G16_053	G16-017-TAP 345.00 345KV	1.12983	1.104317	0.0255128	1.0188	0.9	1.05	0.23412	GEN-2016-017TAP-FTTHOMPSONREACTOR-FTTHOMPSON-CKT1
FDNS	16ALL	0	20WP	G16_053	G16-017-TAP 345.00 345KV	1.129783	1.105048	0.0247344	1.0188	0.9	1.05	0.11706	FTTHOM1-LNX3345.00 - G16-017-TAP 345.00 345KV CKT 1
FDNS	16ALL	0	25SP	G16_053	G16-017-TAP 345.00 345KV	1.119728	1.092472	0.027256	0.98589	0.9	1.05	0.23764	GEN-2016-017TAP-FTTHOMPSONREACTOR-FTTHOMPSON-CKT1
FDNS	16ALL	0	25SP	G16_053	G16-017-TAP 345.00 345KV	1.119602	1.092728	0.0268749	0.98589	0.9	1.05	0.11882	FTTHOM1-LNX3345.00 - G16-017-TAP 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_053	GEN-2016-045345.00 345KV	1.309628	1.288992	0.0206367	1.28029	0.9	1.05	0.03136	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_053	GEN-2016-045345.00 345KV	1.334832	1.313646	0.0211858	1.30477	0.9	1.05	0.03136	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_053	GEN-2016-057345.00 345KV	1.322751	1.301815	0.0209361	1.29302	0.9	1.05	0.03136	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_054	GEN-2016-045345.00 345KV	1.309628	1.288992	0.0206367	1.28029	0.9	1.05	0.03632	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_054	GEN-2016-045345.00 345KV	1.334832	1.313646	0.0211858	1.30477	0.9	1.05	0.03632	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_054	GEN-2016-045345.00 345KV	1.305864	1.28671	0.0191541	1.27615	0.9	1.05	0.03387	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_054	GEN-2016-045345.00 345KV	1.330995	1.31132	0.019675	1.30055	0.9	1.05	0.03387	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_054	GEN-2016-057345.00 345KV	1.322751	1.301815	0.0209361	1.29302	0.9	1.05	0.03632	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_054	GEN-2016-057345.00 345KV	1.318949	1.29951	0.0194386	1.28884	0.9	1.05	0.03387	DBL-WWRD-TGA
FDNS	00	0	16WP	G16_056	GEN-2016-045345.00 345KV	1.302275	1.283203	0.0190725	1.27699	0.9	1.05	0.09295	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_056	GEN-2016-045345.00 345KV	1.327337	1.307744	0.0195928	1.30141	0.9	1.05	0.09295	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_056	GEN-2016-045345.00 345KV	1.328225	1.308855	0.01937	1.27699	0.9	1.05	0.07711	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_056	GEN-2016-045345.00 345KV	1.353786	1.333895	0.0198903	1.30141	0.9	1.05	0.07711	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_056	GEN-2016-045345.00 345KV	1.303159	1.284075	0.0190835	1.27699	0.9	1.05	0.06300	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_056	GEN-2016-045345.00 345KV	1.328238	1.308634	0.0196037	1.30141	0.9	1.05	0.06300	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_056	GEN-2016-045345.00 345KV	1.303982	1.283132	0.0208503	1.27799	0.9	1.05	0.09111	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_056	GEN-2016-045345.00 345KV	1.329077	1.307672	0.0214047	1.30243	0.9	1.05	0.09111	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_056	GEN-2016-045345.00 345KV	1.333544	1.311597	0.021947	1.27799	0.9	1.05	0.07406	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_056	GEN-2016-045345.00 345KV	1.359207	1.336691	0.0225165	1.30243	0.9	1.05	0.07406	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_056	GEN-2016-045345.00 345KV	1.307155	1.285756	0.0213988	1.27799	0.9	1.05	0.06220	CIMARRON - DRAPER LAKE 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	00	0	17SP	G16_056	GEN-2016-045345.00 345KV	1.33231	1.310347	0.0219632	1.30243	0.9	1.05	0.06220	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_056	GEN-2016-045345.00 345KV	1.309628	1.288992	0.0206367	1.28029	0.9	1.05	0.13381	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_056	GEN-2016-045345.00 345KV	1.334832	1.313646	0.0211858	1.30477	0.9	1.05	0.13381	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_056	GEN-2016-045345.00 345KV	1.33437	1.312243	0.0221272	1.28029	0.9	1.05	0.08690	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_056	GEN-2016-045345.00 345KV	1.360049	1.33735	0.0226998	1.30477	0.9	1.05	0.08690	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_056	GEN-2016-045345.00 345KV	1.309935	1.288951	0.0209841	1.28029	0.9	1.05	0.07427	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_056	GEN-2016-045345.00 345KV	1.335144	1.313604	0.0215397	1.30477	0.9	1.05	0.07427	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_056	GEN-2016-045345.00 345KV	1.310007	1.288969	0.0210375	1.28029	0.9	1.05	0.07427	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G16_056	GEN-2016-045345.00 345KV	1.335217	1.313623	0.0215942	1.30477	0.9	1.05	0.07427	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G16_056	GEN-2016-045345.00 345KV	1.308164	1.286876	0.0212878	1.28029	0.9	1.05	0.06767	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_056	GEN-2016-045345.00 345KV	1.333339	1.311489	0.0218499	1.30477	0.9	1.05	0.06767	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_056	GEN-2016-045345.00 345KV	1.305864	1.28671	0.0191541	1.27615	0.9	1.05	0.13140	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_056	GEN-2016-045345.00 345KV	1.330995	1.31132	0.019675	1.30055	0.9	1.05	0.13140	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_056	GEN-2016-045345.00 345KV	1.323208	1.303765	0.0194432	1.27615	0.9	1.05	0.08653	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_056	GEN-2016-045345.00 345KV	1.348673	1.328706	0.0199662	1.30055	0.9	1.05	0.08653	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_056	GEN-2016-045345.00 345KV	1.326278	1.306902	0.0193765	1.30055	0.9	1.05	0.07571	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_056	GEN-2016-045345.00 345KV	1.326357	1.306911	0.0194464	1.30055	0.9	1.05	0.07571	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	G16_056	GEN-2016-045345.00 345KV	1.325717	1.30636	0.0193567	1.30055	0.9	1.05	0.06544	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_056	GEN-2016-045345.00 345KV	1.324474	1.304677	0.0197963	1.27732	0.9	1.05	0.08929	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_056	GEN-2016-045345.00 345KV	1.349963	1.329637	0.0203258	1.30175	0.9	1.05	0.08929	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_056	GEN-2016-045345.00 345KV	1.303018	1.283173	0.019845	1.27732	0.9	1.05	0.07124	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_056	GEN-2016-045345.00 345KV	1.328094	1.307714	0.0203803	1.30175	0.9	1.05	0.07124	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_056	GEN-2016-057345.00 345KV	1.315324	1.295967	0.0193568	1.28969	0.9	1.05	0.09295	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_056	GEN-2016-057345.00 345KV	1.341534	1.32188	0.019654	1.28969	0.9	1.05	0.07711	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_056	GEN-2016-057345.00 345KV	1.316217	1.296849	0.0193679	1.28969	0.9	1.05	0.06300	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_056	GEN-2016-057345.00 345KV	1.317048	1.295896	0.0211525	1.2907	0.9	1.05	0.09111	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_056	GEN-2016-057345.00 345KV	1.346906	1.32465	0.0222567	1.2907	0.9	1.05	0.07406	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_056	GEN-2016-057345.00 345KV	1.320253	1.298546	0.0217063	1.2907	0.9	1.05	0.06220	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_056	GEN-2016-057345.00 345KV	1.322751	1.301815	0.0209361	1.29302	0.9	1.05	0.13381	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_056	GEN-2016-057345.00 345KV	1.347741	1.325302	0.0224383	1.29302	0.9	1.05	0.08690	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_056	GEN-2016-057345.00 345KV	1.323061	1.301774	0.0212868	1.29302	0.9	1.05	0.07427	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_056	GEN-2016-057345.00 345KV	1.323133	1.301793	0.0213408	1.29302	0.9	1.05	0.07427	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G16_056	GEN-2016-057345.00 345KV	1.321272	1.299678	0.0215942	1.29302	0.9	1.05	0.06767	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_056	GEN-2016-057345.00 345KV	1.318949	1.29951	0.0194386	1.28884	0.9	1.05	0.13140	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_056	GEN-2016-057345.00 345KV	1.336467	1.316738	0.0197288	1.28884	0.9	1.05	0.08653	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_056	GEN-2016-057345.00 345KV	1.314275	1.295132	0.0191426	1.28884	0.9	1.05	0.07571	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_056	GEN-2016-057345.00 345KV	1.314354	1.295142	0.019212	1.28884	0.9	1.05	0.07571	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	G16_056	GEN-2016-057345.00 345KV	1.313719	1.294596	0.019123	1.28884	0.9	1.05	0.06544	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_056	GEN-2016-057345.00 345KV	1.337745	1.31766	0.0200852	1.29003	0.9	1.05	0.08929	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_056	GEN-2016-057345.00 345KV	1.316075	1.295937	0.0201374	1.29003	0.9	1.05	0.07124	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	02ALL	2	17G	G16_056	MATHWSN7 345.00 345KV	1	1.057966	0.0579665	1.05205	0.9	1.05	0.09448	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL	2	17G	G16_056	MATHWSN7 345.00 345KV	1	1.060389	0.0603888	1.05205	0.9	1.05	0.09448	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	06ALL	6	17G	G16_056	MCLEAN RURAL SUB 115KV	0.933339	0.89248	0.0408586	0.94889	0.9	1.05	0.20818	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	17G	G16_056	SHAMROCK 115KV	0.911364	0.864894	0.0464693	0.92956	0.92	1.05	0.20818	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	17G	G16_056	SHAMROCK 115KV	0.921558	0.890208	0.0313495	0.92956	0.92	1.05	0.17405	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	17G	G16_056	SHAMROCK 115KV	0.938216	0.905653	0.0325633	0.92956	0.92	1.05	0.16947	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNS	06ALL	6	17G	G16_056	SHAMROCK 115KV	0.938216	0.905653	0.0325631	0.92956	0.92	1.05	0.16947	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNS	06ALL	6	17G	G16_056	SHAMROCK 115KV	0.932605	0.910884	0.0217218	0.92956	0.92	1.05	0.16330	CHISHOLM7 345.00 - G16-037-TAP 345.00 345KV CKT 1
FDNS	06ALL	6	17G	G16_056	SHAMROCK 115KV	0.933373	0.906096	0.0272766	0.92956	0.92	1.05	0.16330	G16-037-TAP 345.00 - GRACEMONT 345KV CKT 1
FDNS	06ALL	6	17G	G16_056	SHAMROCK 115KV	0.940696	0.909748	0.030948	0.92956	0.92	1.05	0.12912	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1
FDNS	06ALL	6	17G	G16_056	SHAMROCK 115KV	0.939142	0.913869	0.0252723	0.92956	0.92	1.05	0.12912	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNS	06ALL	6	17G	G16_056	SHAMROCK 115KV	0.944283	0.911952	0.0323306	0.92956	0.92	1.05	0.09669	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	06ALL	6	17G	G16_056	SHAMROCK 115KV	0.935809	0.904739	0.0310695	0.92956	0.92	1.05	0.06334	CHISHOLM6 230.00 - ELK CITY 230KV 230KV CKT 1
FDNS	06ALL	6	17G	G16_056	SHAMROCK 115KV	0.931566	0.908706	0.0228604	0.92956	0.92	1.05	0.04903	STATELINE INTERCHANGE - STLN-DEMARC6 230KV CKT 1
FDNS	06ALL	6	17G	G16_056	SHAMROCK 115KV	0.932759	0.911022	0.021737	0.92956	0.92	1.05	0.04903	STLN-DEMARC6 - SWEETWATER 230KV CKT 1
FDNS	06ALL	6	17G	G16_056	SHAMROCK 115KV	0.934321	0.907423	0.0268984	0.92956	0.92	1.05	0.04183	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNS	06ALL	6	20L	G16_056	SHAMROCK 115KV	0.936253	0.901881	0.0343719	0.95391	0.92	1.05	0.15569	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20L	G16_056	SHAMROCK 115KV	0.936253	0.901881	0.0343719	0.95391	0.92	1.05	0.15569	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20L	G16_056	SHAMROCK 115KV	0.923555	0.895417	0.0281389	0.95391	0.92	1.05	0.09107	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNS	06ALL	6	20L	G16_056	SHAMROCK 115KV	0.933464	0.911038	0.0224263	0.95391	0.92	1.05	0.03999	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNS	06ALL	6	20WP	G16_056	SHAMROCK 115KV	0.93991	0.891866	0.0480433	0.9604	0.92	1.05	0.20056	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	G16_056	SHAMROCK 115KV	0.93991	0.891866	0.0480433	0.9604	0.92	1.05	0.20056	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	G16_056	SHAMROCK 115KV	0.939273	0.906513	0.0327598	0.9604	0.92	1.05	0.18464	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	G16_056	SHAMROCK 115KV	0.939273	0.906513	0.0327598	0.9604	0.92	1.05	0.18464	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	G16_056	SHAMROCK 115KV	0.916691	0.893822	0.0228696	0.9604	0.92	1.05	0.11261	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNS	06ALL	6	20WP	G16_056	SHAMROCK 115KV	0.935879	0.913992	0.0218866	0.9604	0.92	1.05	0.05099	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNS	06ALL	6	17G	G16_056	SHAMROCK 69KV	0.927509	0.885744	0.0417651	0.94554	0.92	1.05	0.20818	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	17G	G16_056	SHAMROCK 69KV	0.938055	0.911641	0.0264134	0.94554	0.92	1.05	0.17405	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20L	G16_056	SHAMROCK 69KV	0.940765	0.913238	0.0275269	0.97198	0.92	1.05	0.09107	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNS	06ALL	6	20WP	G16_056	SHAMROCK 69KV	0.960626	0.913935	0.0466906	0.97894	0.92	1.05	0.20056	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	G16_056	SHAMROCK 69KV	0.960626	0.913935	0.0466906	0.97894	0.92	1.05	0.20056	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	G16_056	SHAMROCK 69KV	0.936192	0.911756	0.0244357	0.97894	0.92	1.05	0.11261	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNS	00	0	16WP	G16_057	GEN-2016-045345.00 345KV	1.353786	1.333895	0.0198903	1.30141	0.9	1.05	0.31983	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	00	0	16WP	G16_057	GEN-2016-045345.00 345KV	1.328225	1.308855	0.01937	1.27699	0.9	1.05	0.31983	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_057	GEN-2016-045345.00 345KV	1.330992	1.311745	0.0192469	1.30141	0.9	1.05	0.18367	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_057	GEN-2016-045345.00 345KV	1.330992	1.311745	0.0192469	1.30141	0.9	1.05	0.18367	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	16WP	G16_057	GEN-2016-045345.00 345KV	1.328238	1.308634	0.0196037	1.30141	0.9	1.05	0.13894	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_057	GEN-2016-045345.00 345KV	1.303159	1.284075	0.0190835	1.27699	0.9	1.05	0.13894	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_057	GEN-2016-045345.00 345KV	1.359207	1.336691	0.0225165	1.30243	0.9	1.05	0.31672	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_057	GEN-2016-045345.00 345KV	1.333544	1.311597	0.021947	1.27799	0.9	1.05	0.31672	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_057	GEN-2016-045345.00 345KV	1.332749	1.311835	0.0209147	1.30243	0.9	1.05	0.18503	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_057	GEN-2016-045345.00 345KV	1.307585	1.287215	0.0203704	1.27799	0.9	1.05	0.18503	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_057	GEN-2016-045345.00 345KV	1.332749	1.311835	0.0209147	1.30243	0.9	1.05	0.18503	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_057	GEN-2016-045345.00 345KV	1.307585	1.287215	0.0203704	1.27799	0.9	1.05	0.18503	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_057	GEN-2016-045345.00 345KV	1.33231	1.310347	0.0219632	1.30243	0.9	1.05	0.13826	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_057	GEN-2016-045345.00 345KV	1.307155	1.285756	0.0213988	1.27799	0.9	1.05	0.13826	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_057	GEN-2016-045345.00 345KV	1.330409	1.309006	0.0214026	1.30243	0.9	1.05	0.04066	CIMARRON (CIMARON2) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	00	0	17SP	G16_057	GEN-2016-045345.00 345KV	1.305289	1.284441	0.0208484	1.27799	0.9	1.05	0.04066	CIMARRON (CIMARON2) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	00	0	17SP	G16_057	GEN-2016-045345.00 345KV	1.329081	1.307674	0.0214071	1.30243	0.9	1.05	0.03960	CIMARRON (CIMARON1) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	00	0	17SP	G16_057	GEN-2016-045345.00 345KV	1.303987	1.283134	0.0208526	1.27799	0.9	1.05	0.03960	CIMARRON (CIMARON1) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	00	0	20SP	G16_057	GEN-2016-045345.00 345KV	1.360049	1.33735	0.0226998	1.30477	0.9	1.05	0.29811	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_057	GEN-2016-045345.00 345KV	1.33437	1.312243	0.0221272	1.28029	0.9	1.05	0.29811	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_057	GEN-2016-045345.00 345KV	1.335144	1.313604	0.0215397	1.30477	0.9	1.05	0.18075	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_057	GEN-2016-045345.00 345KV	1.309935	1.288951	0.0209841	1.28029	0.9	1.05	0.18075	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_057	GEN-2016-045345.00 345KV	1.335217	1.313623	0.0215942	1.30477	0.9	1.05	0.18075	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G16_057	GEN-2016-045345.00 345KV	1.310007	1.288969	0.0210375	1.28029	0.9	1.05	0.18075	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G16_057	GEN-2016-045345.00 345KV	1.334269	1.312838	0.0214309	1.30477	0.9	1.05	0.17319	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_057	GEN-2016-045345.00 345KV	1.309077	1.2882	0.020877	1.28029	0.9	1.05	0.17319	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_057	GEN-2016-045345.00 345KV	1.334269	1.312838	0.021431	1.30477	0.9	1.05	0.17319	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_057	GEN-2016-045345.00 345KV	1.309077	1.2882	0.0208769	1.28029	0.9	1.05	0.17319	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_057	GEN-2016-045345.00 345KV	1.333339	1.311489	0.0218499	1.30477	0.9	1.05	0.13376	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_057	GEN-2016-045345.00 345KV	1.308164	1.286876	0.0212878	1.28029	0.9	1.05	0.13376	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_057	GEN-2016-045345.00 345KV	1.332298	1.311058	0.0212395	1.30477	0.9	1.05	0.03786	CIMARRON (CIMARON2) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	00	0	20SP	G16_057	GEN-2016-045345.00 345KV	1.307142	1.286453	0.0206889	1.28029	0.9	1.05	0.03786	CIMARRON (CIMARON2) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	00	0	20SP	G16_057	GEN-2016-045345.00 345KV	1.331083	1.309855	0.021228	1.30477	0.9	1.05	0.03687	CIMARRON (CIMARON1) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	00	0	20WP	G16_057	GEN-2016-045345.00 345KV	1.348673	1.328706	0.0199662	1.30055	0.9	1.05	0.29774	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_057	GEN-2016-045345.00 345KV	1.323208	1.303765	0.0194432	1.27615	0.9	1.05	0.29774	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_057	GEN-2016-045345.00 345KV	1.326278	1.306902	0.0193765	1.30055	0.9	1.05	0.18219	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_057	GEN-2016-045345.00 345KV	1.326357	1.306911	0.0194464	1.30055	0.9	1.05	0.18219	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	G16_057	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.17145	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_057	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.17145	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G16_057	GEN-2016-045345.00 345KV	1.325717	1.30636	0.0193567	1.30055	0.9	1.05	0.13153	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_057	GEN-2016-045345.00 345KV	1.349963	1.329637	0.0203258	1.30175	0.9	1.05	0.29483	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_057	GEN-2016-045345.00 345KV	1.324474	1.304677	0.0197963	1.27732	0.9	1.05	0.29483	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_057	GEN-2016-045345.00 345KV	1.328758	1.308962	0.0197957	1.30175	0.9	1.05	0.16998	DBL-WWRD-TGA
FDNS	00	0	25SP	G16_057	GEN-2016-045345.00 345KV	1.303669	1.284397	0.019272	1.27732	0.9	1.05	0.16998	DBL-WWRD-TGA
FDNS	00	0	25SP	G16_057	GEN-2016-045345.00 345KV	1.328094	1.307714	0.0203803	1.30175	0.9	1.05	0.13818	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_057	GEN-2016-045345.00 345KV	1.303018	1.283173	0.019845	1.27732	0.9	1.05	0.13818	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	01ALL	2	20WP	G16_057	GEN-2016-045345.00 345KV	1.287071	1.255685	0.0313865	1.0597	0.9	1.05	0.03799	GEN587303 1-G16-045-GEN10.6900
FDNS	01ALL	2	20WP	G16_057	GEN-2016-045345.00 345KV	1.31184	1.280449	0.031391	1.06232	0.9	1.05	0.03799	GEN587307 1-G16-045-GEN20.6900
FDNS	00	0	16WP	G16_057	GEN-2016-057345.00 345KV	1.341534	1.32188	0.019654	1.28969	0.9	1.05	0.31983	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_057	GEN-2016-057345.00 345KV	1.318946	1.299931	0.0190147	1.28969	0.9	1.05	0.18367	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_057	GEN-2016-057345.00 345KV	1.318946	1.299931	0.0190147	1.28969	0.9	1.05	0.18367	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	16WP	G16_057	GEN-2016-057345.00 345KV	1.316217	1.296849	0.0193679	1.28969	0.9	1.05	0.13894	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_057	GEN-2016-057345.00 345KV	1.346906	1.32465	0.0222567	1.2907	0.9	1.05	0.31672	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_057	GEN-2016-057345.00 345KV	1.311511	1.290701	0.0208102	1.2907	0.95	1.05	0.25000	BASE CASE
FDNS	00	0	17SP	G16_057	GEN-2016-057345.00 345KV	1.320688	1.30002	0.0206672	1.2907	0.9	1.05	0.18503	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_057	GEN-2016-057345.00 345KV	1.320688	1.30002	0.0206672	1.2907	0.9	1.05	0.18503	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_057	GEN-2016-057345.00 345KV	1.320253	1.298546	0.0217063	1.2907	0.9	1.05	0.13826	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_057	GEN-2016-057345.00 345KV	1.318368	1.297218	0.0211505	1.2907	0.9	1.05	0.04066	CIMARRON (CIMARON2) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	00	0	17SP	G16_057	GEN-2016-057345.00 345KV	1.317053	1.295898	0.0211549	1.2907	0.9	1.05	0.03960	CIMARRON (CIMARON1) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	00	0	20SP	G16_057	GEN-2016-057345.00 345KV	1.347741	1.325302	0.0224383	1.29302	0.9	1.05	0.29811	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_057	GEN-2016-057345.00 345KV	1.313976	1.293021	0.020955	1.29302	0.95	1.05	0.25000	BASE CASE
FDNS	00	0	20SP	G16_057	GEN-2016-057345.00 345KV	1.323061	1.301774	0.0212868	1.29302	0.9	1.05	0.18075	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_057	GEN-2016-057345.00 345KV	1.323133	1.301793	0.0213408	1.29302	0.9	1.05	0.18075	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G16_057	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.17319	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_057	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.17319	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_057	GEN-2016-057345.00 345KV	1.321272	1.299678	0.0215942	1.29302	0.9	1.05	0.13376	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_057	GEN-2016-057345.00 345KV	1.32024	1.299251	0.0209891	1.29302	0.9	1.05	0.03786	CIMARRON (CIMARON2) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	00	0	20SP	G16_057	GEN-2016-057345.00 345KV	1.319036	1.298059	0.0209775	1.29302	0.9	1.05	0.03687	CIMARRON (CIMARON1) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	00	0	20WP	G16_057	GEN-2016-057345.00 345KV	1.336467	1.316738	0.0197288	1.28884	0.9	1.05	0.29774	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_057	GEN-2016-057345.00 345KV	1.314275	1.295132	0.0191426	1.28884	0.9	1.05	0.18219	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_057	GEN-2016-057345.00 345KV	1.314354	1.295142	0.019212	1.28884	0.9	1.05	0.18219	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	G16_057	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.17145	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_057	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.17145	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G16_057	GEN-2016-057345.00 345KV	1.313719	1.294596	0.019123	1.28884	0.9	1.05	0.13153	CIMARRON - DRAPER LAKE 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	00	0	25SP	G16_057	GEN-2016-057345.00 345KV	1.337745	1.31766	0.0200852	1.29003	0.9	1.05	0.29483	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_057	GEN-2016-057345.00 345KV	1.316732	1.297174	0.0195582	1.29003	0.9	1.05	0.16998	DBL-WWRD-TGA
FDNS	00	0	25SP	G16_057	GEN-2016-057345.00 345KV	1.316075	1.295937	0.0201374	1.29003	0.9	1.05	0.13818	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	01ALL	2	16WP	G16_057	GEN-2016-057345.00 345KV	1.301268	1.060003	0.241265	1.06	0.95	1.05	0.25000	BASE CASE
FDNS	01ALL	2	17SP	G16_057	GEN-2016-057345.00 345KV	1.302389	1.062475	0.239914	1.06247	0.95	1.05	0.25000	BASE CASE
FDNS	01ALL	2	20L	G16_057	GEN-2016-057345.00 345KV	1.305482	1.063377	0.242105	1.06338	0.95	1.05	0.25000	BASE CASE
FDNS	01ALL	2	20L	G16_057	GEN-2016-057345.00 345KV	1.305482	1.077075	0.228407	1.06338	0.9	1.05	0.25000	GEN-2016-057345.00 345/34.5KV TRANSFORMER CKT 1
FDNS	01ALL	2	20L	G16_057	GEN-2016-057345.00 345KV	1.305482	1.077075	0.228407	1.06338	0.9	1.05	0.25000	GEN-2016-057345.00 345/34.5KV TRANSFORMER CKT 2
FDNS	01ALL	2	20SP	G16_057	GEN-2016-057345.00 345KV	1.301762	1.063477	0.238285	1.06348	0.95	1.05	0.25000	BASE CASE
FDNS	01ALL	2	20SP	G16_057	GEN-2016-057345.00 345KV	1.301762	1.077177	0.224585	1.06348	0.9	1.05	0.25000	GEN-2016-057345.00 345/34.5KV TRANSFORMER CKT 1
FDNS	01ALL	2	20SP	G16_057	GEN-2016-057345.00 345KV	1.301762	1.077177	0.224585	1.06348	0.9	1.05	0.25000	GEN-2016-057345.00 345/34.5KV TRANSFORMER CKT 2
FDNS	01ALL	2	20WP	G16_057	GEN-2016-057345.00 345KV	1.299968	1.06107	0.238898	1.06107	0.95	1.05	0.25000	BASE CASE
FDNS	01ALL	2	20WP	G16_057	GEN-2016-057345.00 345KV	1.299968	1.073684	0.226284	1.06107	0.9	1.05	0.25000	GEN-2016-057345.00 345/34.5KV TRANSFORMER CKT 1
FDNS	01ALL	2	20WP	G16_057	GEN-2016-057345.00 345KV	1.299968	1.073684	0.226284	1.06107	0.9	1.05	0.25000	GEN-2016-057345.00 345/34.5KV TRANSFORMER CKT 2
FDNS	01ALL	2	20WP	G16_057	GEN-2016-057345.00 345KV	1.299968	1.268578	0.03139	1.06107	0.9	1.05	0.03799	GEN587383 1-G16-045-GEN10.6900
FDNS	01ALL	2	25SP	G16_057	GEN-2016-057345.00 345KV	1.302367	1.063462	0.238905	1.06346	0.95	1.05	0.25000	BASE CASE
FDNS	01ALL	2	25SP	G16_057	GEN-2016-057345.00 345KV	1.302367	1.07716	0.225207	1.06346	0.9	1.05	0.25000	GEN-2016-057345.00 345/34.5KV TRANSFORMER CKT 1
FDNS	01ALL	2	25SP	G16_057	GEN-2016-057345.00 345KV	1.302367	1.07716	0.225207	1.06346	0.9	1.05	0.25000	GEN-2016-057345.00 345/34.5KV TRANSFORMER CKT 2
FDNS	08ALL	3	16WP	G16_060	CANEYRV7 345.00 345KV	0.968493	0.947728	0.0207649	0.97454	0.95	1.05	0.12477	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	3	16WP	G16_060	CANEYRV7 345.00 345KV	0.957889	0.930216	0.0276732	0.97454	0.95	1.05	0.12406	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	16WP	G16_060	CANEYRV7 345.00 345KV	0.967302	0.942965	0.0243372	0.97454	0.95	1.05	0.12406	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	17G	G16_060	CANEYRV7 345.00 345KV	0.971453	0.94816	0.0232931	0.98427	0.95	1.05	0.11925	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	20L	G16_060	CANEYRV7 345.00 345KV	0.961378	0.939471	0.0219065	0.97036	0.95	1.05	0.12694	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_060	CANEYRV7 345.00 345KV	0.951442	0.924033	0.0274088	0.97036	0.95	1.05	0.10873	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_060	CANEYRV7 345.00 345KV	0.961057	0.939411	0.0216459	0.97036	0.95	1.05	0.10873	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	20WP	G16_060	CANEYRV7 345.00 345KV	0.955032	0.926187	0.0288444	0.97062	0.95	1.05	0.11820	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	20WP	G16_060	CANEYRV7 345.00 345KV	0.963877	0.939795	0.0240821	0.97062	0.95	1.05	0.11820	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	20WP	G16_060	CANEYRV7 345.00 345KV	0.96391	0.941114	0.0227962	0.97062	0.95	1.05	0.11298	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	3	16WP	G16_060	ELKRVR17 345.00 345KV	0.968943	0.94939	0.0195534	0.97593	0.95	1.05	0.12477	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	3	16WP	G16_060	ELKRVR17 345.00 345KV	0.959343	0.93365	0.0256935	0.97593	0.95	1.05	0.12406	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	16WP	G16_060	ELKRVR17 345.00 345KV	0.968505	0.946079	0.0224264	0.97593	0.95	1.05	0.12406	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	20L	G16_060	ELKRVR17 345.00 345KV	0.964027	0.943097	0.0209303	0.97326	0.95	1.05	0.12694	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_060	ELKRVR17 345.00 345KV	0.955506	0.930443	0.0250634	0.97326	0.95	1.05	0.10873	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_060	ELKRVR17 345.00 345KV	0.96445	0.944976	0.0194742	0.97326	0.95	1.05	0.10873	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	20WP	G16_060	ELKRVR17 345.00 345KV	0.957215	0.930383	0.026832	0.97282	0.95	1.05	0.11820	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	20WP	G16_060	ELKRVR17 345.00 345KV	0.965717	0.943673	0.0220444	0.97282	0.95	1.05	0.11820	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	20WP	G16_060	ELKRVR17 345.00 345KV	0.96508	0.943685	0.0213954	0.97282	0.95	1.05	0.11298	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNS	00	0	16WP	G16_060	GEN-2016-045345.00 345KV	1.327852	1.308625	0.0192273	1.30141	0.9	1.05	0.09192	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_060	GEN-2016-045345.00 345KV	1.328063	1.308725	0.0193386	1.30141	0.9	1.05	0.09192	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	16WP	G16_060	GEN-2016-045345.00 345KV	1.303159	1.284075	0.0190835	1.27699	0.9	1.05	0.04475	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_060	GEN-2016-045345.00 345KV	1.328238	1.308634	0.0196037	1.30141	0.9	1.05	0.04475	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_060	GEN-2016-045345.00 345KV	1.330992	1.311745	0.0192469	1.30141	0.9	1.05	0.03718	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_060	GEN-2016-045345.00 345KV	1.330992	1.311745	0.0192469	1.30141	0.9	1.05	0.03718	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	16WP	G16_060	GEN-2016-045345.00 345KV	1.328225	1.308855	0.01937	1.27699	0.9	1.05	0.03317	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_060	GEN-2016-045345.00 345KV	1.353786	1.333895	0.0198903	1.30141	0.9	1.05	0.03317	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_060	GEN-2016-045345.00 345KV	1.307321	1.286507	0.0208138	1.27799	0.9	1.05	0.09386	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_060	GEN-2016-045345.00 345KV	1.33248	1.311113	0.0213668	1.30243	0.9	1.05	0.09386	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_060	GEN-2016-045345.00 345KV	1.307442	1.286574	0.0208676	1.27799	0.9	1.05	0.09386	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_060	GEN-2016-045345.00 345KV	1.332603	1.311181	0.0214216	1.30243	0.9	1.05	0.09386	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_060	GEN-2016-045345.00 345KV	1.307155	1.285756	0.0213988	1.27799	0.9	1.05	0.04419	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_060	GEN-2016-045345.00 345KV	1.33231	1.310347	0.0219632	1.30243	0.9	1.05	0.04419	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_060	GEN-2016-045345.00 345KV	1.307585	1.287215	0.0203704	1.27799	0.9	1.05	0.03849	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_060	GEN-2016-045345.00 345KV	1.332749	1.311835	0.0209147	1.30243	0.9	1.05	0.03849	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_060	GEN-2016-045345.00 345KV	1.307585	1.287215	0.0203704	1.27799	0.9	1.05	0.03849	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_060	GEN-2016-045345.00 345KV	1.332749	1.311835	0.0209147	1.30243	0.9	1.05	0.03849	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_060	GEN-2016-045345.00 345KV	1.333544	1.311597	0.021947	1.27799	0.9	1.05	0.03027	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_060	GEN-2016-045345.00 345KV	1.359207	1.336691	0.0225165	1.30243	0.9	1.05	0.03027	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_060	GEN-2016-045345.00 345KV	1.308164	1.286876	0.0212878	1.28029	0.9	1.05	0.04750	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_060	GEN-2016-045345.00 345KV	1.333339	1.311489	0.0218499	1.30477	0.9	1.05	0.04750	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_060	GEN-2016-045345.00 345KV	1.309077	1.2882	0.020877	1.28029	0.9	1.05	0.04302	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_060	GEN-2016-045345.00 345KV	1.334269	1.312838	0.0214309	1.30477	0.9	1.05	0.04302	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_060	GEN-2016-045345.00 345KV	1.309077	1.2882	0.0208769	1.28029	0.9	1.05	0.04302	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_060	GEN-2016-045345.00 345KV	1.334269	1.312838	0.021431	1.30477	0.9	1.05	0.04302	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_060	GEN-2016-045345.00 345KV	1.33437	1.312243	0.0221272	1.28029	0.9	1.05	0.03820	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_060	GEN-2016-045345.00 345KV	1.360049	1.33735	0.0226998	1.30477	0.9	1.05	0.03820	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_060	GEN-2016-045345.00 345KV	1.325717	1.30636	0.0193567	1.30055	0.9	1.05	0.04527	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_060	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.04128	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_060	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.04128	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G16_060	GEN-2016-045345.00 345KV	1.323208	1.303765	0.0194432	1.27615	0.9	1.05	0.03783	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_060	GEN-2016-045345.00 345KV	1.348673	1.328706	0.0199662	1.30055	0.9	1.05	0.03783	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_060	GEN-2016-045345.00 345KV	1.30271	1.283473	0.0192374	1.27732	0.9	1.05	0.10352	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	G16_060	GEN-2016-045345.00 345KV	1.327781	1.30802	0.0197607	1.30175	0.9	1.05	0.10352	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	G16_060	GEN-2016-045345.00 345KV	1.302807	1.2835	0.0193068	1.27732	0.9	1.05	0.10352	G15063_T 345.00 - WOODRING 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	00	0	25SP	G16_060	GEN-2016-045345.00 345KV	1.327879	1.308047	0.0198315	1.30175	0.9	1.05	0.10352	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_060	GEN-2016-045345.00 345KV	1.303018	1.283173	0.019845	1.27732	0.9	1.05	0.05131	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_060	GEN-2016-045345.00 345KV	1.328094	1.307714	0.0203803	1.30175	0.9	1.05	0.05131	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_060	GEN-2016-045345.00 345KV	1.324474	1.304677	0.0197963	1.27732	0.9	1.05	0.03906	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_060	GEN-2016-045345.00 345KV	1.349963	1.329637	0.0203258	1.30175	0.9	1.05	0.03906	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_060	GEN-2016-057345.00 345KV	1.316044	1.296939	0.0191053	1.28969	0.9	1.05	0.09192	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	16WP	G16_060	GEN-2016-057345.00 345KV	1.316217	1.296849	0.0193679	1.28969	0.9	1.05	0.04475	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_060	GEN-2016-057345.00 345KV	1.318946	1.299931	0.0190147	1.28969	0.9	1.05	0.03718	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_060	GEN-2016-057345.00 345KV	1.318946	1.299931	0.0190147	1.28969	0.9	1.05	0.03718	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	16WP	G16_060	GEN-2016-057345.00 345KV	1.341534	1.32188	0.019654	1.28969	0.9	1.05	0.03317	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_060	GEN-2016-057345.00 345KV	1.320421	1.299306	0.0211154	1.2907	0.9	1.05	0.09386	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_060	GEN-2016-057345.00 345KV	1.320542	1.299373	0.0211695	1.2907	0.9	1.05	0.09386	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_060	GEN-2016-057345.00 345KV	1.320253	1.298546	0.0217063	1.2907	0.9	1.05	0.04419	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_060	GEN-2016-057345.00 345KV	1.320688	1.30002	0.0206672	1.2907	0.9	1.05	0.03849	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_060	GEN-2016-057345.00 345KV	1.320688	1.30002	0.0206672	1.2907	0.9	1.05	0.03849	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_060	GEN-2016-057345.00 345KV	1.346906	1.32465	0.0222567	1.2907	0.9	1.05	0.03027	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_060	GEN-2016-057345.00 345KV	1.321272	1.299678	0.0215942	1.29302	0.9	1.05	0.04750	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_060	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.04302	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_060	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.04302	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_060	GEN-2016-057345.00 345KV	1.347741	1.325302	0.0224383	1.29302	0.9	1.05	0.03820	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_060	GEN-2016-057345.00 345KV	1.313719	1.294596	0.019123	1.28884	0.9	1.05	0.04527	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_060	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.04128	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_060	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.04128	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G16_060	GEN-2016-057345.00 345KV	1.336467	1.316738	0.0197288	1.28884	0.9	1.05	0.03783	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_060	GEN-2016-057345.00 345KV	1.315764	1.29624	0.0195235	1.29003	0.9	1.05	0.10352	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	G16_060	GEN-2016-057345.00 345KV	1.315861	1.296268	0.0195937	1.29003	0.9	1.05	0.10352	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_060	GEN-2016-057345.00 345KV	1.316075	1.295937	0.0201374	1.29003	0.9	1.05	0.05131	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_060	GEN-2016-057345.00 345KV	1.337745	1.31766	0.0200852	1.29003	0.9	1.05	0.03906	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	08ALL	3	16WP	G16_060	LATHAMS7 345.00 345KV	0.969075	0.949315	0.01976	0.97613	0.95	1.05	0.12477	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	3	16WP	G16_060	LATHAMS7 345.00 345KV	0.959373	0.933596	0.025777	0.97613	0.95	1.05	0.12406	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	16WP	G16_060	LATHAMS7 345.00 345KV	0.968632	0.945971	0.0226614	0.97613	0.95	1.05	0.12406	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	20L	G16_060	LATHAMS7 345.00 345KV	0.964107	0.943001	0.0211062	0.97344	0.95	1.05	0.12694	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_060	LATHAMS7 345.00 345KV	0.955495	0.930404	0.0250909	0.97344	0.95	1.05	0.10873	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_060	LATHAMS7 345.00 345KV	0.964534	0.944871	0.0196626	0.97344	0.95	1.05	0.10873	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	20WP	G16_060	LATHAMS7 345.00 345KV	0.957222	0.930345	0.0268775	0.973	0.95	1.05	0.11820	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	20WP	G16_060	LATHAMS7 345.00 345KV	0.965815	0.943574	0.0222406	0.973	0.95	1.05	0.11820	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	20WP	G16_060	LATHAMS7 345.00 345KV	0.965171	0.943586	0.0215849	0.973	0.95	1.05	0.11298	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_060	NEOSHO 345KV	0.971991	0.947824	0.0241665	0.98191	0.95	1.05	0.10873	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	16WP	G16_060	TC-ROCK 138KV	1.001341	0.887068	0.114273	0.98949	0.93	1.05	0.07592	SUMNER 4 - TIMBJCT4 138KV CKT 1
FDNS	08ALL	3	16WP	G16_060	TIMBJCT4 138KV	1.00179	0.887576	0.114214	0.98994	0.93	1.05	0.07592	SUMNER 4 - TIMBJCT4 138KV CKT 1
FDNS	08ALL	3	16WP	G16_061	CANEYRV7 345.00 345KV	0.957889	0.930216	0.0276732	0.97454	0.95	1.05	0.06807	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	16WP	G16_061	CANEYRV7 345.00 345KV	0.967302	0.942965	0.0243372	0.97454	0.95	1.05	0.06807	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	17G	G16_061	CANEYRV7 345.00 345KV	0.971453	0.94816	0.0232931	0.98427	0.95	1.05	0.06328	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_061	CANEYRV7 345.00 345KV	0.951442	0.924033	0.0274088	0.97036	0.95	1.05	0.05900	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_061	CANEYRV7 345.00 345KV	0.961057	0.939411	0.0216459	0.97036	0.95	1.05	0.05900	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	20WP	G16_061	CANEYRV7 345.00 345KV	0.955032	0.926187	0.0288444	0.97062	0.95	1.05	0.06846	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	20WP	G16_061	CANEYRV7 345.00 345KV	0.963877	0.939795	0.0240821	0.97062	0.95	1.05	0.06846	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	16WP	G16_061	ELKRVR17 345.00 345KV	0.959343	0.93365	0.0256935	0.97593	0.95	1.05	0.06807	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	16WP	G16_061	ELKRVR17 345.00 345KV	0.968505	0.946079	0.0224264	0.97593	0.95	1.05	0.06807	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_061	ELKRVR17 345.00 345KV	0.955506	0.930443	0.0250634	0.97326	0.95	1.05	0.05900	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_061	ELKRVR17 345.00 345KV	0.96445	0.944976	0.0194742	0.97326	0.95	1.05	0.05900	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	20WP	G16_061	ELKRVR17 345.00 345KV	0.957215	0.930383	0.026832	0.97282	0.95	1.05	0.06846	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	20WP	G16_061	ELKRVR17 345.00 345KV	0.965717	0.943673	0.0220444	0.97282	0.95	1.05	0.06846	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	00	0	16WP	G16_061	GEN-2016-045345.00 345KV	1.327852	1.308625	0.0192273	1.30141	0.9	1.05	0.25593	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_061	GEN-2016-045345.00 345KV	1.328063	1.308725	0.0193386	1.30141	0.9	1.05	0.25593	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	16WP	G16_061	GEN-2016-045345.00 345KV	1.303159	1.284075	0.0190835	1.27699	0.9	1.05	0.07499	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_061	GEN-2016-045345.00 345KV	1.328238	1.308634	0.0196037	1.30141	0.9	1.05	0.07499	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_061	GEN-2016-045345.00 345KV	1.330992	1.311745	0.0192469	1.30141	0.9	1.05	0.07223	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_061	GEN-2016-045345.00 345KV	1.330992	1.311745	0.0192469	1.30141	0.9	1.05	0.07223	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	16WP	G16_061	GEN-2016-045345.00 345KV	1.328225	1.308855	0.01937	1.27699	0.9	1.05	0.05963	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_061	GEN-2016-045345.00 345KV	1.353786	1.333895	0.0198903	1.30141	0.9	1.05	0.05963	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_061	GEN-2016-045345.00 345KV	1.307321	1.286507	0.0208138	1.27799	0.9	1.05	0.25810	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_061	GEN-2016-045345.00 345KV	1.33248	1.311113	0.0213668	1.30243	0.9	1.05	0.25810	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_061	GEN-2016-045345.00 345KV	1.307442	1.286574	0.0208676	1.27799	0.9	1.05	0.25810	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_061	GEN-2016-045345.00 345KV	1.332603	1.311181	0.0214216	1.30243	0.9	1.05	0.25810	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_061	GEN-2016-045345.00 345KV	1.307155	1.285756	0.0213988	1.27799	0.9	1.05	0.07435	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_061	GEN-2016-045345.00 345KV	1.33231	1.310347	0.0219632	1.30243	0.9	1.05	0.07435	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_061	GEN-2016-045345.00 345KV	1.307585	1.287215	0.0203704	1.27799	0.9	1.05	0.07357	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_061	GEN-2016-045345.00 345KV	1.332749	1.311835	0.0209147	1.30243	0.9	1.05	0.07357	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_061	GEN-2016-045345.00 345KV	1.307585	1.287215	0.0203704	1.27799	0.9	1.05	0.07357	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_061	GEN-2016-045345.00 345KV	1.332749	1.311835	0.0209147	1.30243	0.9	1.05	0.07357	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_061	GEN-2016-045345.00 345KV	1.333544	1.311597	0.021947	1.27799	0.9	1.05	0.05658	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_061	GEN-2016-045345.00 345KV	1.359207	1.336691	0.0225165	1.30243	0.9	1.05	0.05658	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	00	0	20SP	G16_061	GEN-2016-045345.00 345KV	1.308164	1.286876	0.0212878	1.28029	0.9	1.05	0.07184	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_061	GEN-2016-045345.00 345KV	1.333339	1.311489	0.0218499	1.30477	0.9	1.05	0.07184	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_061	GEN-2016-045345.00 345KV	1.309077	1.2882	0.020877	1.28029	0.9	1.05	0.06763	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_061	GEN-2016-045345.00 345KV	1.334269	1.312838	0.0214309	1.30477	0.9	1.05	0.06763	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_061	GEN-2016-045345.00 345KV	1.309077	1.2882	0.0208769	1.28029	0.9	1.05	0.06763	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_061	GEN-2016-045345.00 345KV	1.334269	1.312838	0.021431	1.30477	0.9	1.05	0.06763	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_061	GEN-2016-045345.00 345KV	1.33437	1.312243	0.0221272	1.28029	0.9	1.05	0.04664	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_061	GEN-2016-045345.00 345KV	1.360049	1.33735	0.0226998	1.30477	0.9	1.05	0.04664	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_061	GEN-2016-045345.00 345KV	1.325717	1.30636	0.0193567	1.30055	0.9	1.05	0.06961	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_061	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.06589	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_061	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.06589	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G16_061	GEN-2016-045345.00 345KV	1.323208	1.303765	0.0194432	1.27615	0.9	1.05	0.04628	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_061	GEN-2016-045345.00 345KV	1.348673	1.328706	0.0199662	1.30055	0.9	1.05	0.04628	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_061	GEN-2016-045345.00 345KV	1.30271	1.283473	0.0192374	1.27732	0.9	1.05	0.26162	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	G16_061	GEN-2016-045345.00 345KV	1.327781	1.30802	0.0197607	1.30175	0.9	1.05	0.26162	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	G16_061	GEN-2016-045345.00 345KV	1.302807	1.2835	0.0193068	1.27732	0.9	1.05	0.26162	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_061	GEN-2016-045345.00 345KV	1.327879	1.308047	0.0198315	1.30175	0.9	1.05	0.26162	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_061	GEN-2016-045345.00 345KV	1.303669	1.284397	0.019272	1.27732	0.9	1.05	0.07590	DBL-WWRD-TGA
FDNS	00	0	25SP	G16_061	GEN-2016-045345.00 345KV	1.328758	1.308962	0.0197957	1.30175	0.9	1.05	0.07590	DBL-WWRD-TGA
FDNS	00	0	25SP	G16_061	GEN-2016-045345.00 345KV	1.303018	1.283173	0.019845	1.27732	0.9	1.05	0.07576	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_061	GEN-2016-045345.00 345KV	1.328094	1.307714	0.0203803	1.30175	0.9	1.05	0.07576	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_061	GEN-2016-045345.00 345KV	1.324474	1.304677	0.0197963	1.27732	0.9	1.05	0.04679	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_061	GEN-2016-045345.00 345KV	1.349963	1.329637	0.0203258	1.30175	0.9	1.05	0.04679	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_061	GEN-2016-057345.00 345KV	1.316044	1.296939	0.0191053	1.28969	0.9	1.05	0.25593	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	16WP	G16_061	GEN-2016-057345.00 345KV	1.316217	1.296849	0.0193679	1.28969	0.9	1.05	0.07499	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_061	GEN-2016-057345.00 345KV	1.318946	1.299931	0.0190147	1.28969	0.9	1.05	0.07223	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_061	GEN-2016-057345.00 345KV	1.318946	1.299931	0.0190147	1.28969	0.9	1.05	0.07223	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	16WP	G16_061	GEN-2016-057345.00 345KV	1.341534	1.32188	0.019654	1.28969	0.9	1.05	0.05963	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_061	GEN-2016-057345.00 345KV	1.320421	1.299306	0.0211154	1.2907	0.9	1.05	0.25810	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_061	GEN-2016-057345.00 345KV	1.320542	1.299373	0.0211695	1.2907	0.9	1.05	0.25810	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_061	GEN-2016-057345.00 345KV	1.320253	1.298546	0.0217063	1.2907	0.9	1.05	0.07435	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_061	GEN-2016-057345.00 345KV	1.320688	1.30002	0.0206672	1.2907	0.9	1.05	0.07357	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_061	GEN-2016-057345.00 345KV	1.320688	1.30002	0.0206672	1.2907	0.9	1.05	0.07357	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_061	GEN-2016-057345.00 345KV	1.346906	1.32465	0.0222567	1.2907	0.9	1.05	0.05658	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_061	GEN-2016-057345.00 345KV	1.321272	1.299678	0.0215942	1.29302	0.9	1.05	0.07184	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_061	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.06763	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_061	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.06763	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_061	GEN-2016-057345.00 345KV	1.347741	1.325302	0.0224383	1.29302	0.9	1.05	0.04664	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_061	GEN-2016-057345.00 345KV	1.313719	1.294596	0.019123	1.28884	0.9	1.05	0.06961	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_061	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.06589	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_061	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.06589	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G16_061	GEN-2016-057345.00 345KV	1.336467	1.316738	0.0197288	1.28884	0.9	1.05	0.04628	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_061	GEN-2016-057345.00 345KV	1.315764	1.29624	0.0195235	1.29003	0.9	1.05	0.26162	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	G16_061	GEN-2016-057345.00 345KV	1.315861	1.296268	0.0195937	1.29003	0.9	1.05	0.26162	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_061	GEN-2016-057345.00 345KV	1.316732	1.297174	0.0195582	1.29003	0.9	1.05	0.07590	DBL-WWRD-TGA
FDNS	00	0	25SP	G16_061	GEN-2016-057345.00 345KV	1.316075	1.295937	0.0201374	1.29003	0.9	1.05	0.07576	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_061	GEN-2016-057345.00 345KV	1.337745	1.31766	0.0200852	1.29003	0.9	1.05	0.04679	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	08ALL	3	16WP	G16_061	LATHAMS7 345.00 345KV	0.959373	0.933596	0.025777	0.97613	0.95	1.05	0.06807	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	16WP	G16_061	LATHAMS7 345.00 345KV	0.968632	0.945971	0.0226614	0.97613	0.95	1.05	0.06807	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_061	LATHAMS7 345.00 345KV	0.955495	0.930404	0.0250909	0.97344	0.95	1.05	0.05900	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_061	LATHAMS7 345.00 345KV	0.964534	0.944871	0.0196626	0.97344	0.95	1.05	0.05900	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	20WP	G16_061	LATHAMS7 345.00 345KV	0.957222	0.930345	0.0268775	0.973	0.95	1.05	0.06846	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	20WP	G16_061	LATHAMS7 345.00 345KV	0.965815	0.943574	0.0222406	0.973	0.95	1.05	0.06846	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_061	NEOSHO 345KV	0.971991	0.947824	0.0241665	0.98191	0.95	1.05	0.05900	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_062	GEN-2016-045345.00 345KV	1.302275	1.283203	0.0190725	1.27699	0.9	1.05	0.10273	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_062	GEN-2016-045345.00 345KV	1.327337	1.307744	0.0195928	1.30141	0.9	1.05	0.10273	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_062	GEN-2016-045345.00 345KV	1.328225	1.308855	0.01937	1.27699	0.9	1.05	0.07941	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_062	GEN-2016-045345.00 345KV	1.353786	1.333895	0.0198903	1.30141	0.9	1.05	0.07941	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_062	GEN-2016-045345.00 345KV	1.303159	1.284075	0.0190835	1.27699	0.9	1.05	0.06350	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_062	GEN-2016-045345.00 345KV	1.328238	1.308634	0.0196037	1.30141	0.9	1.05	0.06350	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_062	GEN-2016-045345.00 345KV	1.303982	1.283132	0.0208503	1.27799	0.9	1.05	0.09850	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_062	GEN-2016-045345.00 345KV	1.329077	1.307672	0.0214047	1.30243	0.9	1.05	0.09850	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_062	GEN-2016-045345.00 345KV	1.333544	1.311597	0.021947	1.27799	0.9	1.05	0.07578	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_062	GEN-2016-045345.00 345KV	1.359207	1.336691	0.0225165	1.30243	0.9	1.05	0.07578	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_062	GEN-2016-045345.00 345KV	1.307155	1.285756	0.0213988	1.27799	0.9	1.05	0.06257	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_062	GEN-2016-045345.00 345KV	1.33231	1.310347	0.0219632	1.30243	0.9	1.05	0.06257	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_062	GEN-2016-045345.00 345KV	1.309628	1.288992	0.0206367	1.28029	0.9	1.05	0.13772	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_062	GEN-2016-045345.00 345KV	1.334832	1.313646	0.0211858	1.30477	0.9	1.05	0.13772	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_062	GEN-2016-045345.00 345KV	1.33437	1.312243	0.0221272	1.28029	0.9	1.05	0.08790	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_062	GEN-2016-045345.00 345KV	1.360049	1.33735	0.0226998	1.30477	0.9	1.05	0.08790	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_062	GEN-2016-045345.00 345KV	1.309935	1.288951	0.0209841	1.28029	0.9	1.05	0.07334	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_062	GEN-2016-045345.00 345KV	1.335144	1.313604	0.0215397	1.30477	0.9	1.05	0.07334	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_062	GEN-2016-045345.00 345KV	1.310007	1.288969	0.0210375	1.28029	0.9	1.05	0.07334	G15063_T 345.00 - WOODRING 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	00	0	20SP	G16_062	GEN-2016-045345.00 345KV	1.335217	1.313623	0.0215942	1.30477	0.9	1.05	0.07334	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G16_062	GEN-2016-045345.00 345KV	1.308164	1.286876	0.0212878	1.28029	0.9	1.05	0.06791	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_062	GEN-2016-045345.00 345KV	1.333339	1.311489	0.0218499	1.30477	0.9	1.05	0.06791	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_062	GEN-2016-045345.00 345KV	1.305864	1.28671	0.0191541	1.27615	0.9	1.05	0.13531	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_062	GEN-2016-045345.00 345KV	1.330995	1.31132	0.019675	1.30055	0.9	1.05	0.13531	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_062	GEN-2016-045345.00 345KV	1.323208	1.303765	0.0194432	1.27615	0.9	1.05	0.08753	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_062	GEN-2016-045345.00 345KV	1.348673	1.328706	0.0199662	1.30055	0.9	1.05	0.08753	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_062	GEN-2016-045345.00 345KV	1.326278	1.306902	0.0193765	1.30055	0.9	1.05	0.07479	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_062	GEN-2016-045345.00 345KV	1.326357	1.306911	0.0194464	1.30055	0.9	1.05	0.07479	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	G16_062	GEN-2016-045345.00 345KV	1.325717	1.30636	0.0193567	1.30055	0.9	1.05	0.06568	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_062	GEN-2016-045345.00 345KV	1.324474	1.304677	0.0197963	1.27732	0.9	1.05	0.09024	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_062	GEN-2016-045345.00 345KV	1.349963	1.329637	0.0203258	1.30175	0.9	1.05	0.09024	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_062	GEN-2016-045345.00 345KV	1.303018	1.283173	0.019845	1.27732	0.9	1.05	0.07148	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_062	GEN-2016-045345.00 345KV	1.328094	1.307714	0.0203803	1.30175	0.9	1.05	0.07148	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_062	GEN-2016-057345.00 345KV	1.315324	1.295967	0.0193568	1.28969	0.9	1.05	0.10273	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_062	GEN-2016-057345.00 345KV	1.341534	1.32188	0.019654	1.28969	0.9	1.05	0.07941	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_062	GEN-2016-057345.00 345KV	1.316217	1.296849	0.0193679	1.28969	0.9	1.05	0.06350	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_062	GEN-2016-057345.00 345KV	1.317048	1.295896	0.0211525	1.2907	0.9	1.05	0.09850	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_062	GEN-2016-057345.00 345KV	1.346906	1.32465	0.0222567	1.2907	0.9	1.05	0.07578	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_062	GEN-2016-057345.00 345KV	1.320253	1.298546	0.0217063	1.2907	0.9	1.05	0.06257	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_062	GEN-2016-057345.00 345KV	1.322751	1.301815	0.0209361	1.29302	0.9	1.05	0.13772	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_062	GEN-2016-057345.00 345KV	1.347741	1.325302	0.0224383	1.29302	0.9	1.05	0.08790	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_062	GEN-2016-057345.00 345KV	1.323061	1.301774	0.0212868	1.29302	0.9	1.05	0.07334	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_062	GEN-2016-057345.00 345KV	1.323133	1.301793	0.0213408	1.29302	0.9	1.05	0.07334	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G16_062	GEN-2016-057345.00 345KV	1.321272	1.299678	0.0215942	1.29302	0.9	1.05	0.06791	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_062	GEN-2016-057345.00 345KV	1.318949	1.29951	0.0194386	1.28884	0.9	1.05	0.13531	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_062	GEN-2016-057345.00 345KV	1.336467	1.316738	0.0197288	1.28884	0.9	1.05	0.08753	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_062	GEN-2016-057345.00 345KV	1.314275	1.295132	0.0191426	1.28884	0.9	1.05	0.07479	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_062	GEN-2016-057345.00 345KV	1.314354	1.295142	0.019212	1.28884	0.9	1.05	0.07479	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	G16_062	GEN-2016-057345.00 345KV	1.313719	1.294596	0.019123	1.28884	0.9	1.05	0.06568	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_062	GEN-2016-057345.00 345KV	1.337745	1.31766	0.0200852	1.29003	0.9	1.05	0.09024	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_062	GEN-2016-057345.00 345KV	1.316075	1.295937	0.0201374	1.29003	0.9	1.05	0.07148	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	02ALL	2	17G	G16_062	MATHWSN7 345.00 345KV	1	1.057966	0.0579665	1.05205	0.9	1.05	0.10416	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL	2	17G	G16_062	MATHWSN7 345.00 345KV	1	1.060389	0.0603888	1.05205	0.9	1.05	0.10416	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	06ALL	6	17G	G16_062	MCLEAN RURAL SUB 115KV	0.933339	0.89248	0.0408586	0.94889	0.9	1.05	0.19896	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	17G	G16_062	SHAMROCK 115KV	0.911364	0.864894	0.0464693	0.92956	0.92	1.05	0.19896	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	17G	G16_062	SHAMROCK 115KV	0.921558	0.890208	0.0313495	0.92956	0.92	1.05	0.18844	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	17G	G16_062	SHAMROCK 115KV	0.932605	0.910884	0.0217218	0.92956	0.92	1.05	0.16183	CHISHOLM7 345.00 - G16-037-TAP 345.00 345KV CKT 1
FDNS	06ALL	6	17G	G16_062	SHAMROCK 115KV	0.933373	0.906096	0.0272766	0.92956	0.92	1.05	0.16183	G16-037-TAP 345.00 - GRACEMONT 345KV CKT 1
FDNS	06ALL	6	17G	G16_062	SHAMROCK 115KV	0.938216	0.905653	0.0325633	0.92956	0.92	1.05	0.16055	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNS	06ALL	6	17G	G16_062	SHAMROCK 115KV	0.938216	0.905653	0.0325631	0.92956	0.92	1.05	0.16055	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNS	06ALL	6	17G	G16_062	SHAMROCK 115KV	0.940696	0.909748	0.030948	0.92956	0.92	1.05	0.13405	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1
FDNS	06ALL	6	17G	G16_062	SHAMROCK 115KV	0.939142	0.913869	0.0252723	0.92956	0.92	1.05	0.13405	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNS	06ALL	6	17G	G16_062	SHAMROCK 115KV	0.944283	0.911952	0.0323306	0.92956	0.92	1.05	0.09983	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	06ALL	6	17G	G16_062	SHAMROCK 115KV	0.935809	0.904739	0.0310695	0.92956	0.92	1.05	0.06299	CHISHOLM6 230.00 - ELK CITY 230KV 230KV CKT 1
FDNS	06ALL	6	17G	G16_062	SHAMROCK 115KV	0.931566	0.908706	0.0228604	0.92956	0.92	1.05	0.05568	STATELINE INTERCHANGE - STLN-DEMARC6 230KV CKT 1
FDNS	06ALL	6	17G	G16_062	SHAMROCK 115KV	0.932759	0.911022	0.021737	0.92956	0.92	1.05	0.05568	STLN-DEMARC6 - SWEETWATER 230KV CKT 1
FDNS	06ALL	6	17G	G16_062	SHAMROCK 115KV	0.934321	0.907423	0.0268984	0.92956	0.92	1.05	0.04744	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNS	06ALL	6	20L	G16_062	SHAMROCK 115KV	0.936253	0.901881	0.0343719	0.95391	0.92	1.05	0.16572	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20L	G16_062	SHAMROCK 115KV	0.936253	0.901881	0.0343719	0.95391	0.92	1.05	0.16572	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20L	G16_062	SHAMROCK 115KV	0.923555	0.895417	0.0281389	0.95391	0.92	1.05	0.09454	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNS	06ALL	6	20L	G16_062	SHAMROCK 115KV	0.933464	0.911038	0.0224263	0.95391	0.92	1.05	0.04376	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNS	06ALL	6	20WP	G16_062	SHAMROCK 115KV	0.939273	0.906513	0.0327598	0.9604	0.92	1.05	0.19466	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	G16_062	SHAMROCK 115KV	0.939273	0.906513	0.0327598	0.9604	0.92	1.05	0.19466	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	G16_062	SHAMROCK 115KV	0.93991	0.891866	0.0480433	0.9604	0.92	1.05	0.19453	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	G16_062	SHAMROCK 115KV	0.93991	0.891866	0.0480433	0.9604	0.92	1.05	0.19453	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	G16_062	SHAMROCK 115KV	0.916691	0.893822	0.0228696	0.9604	0.92	1.05	0.11608	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNS	06ALL	6	20WP	G16_062	SHAMROCK 115KV	0.935879	0.913992	0.0218866	0.9604	0.92	1.05	0.05476	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNS	06ALL	6	17G	G16_062	SHAMROCK 69KV	0.927509	0.885744	0.0417651	0.94554	0.92	1.05	0.19896	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	17G	G16_062	SHAMROCK 69KV	0.938055	0.911641	0.0264134	0.94554	0.92	1.05	0.18844	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20L	G16_062	SHAMROCK 69KV	0.940765	0.913238	0.0275269	0.97198	0.92	1.05	0.09454	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNS	06ALL	6	20WP	G16_062	SHAMROCK 69KV	0.960626	0.913935	0.0466906	0.97894	0.92	1.05	0.19453	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	G16_062	SHAMROCK 69KV	0.960626	0.913935	0.0466906	0.97894	0.92	1.05	0.19453	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	G16_062	SHAMROCK 69KV	0.936192	0.911756	0.0244357	0.97894	0.92	1.05	0.11608	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNS	00	0	20SP	G16_063	GEN-2016-045345.00 345KV	1.309935	1.288951	0.0209841	1.28029	0.9	1.05	0.06520	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_063	GEN-2016-045345.00 345KV	1.335144	1.313604	0.0215397	1.30477	0.9	1.05	0.06520	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_063	GEN-2016-045345.00 345KV	1.310007	1.288969	0.0210375	1.28029	0.9	1.05	0.06520	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G16_063	GEN-2016-045345.00 345KV	1.335217	1.313623	0.0215942	1.30477	0.9	1.05	0.06520	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	G16_063	GEN-2016-045345.00 345KV	1.326278	1.306902	0.0193765	1.30055	0.9	1.05	0.06664	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_063	GEN-2016-045345.00 345KV	1.326357	1.306911	0.0194464	1.30055	0.9	1.05	0.06664	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_063	GEN-2016-045345.00 345KV	1.303669	1.284397	0.019272	1.27732	0.9	1.05	0.05673	DBL-WWRD-TGA
FDNS	00	0	25SP	G16_063	GEN-2016-045345.00 345KV	1.328758	1.308962	0.0197957	1.30175	0.9	1.05	0.05673	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_063	GEN-2016-057345.00 345KV	1.323061	1.301774	0.0212868	1.29302	0.9	1.05	0.06520	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	00	0	20SP	G16_063	GEN-2016-057345.00 345KV	1.323133	1.301793	0.0213408	1.29302	0.9	1.05	0.06520	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	G16_063	GEN-2016-057345.00 345KV	1.314275	1.295132	0.0191426	1.28884	0.9	1.05	0.06664	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_063	GEN-2016-057345.00 345KV	1.314354	1.295142	0.019212	1.28884	0.9	1.05	0.06664	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_063	GEN-2016-057345.00 345KV	1.316732	1.297174	0.0195582	1.29003	0.9	1.05	0.05673	DBL-WWRD-TGA
FDNS	00	0	16WP	G16_067	GEN-2016-045345.00 345KV	1.302275	1.283203	0.0190725	1.27699	0.9	1.05	0.09064	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_067	GEN-2016-045345.00 345KV	1.327337	1.307744	0.0195928	1.30141	0.9	1.05	0.09064	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_067	GEN-2016-045345.00 345KV	1.328225	1.308855	0.01937	1.27699	0.9	1.05	0.05869	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_067	GEN-2016-045345.00 345KV	1.353786	1.333895	0.0198903	1.30141	0.9	1.05	0.05869	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_067	GEN-2016-045345.00 345KV	1.303159	1.284075	0.0190835	1.27699	0.9	1.05	0.04226	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_067	GEN-2016-045345.00 345KV	1.328238	1.308634	0.0196037	1.30141	0.9	1.05	0.04226	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_067	GEN-2016-045345.00 345KV	1.303982	1.283132	0.0208503	1.27799	0.9	1.05	0.08917	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_067	GEN-2016-045345.00 345KV	1.329077	1.307672	0.0214047	1.30243	0.9	1.05	0.08917	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_067	GEN-2016-045345.00 345KV	1.333544	1.311597	0.021947	1.27799	0.9	1.05	0.05612	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_067	GEN-2016-045345.00 345KV	1.359207	1.336691	0.0225165	1.30243	0.9	1.05	0.05612	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_067	GEN-2016-045345.00 345KV	1.307155	1.285756	0.0213988	1.27799	0.9	1.05	0.04194	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_067	GEN-2016-045345.00 345KV	1.33231	1.310347	0.0219632	1.30243	0.9	1.05	0.04194	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_067	GEN-2016-045345.00 345KV	1.309628	1.288992	0.0206367	1.28029	0.9	1.05	0.12655	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_067	GEN-2016-045345.00 345KV	1.334832	1.313646	0.0211858	1.30477	0.9	1.05	0.12655	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_067	GEN-2016-045345.00 345KV	1.33437	1.312243	0.0221272	1.28029	0.9	1.05	0.06675	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_067	GEN-2016-045345.00 345KV	1.360049	1.33735	0.0226998	1.30477	0.9	1.05	0.06675	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_067	GEN-2016-045345.00 345KV	1.308164	1.286876	0.0212878	1.28029	0.9	1.05	0.04563	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_067	GEN-2016-045345.00 345KV	1.333339	1.311489	0.0218499	1.30477	0.9	1.05	0.04563	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_067	GEN-2016-045345.00 345KV	1.309077	1.2882	0.020877	1.28029	0.9	1.05	0.03563	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_067	GEN-2016-045345.00 345KV	1.334269	1.312838	0.0214309	1.30477	0.9	1.05	0.03563	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_067	GEN-2016-045345.00 345KV	1.309077	1.2882	0.0208769	1.28029	0.9	1.05	0.03563	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_067	GEN-2016-045345.00 345KV	1.334269	1.312838	0.021431	1.30477	0.9	1.05	0.03563	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G16_067	GEN-2016-045345.00 345KV	1.305864	1.28671	0.0191541	1.27615	0.9	1.05	0.12411	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_067	GEN-2016-045345.00 345KV	1.330995	1.31132	0.019675	1.30055	0.9	1.05	0.12411	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_067	GEN-2016-045345.00 345KV	1.323208	1.303765	0.0194432	1.27615	0.9	1.05	0.06637	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_067	GEN-2016-045345.00 345KV	1.348673	1.328706	0.0199662	1.30055	0.9	1.05	0.06637	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_067	GEN-2016-045345.00 345KV	1.325717	1.30636	0.0193567	1.30055	0.9	1.05	0.04338	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_067	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.03387	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_067	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.03387	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	25SP	G16_067	GEN-2016-045345.00 345KV	1.324474	1.304677	0.0197963	1.27732	0.9	1.05	0.06777	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_067	GEN-2016-045345.00 345KV	1.349963	1.329637	0.0203258	1.30175	0.9	1.05	0.06777	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_067	GEN-2016-045345.00 345KV	1.303018	1.283173	0.019845	1.27732	0.9	1.05	0.04940	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_067	GEN-2016-045345.00 345KV	1.328094	1.307714	0.0203803	1.30175	0.9	1.05	0.04940	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_067	GEN-2016-057345.00 345KV	1.315324	1.295967	0.0193568	1.28969	0.9	1.05	0.09064	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_067	GEN-2016-057345.00 345KV	1.341534	1.32188	0.019654	1.28969	0.9	1.05	0.05869	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_067	GEN-2016-057345.00 345KV	1.316217	1.296849	0.0193679	1.28969	0.9	1.05	0.04226	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_067	GEN-2016-057345.00 345KV	1.317048	1.295896	0.0211525	1.2907	0.9	1.05	0.08917	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_067	GEN-2016-057345.00 345KV	1.346906	1.32465	0.0222567	1.2907	0.9	1.05	0.05612	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_067	GEN-2016-057345.00 345KV	1.320253	1.298546	0.0217063	1.2907	0.9	1.05	0.04194	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_067	GEN-2016-057345.00 345KV	1.322751	1.301815	0.0209361	1.29302	0.9	1.05	0.12655	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_067	GEN-2016-057345.00 345KV	1.347741	1.325302	0.0224383	1.29302	0.9	1.05	0.06675	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_067	GEN-2016-057345.00 345KV	1.321272	1.299678	0.0215942	1.29302	0.9	1.05	0.04563	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_067	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.03563	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_067	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.03563	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G16_067	GEN-2016-057345.00 345KV	1.318949	1.29951	0.0194386	1.28884	0.9	1.05	0.12411	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_067	GEN-2016-057345.00 345KV	1.336467	1.316738	0.0197288	1.28884	0.9	1.05	0.06637	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_067	GEN-2016-057345.00 345KV	1.313719	1.294596	0.019123	1.28884	0.9	1.05	0.04338	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_067	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.03387	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_067	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.03387	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	25SP	G16_067	GEN-2016-057345.00 345KV	1.337745	1.31766	0.0200852	1.29003	0.9	1.05	0.06777	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_067	GEN-2016-057345.00 345KV	1.316075	1.295937	0.0201374	1.29003	0.9	1.05	0.04940	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	02ALL	2	17G	G16_067	MATHWSN7 345.00 345KV	1	1.057966	0.0579665	1.05205	0.9	1.05	0.09089	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL	2	17G	G16_067	MATHWSN7 345.00 345KV	1	1.060389	0.0603888	1.05205	0.9	1.05	0.09089	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	08ALL	3	16WP	G16_068	CANEYRV7 345.00 345KV	0.957889	0.930216	0.0276732	0.97454	0.95	1.05	0.06707	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	16WP	G16_068	CANEYRV7 345.00 345KV	0.967302	0.942965	0.0243372	0.97454	0.95	1.05	0.06707	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	17G	G16_068	CANEYRV7 345.00 345KV	0.971453	0.94816	0.0232931	0.98427	0.95	1.05	0.06227	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_068	CANEYRV7 345.00 345KV	0.951442	0.924033	0.0274088	0.97036	0.95	1.05	0.05843	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_068	CANEYRV7 345.00 345KV	0.961057	0.939411	0.0216459	0.97036	0.95	1.05	0.05843	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	20WP	G16_068	CANEYRV7 345.00 345KV	0.955032	0.926187	0.0288444	0.97062	0.95	1.05	0.06790	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	20WP	G16_068	CANEYRV7 345.00 345KV	0.963877	0.939795	0.0240821	0.97062	0.95	1.05	0.06790	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	16WP	G16_068	ELKRVR17 345.00 345KV	0.959343	0.93365	0.0256935	0.97593	0.95	1.05	0.06707	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	16WP	G16_068	ELKRVR17 345.00 345KV	0.968505	0.946079	0.0224264	0.97593	0.95	1.05	0.06707	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_068	ELKRVR17 345.00 345KV	0.955506	0.930443	0.0250634	0.97326	0.95	1.05	0.05843	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_068	ELKRVR17 345.00 345KV	0.96445	0.944976	0.0194742	0.97326	0.95	1.05	0.05843	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	20WP	G16_068	ELKRVR17 345.00 345KV	0.957215	0.930383	0.026832	0.97282	0.95	1.05	0.06790	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	20WP	G16_068	ELKRVR17 345.00 345KV	0.965717	0.943673	0.0220444	0.97282	0.95	1.05	0.06790	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	00	0	16WP	G16_068	GEN-2016-045345.00 345KV	1.327852	1.308625	0.0192273	1.30141	0.9	1.05	0.36506	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_068	GEN-2016-045345.00 345KV	1.328063	1.308725	0.0193386	1.30141	0.9	1.05	0.36506	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	16WP	G16_068	GEN-2016-045345.00 345KV	1.328225	1.308855	0.01937	1.27699	0.9	1.05	0.12094	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	00	0	16WP	G16_068	GEN-2016-045345.00 345KV	1.353786	1.333895	0.0198903	1.30141	0.9	1.05	0.12094	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_068	GEN-2016-045345.00 345KV	1.330992	1.311745	0.0192469	1.30141	0.9	1.05	0.09373	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_068	GEN-2016-045345.00 345KV	1.330992	1.311745	0.0192469	1.30141	0.9	1.05	0.09373	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	16WP	G16_068	GEN-2016-045345.00 345KV	1.303159	1.284075	0.0190835	1.27699	0.9	1.05	0.08669	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_068	GEN-2016-045345.00 345KV	1.328238	1.308634	0.0196037	1.30141	0.9	1.05	0.08669	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_068	GEN-2016-045345.00 345KV	1.307321	1.286507	0.0208138	1.27799	0.9	1.05	0.36725	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_068	GEN-2016-045345.00 345KV	1.33248	1.311113	0.0213668	1.30243	0.9	1.05	0.36725	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_068	GEN-2016-045345.00 345KV	1.307442	1.286574	0.0208676	1.27799	0.9	1.05	0.36725	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_068	GEN-2016-045345.00 345KV	1.332603	1.311181	0.0214216	1.30243	0.9	1.05	0.36725	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_068	GEN-2016-045345.00 345KV	1.333544	1.311597	0.021947	1.27799	0.9	1.05	0.11788	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_068	GEN-2016-045345.00 345KV	1.359207	1.336691	0.0225165	1.30243	0.9	1.05	0.11788	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_068	GEN-2016-045345.00 345KV	1.307585	1.287215	0.0203704	1.27799	0.9	1.05	0.09507	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_068	GEN-2016-045345.00 345KV	1.332749	1.311835	0.0209147	1.30243	0.9	1.05	0.09507	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_068	GEN-2016-045345.00 345KV	1.307585	1.287215	0.0203704	1.27799	0.9	1.05	0.09507	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_068	GEN-2016-045345.00 345KV	1.332749	1.311835	0.0209147	1.30243	0.9	1.05	0.09507	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_068	GEN-2016-045345.00 345KV	1.307155	1.285756	0.0213988	1.27799	0.9	1.05	0.08604	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_068	GEN-2016-045345.00 345KV	1.33231	1.310347	0.0219632	1.30243	0.9	1.05	0.08604	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_068	GEN-2016-045345.00 345KV	1.33437	1.312243	0.0221272	1.28029	0.9	1.05	0.10696	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_068	GEN-2016-045345.00 345KV	1.360049	1.33735	0.0226998	1.30477	0.9	1.05	0.10696	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_068	GEN-2016-045345.00 345KV	1.309077	1.2882	0.020877	1.28029	0.9	1.05	0.08853	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_068	GEN-2016-045345.00 345KV	1.334269	1.312838	0.0214309	1.30477	0.9	1.05	0.08853	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_068	GEN-2016-045345.00 345KV	1.309077	1.2882	0.0208769	1.28029	0.9	1.05	0.08853	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_068	GEN-2016-045345.00 345KV	1.334269	1.312838	0.021431	1.30477	0.9	1.05	0.08853	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_068	GEN-2016-045345.00 345KV	1.308164	1.286876	0.0212878	1.28029	0.9	1.05	0.08328	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_068	GEN-2016-045345.00 345KV	1.333339	1.311489	0.0218499	1.30477	0.9	1.05	0.08328	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_068	GEN-2016-045345.00 345KV	1.323208	1.303765	0.0194432	1.27615	0.9	1.05	0.10660	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_068	GEN-2016-045345.00 345KV	1.348673	1.328706	0.0199662	1.30055	0.9	1.05	0.10660	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_068	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.08678	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_068	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.08678	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G16_068	GEN-2016-045345.00 345KV	1.325717	1.30636	0.0193567	1.30055	0.9	1.05	0.08105	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_068	GEN-2016-045345.00 345KV	1.30271	1.283473	0.0192374	1.27732	0.9	1.05	0.37048	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	G16_068	GEN-2016-045345.00 345KV	1.327781	1.30802	0.0197607	1.30175	0.9	1.05	0.37048	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	G16_068	GEN-2016-045345.00 345KV	1.302807	1.2835	0.0193068	1.27732	0.9	1.05	0.37048	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_068	GEN-2016-045345.00 345KV	1.327879	1.308047	0.0198315	1.30175	0.9	1.05	0.37048	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_068	GEN-2016-045345.00 345KV	1.324474	1.304677	0.0197963	1.27732	0.9	1.05	0.10642	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_068	GEN-2016-045345.00 345KV	1.349963	1.329637	0.0203258	1.30175	0.9	1.05	0.10642	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_068	GEN-2016-045345.00 345KV	1.303018	1.283173	0.019845	1.27732	0.9	1.05	0.08730	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_068	GEN-2016-045345.00 345KV	1.328094	1.307714	0.0203803	1.30175	0.9	1.05	0.08730	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_068	GEN-2016-045345.00 345KV	1.303669	1.284397	0.019272	1.27732	0.9	1.05	0.08250	DBL-WWRD-TGA
FDNS	00	0	25SP	G16_068	GEN-2016-045345.00 345KV	1.328758	1.308962	0.0197957	1.30175	0.9	1.05	0.08250	DBL-WWRD-TGA
FDNS	00	0	16WP	G16_068	GEN-2016-057345.00 345KV	1.316044	1.296939	0.0191053	1.28969	0.9	1.05	0.36506	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	16WP	G16_068	GEN-2016-057345.00 345KV	1.341534	1.32188	0.019654	1.28969	0.9	1.05	0.12094	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_068	GEN-2016-057345.00 345KV	1.318946	1.299931	0.0190147	1.28969	0.9	1.05	0.09373	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_068	GEN-2016-057345.00 345KV	1.318946	1.299931	0.0190147	1.28969	0.9	1.05	0.09373	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	16WP	G16_068	GEN-2016-057345.00 345KV	1.316217	1.296849	0.0193679	1.28969	0.9	1.05	0.08669	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_068	GEN-2016-057345.00 345KV	1.320421	1.299306	0.0211154	1.2907	0.9	1.05	0.36725	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_068	GEN-2016-057345.00 345KV	1.320542	1.299373	0.0211695	1.2907	0.9	1.05	0.36725	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_068	GEN-2016-057345.00 345KV	1.346906	1.32465	0.0222567	1.2907	0.9	1.05	0.11788	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_068	GEN-2016-057345.00 345KV	1.320688	1.30002	0.0206672	1.2907	0.9	1.05	0.09507	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_068	GEN-2016-057345.00 345KV	1.320688	1.30002	0.0206672	1.2907	0.9	1.05	0.09507	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_068	GEN-2016-057345.00 345KV	1.320253	1.298546	0.0217063	1.2907	0.9	1.05	0.08604	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_068	GEN-2016-057345.00 345KV	1.347741	1.325302	0.0224383	1.29302	0.9	1.05	0.10696	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_068	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.08853	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_068	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.08853	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_068	GEN-2016-057345.00 345KV	1.321272	1.299678	0.0215942	1.29302	0.9	1.05	0.08328	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_068	GEN-2016-057345.00 345KV	1.336467	1.316738	0.0197288	1.28884	0.9	1.05	0.10660	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_068	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.08678	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_068	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.08678	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G16_068	GEN-2016-057345.00 345KV	1.313719	1.294596	0.019123	1.28884	0.9	1.05	0.08105	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_068	GEN-2016-057345.00 345KV	1.315764	1.29624	0.0195235	1.29003	0.9	1.05	0.37048	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	G16_068	GEN-2016-057345.00 345KV	1.315861	1.296268	0.0195937	1.29003	0.9	1.05	0.37048	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_068	GEN-2016-057345.00 345KV	1.337745	1.31766	0.0200852	1.29003	0.9	1.05	0.10642	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_068	GEN-2016-057345.00 345KV	1.316075	1.295937	0.0201374	1.29003	0.9	1.05	0.08730	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_068	GEN-2016-057345.00 345KV	1.316732	1.297174	0.0195582	1.29003	0.9	1.05	0.08250	DBL-WWRD-TGA
FDNS	08ALL	3	16WP	G16_068	LATHAMS7 345.00 345KV	0.959373	0.933596	0.025777	0.97613	0.95	1.05	0.06707	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	16WP	G16_068	LATHAMS7 345.00 345KV	0.968632	0.945971	0.0226614	0.97613	0.95	1.05	0.06707	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_068	LATHAMS7 345.00 345KV	0.955495	0.930404	0.0250909	0.97344	0.95	1.05	0.05843	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_068	LATHAMS7 345.00 345KV	0.964534	0.944871	0.0196626	0.97344	0.95	1.05	0.05843	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	20WP	G16_068	LATHAMS7 345.00 345KV	0.957222	0.930345	0.0268775	0.973	0.95	1.05	0.06790	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	20WP	G16_068	LATHAMS7 345.00 345KV	0.965815	0.943574	0.0222406	0.973	0.95	1.05	0.06790	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_068	NEOSHO 345KV	0.971991	0.947824	0.0241665	0.98191	0.95	1.05	0.05843	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_069	GEN-2016-045345.00 345KV	1.302275	1.283203	0.0190725	1.27699	0.9	1.05	0.10407	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_069	GEN-2016-045345.00 345KV	1.327337	1.307744	0.0195928	1.30141	0.9	1.05	0.10407	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	00	0	16WP	G16_069	GEN-2016-045345.00 345KV	1.328225	1.308855	0.01937	1.27699	0.9	1.05	0.07973	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_069	GEN-2016-045345.00 345KV	1.353786	1.333895	0.0198903	1.30141	0.9	1.05	0.07973	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_069	GEN-2016-045345.00 345KV	1.303159	1.284075	0.0190835	1.27699	0.9	1.05	0.06357	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_069	GEN-2016-045345.00 345KV	1.328238	1.308634	0.0196037	1.30141	0.9	1.05	0.06357	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_069	GEN-2016-045345.00 345KV	1.303982	1.283132	0.0208503	1.27799	0.9	1.05	0.09995	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_069	GEN-2016-045345.00 345KV	1.329077	1.307672	0.0214047	1.30243	0.9	1.05	0.09995	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_069	GEN-2016-045345.00 345KV	1.333544	1.311597	0.021947	1.27799	0.9	1.05	0.07612	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_069	GEN-2016-045345.00 345KV	1.359207	1.336691	0.0225165	1.30243	0.9	1.05	0.07612	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_069	GEN-2016-045345.00 345KV	1.307155	1.285756	0.0213988	1.27799	0.9	1.05	0.06264	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_069	GEN-2016-045345.00 345KV	1.33231	1.310347	0.0219632	1.30243	0.9	1.05	0.06264	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_069	GEN-2016-045345.00 345KV	1.309628	1.288992	0.0206367	1.28029	0.9	1.05	0.14225	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_069	GEN-2016-045345.00 345KV	1.334832	1.313646	0.0211858	1.30477	0.9	1.05	0.14225	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_069	GEN-2016-045345.00 345KV	1.33437	1.312243	0.0221272	1.28029	0.9	1.05	0.08908	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_069	GEN-2016-045345.00 345KV	1.360049	1.33735	0.0226998	1.30477	0.9	1.05	0.08908	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_069	GEN-2016-045345.00 345KV	1.309935	1.288951	0.0209841	1.28029	0.9	1.05	0.07229	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_069	GEN-2016-045345.00 345KV	1.335144	1.313604	0.0215397	1.30477	0.9	1.05	0.07229	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_069	GEN-2016-045345.00 345KV	1.310007	1.288969	0.0210375	1.28029	0.9	1.05	0.07229	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G16_069	GEN-2016-045345.00 345KV	1.335217	1.313623	0.0215942	1.30477	0.9	1.05	0.07229	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G16_069	GEN-2016-045345.00 345KV	1.308164	1.286876	0.0212878	1.28029	0.9	1.05	0.06820	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_069	GEN-2016-045345.00 345KV	1.333339	1.311489	0.0218499	1.30477	0.9	1.05	0.06820	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_069	GEN-2016-045345.00 345KV	1.305864	1.28671	0.0191541	1.27615	0.9	1.05	0.13983	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_069	GEN-2016-045345.00 345KV	1.330995	1.31132	0.019675	1.30055	0.9	1.05	0.13983	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_069	GEN-2016-045345.00 345KV	1.323208	1.303765	0.0194432	1.27615	0.9	1.05	0.08871	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_069	GEN-2016-045345.00 345KV	1.348673	1.328706	0.0199662	1.30055	0.9	1.05	0.08871	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_069	GEN-2016-045345.00 345KV	1.326278	1.306902	0.0193765	1.30055	0.9	1.05	0.07374	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_069	GEN-2016-045345.00 345KV	1.326357	1.306911	0.0194464	1.30055	0.9	1.05	0.07374	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	G16_069	GEN-2016-045345.00 345KV	1.325717	1.30636	0.0193567	1.30055	0.9	1.05	0.06597	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_069	GEN-2016-045345.00 345KV	1.324474	1.304677	0.0197963	1.27732	0.9	1.05	0.09135	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_069	GEN-2016-045345.00 345KV	1.349963	1.329637	0.0203258	1.30175	0.9	1.05	0.09135	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_069	GEN-2016-045345.00 345KV	1.303018	1.283173	0.019845	1.27732	0.9	1.05	0.07178	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_069	GEN-2016-045345.00 345KV	1.328094	1.307714	0.0203803	1.30175	0.9	1.05	0.07178	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_069	GEN-2016-057345.00 345KV	1.315324	1.295967	0.0193568	1.28969	0.9	1.05	0.10407	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_069	GEN-2016-057345.00 345KV	1.341534	1.32188	0.019654	1.28969	0.9	1.05	0.07973	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_069	GEN-2016-057345.00 345KV	1.316217	1.296849	0.0193679	1.28969	0.9	1.05	0.06357	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_069	GEN-2016-057345.00 345KV	1.317048	1.295896	0.0211525	1.2907	0.9	1.05	0.09995	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_069	GEN-2016-057345.00 345KV	1.346906	1.32465	0.0222567	1.2907	0.9	1.05	0.07612	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_069	GEN-2016-057345.00 345KV	1.320253	1.298546	0.0217063	1.2907	0.9	1.05	0.06264	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_069	GEN-2016-057345.00 345KV	1.322751	1.301815	0.0209361	1.29302	0.9	1.05	0.14225	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_069	GEN-2016-057345.00 345KV	1.347741	1.325302	0.0224383	1.29302	0.9	1.05	0.08908	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_069	GEN-2016-057345.00 345KV	1.323061	1.301774	0.0212868	1.29302	0.9	1.05	0.07229	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_069	GEN-2016-057345.00 345KV	1.323133	1.301793	0.0213408	1.29302	0.9	1.05	0.07229	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G16_069	GEN-2016-057345.00 345KV	1.321272	1.299678	0.0215942	1.29302	0.9	1.05	0.06820	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_069	GEN-2016-057345.00 345KV	1.318949	1.29951	0.0194386	1.28884	0.9	1.05	0.13983	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_069	GEN-2016-057345.00 345KV	1.336467	1.316738	0.0197288	1.28884	0.9	1.05	0.08871	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_069	GEN-2016-057345.00 345KV	1.314275	1.295132	0.0191426	1.28884	0.9	1.05	0.07374	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_069	GEN-2016-057345.00 345KV	1.314354	1.295142	0.019212	1.28884	0.9	1.05	0.07374	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	G16_069	GEN-2016-057345.00 345KV	1.313719	1.294596	0.019123	1.28884	0.9	1.05	0.06597	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_069	GEN-2016-057345.00 345KV	1.337745	1.31766	0.0200852	1.29003	0.9	1.05	0.09135	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_069	GEN-2016-057345.00 345KV	1.316075	1.295937	0.0201374	1.29003	0.9	1.05	0.07178	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	02ALL	2	17G	G16_069	MATHWSN7 345.00 345KV	1	1.057966	0.0579665	1.05205	0.9	1.05	0.10548	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL	2	17G	G16_069	MATHWSN7 345.00 345KV	1	1.060389	0.0603888	1.05205	0.9	1.05	0.10548	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	06ALL	6	17G	G16_069	MCLEAN RURAL SUB 115KV	0.933339	0.89248	0.0408586	0.94889	0.9	1.05	0.19078	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	17G	G16_069	SHAMROCK 115KV	0.921558	0.890208	0.0313495	0.92956	0.92	1.05	0.20125	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	17G	G16_069	SHAMROCK 115KV	0.911364	0.864894	0.0464693	0.92956	0.92	1.05	0.19078	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	17G	G16_069	SHAMROCK 115KV	0.932605	0.910884	0.0217218	0.92956	0.92	1.05	0.16012	CHISHOLM7 345.00 - G16-037-TAP 345.00 345KV CKT 1
FDNS	06ALL	6	17G	G16_069	SHAMROCK 115KV	0.933373	0.906096	0.0272766	0.92956	0.92	1.05	0.16012	G16-037-TAP 345.00 - GRACEMONT 345KV CKT 1
FDNS	06ALL	6	17G	G16_069	SHAMROCK 115KV	0.938216	0.905653	0.0325633	0.92956	0.92	1.05	0.15143	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 1
FDNS	06ALL	6	17G	G16_069	SHAMROCK 115KV	0.938216	0.905653	0.0325631	0.92956	0.92	1.05	0.15143	BORDER 7345.00 - CRAWFISH_DR 345.00 345KV CKT 2
FDNS	06ALL	6	17G	G16_069	SHAMROCK 115KV	0.940696	0.909748	0.030948	0.92956	0.92	1.05	0.13869	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1
FDNS	06ALL	6	17G	G16_069	SHAMROCK 115KV	0.939142	0.913869	0.0252723	0.92956	0.92	1.05	0.13869	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNS	06ALL	6	17G	G16_069	SHAMROCK 115KV	0.944283	0.911952	0.0323306	0.92956	0.92	1.05	0.10270	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	06ALL	6	17G	G16_069	SHAMROCK 115KV	0.931566	0.908706	0.0228604	0.92956	0.92	1.05	0.06265	STATELINE INTERCHANGE - STLN-DEMARC6 230KV CKT 1
FDNS	06ALL	6	17G	G16_069	SHAMROCK 115KV	0.932759	0.911022	0.021737	0.92956	0.92	1.05	0.06265	STLN-DEMARC6 - SWEETWATER 230KV CKT 1
FDNS	06ALL	6	17G	G16_069	SHAMROCK 115KV	0.935809	0.904739	0.0310695	0.92956	0.92	1.05	0.06264	CHISHOLM6 230.00 - ELK CITY 230KV 230KV CKT 1
FDNS	06ALL	6	17G	G16_069	SHAMROCK 115KV	0.934321	0.907423	0.0268984	0.92956	0.92	1.05	0.05332	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNS	06ALL	6	20L	G16_069	SHAMROCK 115KV	0.936253	0.901881	0.0343719	0.95391	0.92	1.05	0.17815	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20L	G16_069	SHAMROCK 115KV	0.936253	0.901881	0.0343719	0.95391	0.92	1.05	0.17815	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20L	G16_069	SHAMROCK 115KV	0.923555	0.895417	0.0281389	0.95391	0.92	1.05	0.10098	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNS	06ALL	6	20L	G16_069	SHAMROCK 115KV	0.933464	0.911038	0.0224263	0.95391	0.92	1.05	0.05059	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNS	06ALL	6	20WP	G16_069	SHAMROCK 115KV	0.939273	0.906513	0.0327598	0.9604	0.92	1.05	0.20709	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	G16_069	SHAMROCK 115KV	0.939273	0.906513	0.0327598	0.9604	0.92	1.05	0.20709	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	G16_069	SHAMROCK 115KV	0.93991	0.891866	0.0480433	0.9604	0.92	1.05	0.18643	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	G16_069	SHAMROCK 115KV	0.93991	0.891866	0.0480433	0.9604	0.92	1.05	0.18643	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	06ALL	6	20WP	G16_069	SHAMROCK 115KV	0.916691	0.893822	0.0228696	0.9604	0.92	1.05	0.12251	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNS	06ALL	6	20WP	G16_069	SHAMROCK 115KV	0.935879	0.913992	0.0218866	0.9604	0.92	1.05	0.06159	CHISHOLM6 230.00 - SWEETWATER 230KV CKT 1
FDNS	06ALL	6	17G	G16_069	SHAMROCK 69KV	0.938055	0.911641	0.0264134	0.94554	0.92	1.05	0.20125	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	17G	G16_069	SHAMROCK 69KV	0.927509	0.885744	0.0417651	0.94554	0.92	1.05	0.19078	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20L	G16_069	SHAMROCK 69KV	0.940765	0.913238	0.0275269	0.97198	0.92	1.05	0.10098	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNS	06ALL	6	20WP	G16_069	SHAMROCK 69KV	0.960626	0.913935	0.0466906	0.97894	0.92	1.05	0.18643	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	G16_069	SHAMROCK 69KV	0.960626	0.913935	0.0466906	0.97894	0.92	1.05	0.18643	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	6	20WP	G16_069	SHAMROCK 69KV	0.936192	0.911756	0.0244357	0.97894	0.92	1.05	0.12251	P12:230:AEPW:ELKCITY6:SWEETWT6
FDNS	00	0	16WP	G16_070	GEN-2016-045345.00 345KV	1.302275	1.283203	0.0190725	1.27699	0.9	1.05	0.12987	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_070	GEN-2016-045345.00 345KV	1.327337	1.307744	0.0195928	1.30141	0.9	1.05	0.12987	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_070	GEN-2016-045345.00 345KV	1.328225	1.308855	0.01937	1.27699	0.9	1.05	0.08578	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_070	GEN-2016-045345.00 345KV	1.353786	1.333895	0.0198903	1.30141	0.9	1.05	0.08578	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_070	GEN-2016-045345.00 345KV	1.303159	1.284075	0.0190835	1.27699	0.9	1.05	0.06495	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_070	GEN-2016-045345.00 345KV	1.328238	1.308634	0.0196037	1.30141	0.9	1.05	0.06495	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_070	GEN-2016-045345.00 345KV	1.303982	1.283132	0.0208503	1.27799	0.9	1.05	0.12582	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_070	GEN-2016-045345.00 345KV	1.329077	1.307672	0.0214047	1.30243	0.9	1.05	0.12582	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_070	GEN-2016-045345.00 345KV	1.333544	1.311597	0.021947	1.27799	0.9	1.05	0.08212	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_070	GEN-2016-045345.00 345KV	1.359207	1.336691	0.0225165	1.30243	0.9	1.05	0.08212	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_070	GEN-2016-045345.00 345KV	1.307155	1.285756	0.0213988	1.27799	0.9	1.05	0.06397	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_070	GEN-2016-045345.00 345KV	1.33231	1.310347	0.0219632	1.30243	0.9	1.05	0.06397	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_070	GEN-2016-045345.00 345KV	1.309628	1.288992	0.0206367	1.28029	0.9	1.05	0.18541	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_070	GEN-2016-045345.00 345KV	1.334832	1.313646	0.0211858	1.30477	0.9	1.05	0.18541	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_070	GEN-2016-045345.00 345KV	1.33437	1.312243	0.0221272	1.28029	0.9	1.05	0.10026	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_070	GEN-2016-045345.00 345KV	1.360049	1.33735	0.0226998	1.30477	0.9	1.05	0.10026	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_070	GEN-2016-045345.00 345KV	1.308164	1.286876	0.0212878	1.28029	0.9	1.05	0.07103	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_070	GEN-2016-045345.00 345KV	1.333339	1.311489	0.0218499	1.30477	0.9	1.05	0.07103	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_070	GEN-2016-045345.00 345KV	1.309935	1.288951	0.0209841	1.28029	0.9	1.05	0.06212	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_070	GEN-2016-045345.00 345KV	1.335144	1.313604	0.0215397	1.30477	0.9	1.05	0.06212	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_070	GEN-2016-045345.00 345KV	1.310007	1.288969	0.0210375	1.28029	0.9	1.05	0.06212	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G16_070	GEN-2016-045345.00 345KV	1.335217	1.313623	0.0215942	1.30477	0.9	1.05	0.06212	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	G16_070	GEN-2016-045345.00 345KV	1.305864	1.28671	0.0191541	1.27615	0.9	1.05	0.18299	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_070	GEN-2016-045345.00 345KV	1.330995	1.31132	0.019675	1.30055	0.9	1.05	0.18299	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_070	GEN-2016-045345.00 345KV	1.323208	1.303765	0.0194432	1.27615	0.9	1.05	0.09988	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_070	GEN-2016-045345.00 345KV	1.348673	1.328706	0.0199662	1.30055	0.9	1.05	0.09988	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_070	GEN-2016-045345.00 345KV	1.325717	1.30636	0.0193567	1.30055	0.9	1.05	0.06880	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_070	GEN-2016-045345.00 345KV	1.326278	1.306902	0.0193765	1.30055	0.9	1.05	0.06357	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_070	GEN-2016-045345.00 345KV	1.326357	1.306911	0.0194464	1.30055	0.9	1.05	0.06357	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_070	GEN-2016-045345.00 345KV	1.324474	1.304677	0.0197963	1.27732	0.9	1.05	0.10191	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_070	GEN-2016-045345.00 345KV	1.349963	1.329637	0.0203258	1.30175	0.9	1.05	0.10191	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_070	GEN-2016-045345.00 345KV	1.303018	1.283173	0.019845	1.27732	0.9	1.05	0.07471	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_070	GEN-2016-045345.00 345KV	1.328094	1.307714	0.0203803	1.30175	0.9	1.05	0.07471	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_070	GEN-2016-057345.00 345KV	1.315324	1.295967	0.0193568	1.28969	0.9	1.05	0.12987	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_070	GEN-2016-057345.00 345KV	1.341534	1.32188	0.019654	1.28969	0.9	1.05	0.08578	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_070	GEN-2016-057345.00 345KV	1.316217	1.296849	0.0193679	1.28969	0.9	1.05	0.06495	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_070	GEN-2016-057345.00 345KV	1.317048	1.295896	0.0211525	1.2907	0.9	1.05	0.12582	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_070	GEN-2016-057345.00 345KV	1.346906	1.32465	0.0222567	1.2907	0.9	1.05	0.08212	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_070	GEN-2016-057345.00 345KV	1.320253	1.298546	0.0217063	1.2907	0.9	1.05	0.06397	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_070	GEN-2016-057345.00 345KV	1.322751	1.301815	0.0209361	1.29302	0.9	1.05	0.18541	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_070	GEN-2016-057345.00 345KV	1.347741	1.325302	0.0224383	1.29302	0.9	1.05	0.10026	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_070	GEN-2016-057345.00 345KV	1.321272	1.299678	0.0215942	1.29302	0.9	1.05	0.07103	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_070	GEN-2016-057345.00 345KV	1.323061	1.301774	0.0212868	1.29302	0.9	1.05	0.06212	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_070	GEN-2016-057345.00 345KV	1.323133	1.301793	0.0213408	1.29302	0.9	1.05	0.06212	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20WP	G16_070	GEN-2016-057345.00 345KV	1.318949	1.29951	0.0194386	1.28884	0.9	1.05	0.18299	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_070	GEN-2016-057345.00 345KV	1.336467	1.316738	0.0197288	1.28884	0.9	1.05	0.09988	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_070	GEN-2016-057345.00 345KV	1.313719	1.294596	0.019123	1.28884	0.9	1.05	0.06880	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_070	GEN-2016-057345.00 345KV	1.314275	1.295132	0.0191426	1.28884	0.9	1.05	0.06357	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_070	GEN-2016-057345.00 345KV	1.314354	1.295142	0.019212	1.28884	0.9	1.05	0.06357	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_070	GEN-2016-057345.00 345KV	1.337745	1.31766	0.0200852	1.29003	0.9	1.05	0.10191	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_070	GEN-2016-057345.00 345KV	1.316075	1.295937	0.0201374	1.29003	0.9	1.05	0.07471	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	02ALL	2	17G	G16_070	MATHWSN7 345.00 345KV	1	1.057966	0.0579665	1.05205	0.9	1.05	0.13072	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL	2	17G	G16_070	MATHWSN7 345.00 345KV	1	1.060389	0.0603888	1.05205	0.9	1.05	0.13072	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	08ALL	3	16WP	G16_071	CANEYRV7 345.00 345KV	0.957889	0.930216	0.0276732	0.97454	0.95	1.05	0.09093	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	16WP	G16_071	CANEYRV7 345.00 345KV	0.967302	0.942965	0.0243372	0.97454	0.95	1.05	0.09093	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	17G	G16_071	CANEYRV7 345.00 345KV	0.971453	0.94816	0.0232931	0.98427	0.95	1.05	0.08613	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_071	CANEYRV7 345.00 345KV	0.951442	0.924033	0.0274088	0.97036	0.95	1.05	0.07855	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_071	CANEYRV7 345.00 345KV	0.961057	0.939411	0.0216459	0.97036	0.95	1.05	0.07855	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	20WP	G16_071	CANEYRV7 345.00 345KV	0.955032	0.926187	0.0288444	0.97062	0.95	1.05	0.08802	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	20WP	G16_071	CANEYRV7 345.00 345KV	0.963877	0.939795	0.0240821	0.97062	0.95	1.05	0.08802	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	16WP	G16_071	ELKRVR17 345.00 345KV	0.959343	0.93365	0.0256935	0.97593	0.95	1.05	0.09093	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	16WP	G16_071	ELKRVR17 345.00 345KV	0.968505	0.946079	0.0224264	0.97593	0.95	1.05	0.09093	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_071	ELKRVR17 345.00 345KV	0.955506	0.930443	0.0250634	0.97326	0.95	1.05	0.07855	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_071	ELKRVR17 345.00 345KV	0.96445	0.944976	0.0194742	0.97326	0.95	1.05	0.07855	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	20WP	G16_071	ELKRVR17 345.00 345KV	0.957215	0.930383	0.026832	0.97282	0.95	1.05	0.08802	LACYGNE - WAVERLY7 345.00 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	08ALL	3	20WP	G16_071	ELKRVR17 345.00 345KV	0.965717	0.943673	0.0220444	0.97282	0.95	1.05	0.08802	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	00	0	16WP	G16_071	GEN-2016-045345.00 345KV	1.327852	1.308625	0.0192273	1.30141	0.9	1.05	0.12361	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_071	GEN-2016-045345.00 345KV	1.328063	1.308725	0.0193386	1.30141	0.9	1.05	0.12361	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	16WP	G16_071	GEN-2016-045345.00 345KV	1.303159	1.284075	0.0190835	1.27699	0.9	1.05	0.05030	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_071	GEN-2016-045345.00 345KV	1.328238	1.308634	0.0196037	1.30141	0.9	1.05	0.05030	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_071	GEN-2016-045345.00 345KV	1.330992	1.311745	0.0192469	1.30141	0.9	1.05	0.04247	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_071	GEN-2016-045345.00 345KV	1.330992	1.311745	0.0192469	1.30141	0.9	1.05	0.04247	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_071	GEN-2016-045345.00 345KV	1.307321	1.286507	0.0208138	1.27799	0.9	1.05	0.12566	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_071	GEN-2016-045345.00 345KV	1.33248	1.311113	0.0213668	1.30243	0.9	1.05	0.12566	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_071	GEN-2016-045345.00 345KV	1.307442	1.286574	0.0208676	1.27799	0.9	1.05	0.12566	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_071	GEN-2016-045345.00 345KV	1.332603	1.311181	0.0214216	1.30243	0.9	1.05	0.12566	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_071	GEN-2016-045345.00 345KV	1.307155	1.285756	0.0213988	1.27799	0.9	1.05	0.04969	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_071	GEN-2016-045345.00 345KV	1.33231	1.310347	0.0219632	1.30243	0.9	1.05	0.04969	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_071	GEN-2016-045345.00 345KV	1.307585	1.287215	0.0203704	1.27799	0.9	1.05	0.04380	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_071	GEN-2016-045345.00 345KV	1.332749	1.311835	0.0209147	1.30243	0.9	1.05	0.04380	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_071	GEN-2016-045345.00 345KV	1.307585	1.287215	0.0203704	1.27799	0.9	1.05	0.04380	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_071	GEN-2016-045345.00 345KV	1.332749	1.311835	0.0209147	1.30243	0.9	1.05	0.04380	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_071	GEN-2016-045345.00 345KV	1.308164	1.286876	0.0212878	1.28029	0.9	1.05	0.05004	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_071	GEN-2016-045345.00 345KV	1.333339	1.311489	0.0218499	1.30477	0.9	1.05	0.05004	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_071	GEN-2016-045345.00 345KV	1.309077	1.2882	0.020877	1.28029	0.9	1.05	0.04366	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_071	GEN-2016-045345.00 345KV	1.334269	1.312838	0.0214309	1.30477	0.9	1.05	0.04366	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_071	GEN-2016-045345.00 345KV	1.309077	1.2882	0.0208769	1.28029	0.9	1.05	0.04366	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_071	GEN-2016-045345.00 345KV	1.334269	1.312838	0.021431	1.30477	0.9	1.05	0.04366	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G16_071	GEN-2016-045345.00 345KV	1.325717	1.30636	0.0193567	1.30055	0.9	1.05	0.04781	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_071	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.04192	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_071	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.04192	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	25SP	G16_071	GEN-2016-045345.00 345KV	1.30271	1.283473	0.0192374	1.27732	0.9	1.05	0.13005	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	G16_071	GEN-2016-045345.00 345KV	1.327781	1.30802	0.0197607	1.30175	0.9	1.05	0.13005	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	G16_071	GEN-2016-045345.00 345KV	1.302807	1.2835	0.0193068	1.27732	0.9	1.05	0.13005	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_071	GEN-2016-045345.00 345KV	1.327879	1.308047	0.0198315	1.30175	0.9	1.05	0.13005	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_071	GEN-2016-045345.00 345KV	1.303018	1.283173	0.019845	1.27732	0.9	1.05	0.05385	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_071	GEN-2016-045345.00 345KV	1.328094	1.307714	0.0203803	1.30175	0.9	1.05	0.05385	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_071	GEN-2016-057345.00 345KV	1.316044	1.296939	0.0191053	1.28969	0.9	1.05	0.12361	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	16WP	G16_071	GEN-2016-057345.00 345KV	1.316217	1.296849	0.0193679	1.28969	0.9	1.05	0.05030	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_071	GEN-2016-057345.00 345KV	1.318946	1.299931	0.0190147	1.28969	0.9	1.05	0.04247	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_071	GEN-2016-057345.00 345KV	1.318946	1.299931	0.0190147	1.28969	0.9	1.05	0.04247	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_071	GEN-2016-057345.00 345KV	1.320421	1.299306	0.0211154	1.2907	0.9	1.05	0.12566	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_071	GEN-2016-057345.00 345KV	1.320542	1.299373	0.0211695	1.2907	0.9	1.05	0.12566	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_071	GEN-2016-057345.00 345KV	1.320253	1.298546	0.0217063	1.2907	0.9	1.05	0.04969	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_071	GEN-2016-057345.00 345KV	1.320688	1.30002	0.0206672	1.2907	0.9	1.05	0.04380	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_071	GEN-2016-057345.00 345KV	1.320688	1.30002	0.0206672	1.2907	0.9	1.05	0.04380	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_071	GEN-2016-057345.00 345KV	1.321272	1.299678	0.0215942	1.29302	0.9	1.05	0.05004	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_071	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.04366	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_071	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.04366	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G16_071	GEN-2016-057345.00 345KV	1.313719	1.294596	0.019123	1.28884	0.9	1.05	0.04781	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_071	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.04192	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_071	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.04192	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	25SP	G16_071	GEN-2016-057345.00 345KV	1.315764	1.29624	0.0195235	1.29003	0.9	1.05	0.13005	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	G16_071	GEN-2016-057345.00 345KV	1.315861	1.296268	0.0195937	1.29003	0.9	1.05	0.13005	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_071	GEN-2016-057345.00 345KV	1.316075	1.295937	0.0201374	1.29003	0.9	1.05	0.05385	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	08ALL	3	16WP	G16_071	LATHAMS7 345.00 345KV	0.959373	0.933596	0.025777	0.97613	0.95	1.05	0.09093	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	16WP	G16_071	LATHAMS7 345.00 345KV	0.968632	0.945971	0.0226614	0.97613	0.95	1.05	0.09093	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_071	LATHAMS7 345.00 345KV	0.955495	0.930404	0.0250909	0.97344	0.95	1.05	0.07855	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_071	LATHAMS7 345.00 345KV	0.964534	0.944871	0.0196626	0.97344	0.95	1.05	0.07855	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	20WP	G16_071	LATHAMS7 345.00 345KV	0.957222	0.930345	0.0268775	0.973	0.95	1.05	0.08802	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	20WP	G16_071	LATHAMS7 345.00 345KV	0.965815	0.943574	0.0222406	0.973	0.95	1.05	0.08802	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_071	NEOSHO 345KV	0.971991	0.947824	0.0241665	0.98191	0.95	1.05	0.07855	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	16WP	G16_073	CANEYRV7 345.00 345KV	0.968493	0.947728	0.0207649	0.97454	0.95	1.05	0.10075	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	3	16WP	G16_073	CANEYRV7 345.00 345KV	0.957889	0.930216	0.0276732	0.97454	0.95	1.05	0.09455	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	16WP	G16_073	CANEYRV7 345.00 345KV	0.967302	0.942965	0.0243372	0.97454	0.95	1.05	0.09455	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	17G	G16_073	CANEYRV7 345.00 345KV	0.971453	0.94816	0.0232931	0.98427	0.95	1.05	0.08974	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	20L	G16_073	CANEYRV7 345.00 345KV	0.961378	0.939471	0.0219065	0.97036	0.95	1.05	0.10920	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_073	CANEYRV7 345.00 345KV	0.951442	0.924033	0.0274088	0.97036	0.95	1.05	0.08410	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_073	CANEYRV7 345.00 345KV	0.961057	0.939411	0.0216459	0.97036	0.95	1.05	0.08410	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	20WP	G16_073	CANEYRV7 345.00 345KV	0.96391	0.941114	0.0227962	0.97062	0.95	1.05	0.09524	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	3	20WP	G16_073	CANEYRV7 345.00 345KV	0.955032	0.926187	0.0288444	0.97062	0.95	1.05	0.09358	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	20WP	G16_073	CANEYRV7 345.00 345KV	0.963877	0.939795	0.0240821	0.97062	0.95	1.05	0.09358	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	16WP	G16_073	ELKRVR17 345.00 345KV	0.968943	0.94939	0.0195534	0.97593	0.95	1.05	0.10075	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	3	16WP	G16_073	ELKRVR17 345.00 345KV	0.959343	0.93365	0.0256935	0.97593	0.95	1.05	0.09455	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	16WP	G16_073	ELKRVR17 345.00 345KV	0.968505	0.946079	0.0224264	0.97593	0.95	1.05	0.09455	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	20L	G16_073	ELKRVR17 345.00 345KV	0.964027	0.943097	0.0209303	0.97326	0.95	1.05	0.10920	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_073	ELKRVR17 345.00 345KV	0.955506	0.930443	0.0250634	0.97326	0.95	1.05	0.08410	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_073	ELKRVR17 345.00 345KV	0.96445	0.944976	0.0194742	0.97326	0.95	1.05	0.08410	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	08ALL	3	20WP	G16_073	ELKRVR17 345.00 345KV	0.96508	0.943685	0.0213954	0.97282	0.95	1.05	0.09524	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	3	20WP	G16_073	ELKRVR17 345.00 345KV	0.957215	0.930383	0.026832	0.97282	0.95	1.05	0.09358	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	20WP	G16_073	ELKRVR17 345.00 345KV	0.965717	0.943673	0.0220444	0.97282	0.95	1.05	0.09358	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	00	0	16WP	G16_073	GEN-2016-045345.00 345KV	1.327852	1.308625	0.0192273	1.30141	0.9	1.05	0.07386	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_073	GEN-2016-045345.00 345KV	1.328063	1.308725	0.0193386	1.30141	0.9	1.05	0.07386	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	16WP	G16_073	GEN-2016-045345.00 345KV	1.302275	1.283203	0.0190725	1.27699	0.9	1.05	0.05811	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_073	GEN-2016-045345.00 345KV	1.327337	1.307744	0.0195928	1.30141	0.9	1.05	0.05811	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_073	GEN-2016-045345.00 345KV	1.328225	1.308855	0.01937	1.27699	0.9	1.05	0.05589	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_073	GEN-2016-045345.00 345KV	1.353786	1.333895	0.0198903	1.30141	0.9	1.05	0.05589	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_073	GEN-2016-045345.00 345KV	1.303159	1.284075	0.0190835	1.27699	0.9	1.05	0.04883	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_073	GEN-2016-045345.00 345KV	1.328238	1.308634	0.0196037	1.30141	0.9	1.05	0.04883	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_073	GEN-2016-045345.00 345KV	1.330992	1.311745	0.0192469	1.30141	0.9	1.05	0.03804	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_073	GEN-2016-045345.00 345KV	1.330992	1.311745	0.0192469	1.30141	0.9	1.05	0.03804	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_073	GEN-2016-045345.00 345KV	1.307321	1.286507	0.0208138	1.27799	0.9	1.05	0.07585	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_073	GEN-2016-045345.00 345KV	1.33248	1.311113	0.0213668	1.30243	0.9	1.05	0.07585	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_073	GEN-2016-045345.00 345KV	1.307442	1.286574	0.0208676	1.27799	0.9	1.05	0.07585	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_073	GEN-2016-045345.00 345KV	1.332603	1.311181	0.0214216	1.30243	0.9	1.05	0.07585	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_073	GEN-2016-045345.00 345KV	1.303982	1.283132	0.0208503	1.27799	0.9	1.05	0.05576	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_073	GEN-2016-045345.00 345KV	1.329077	1.307672	0.0214047	1.30243	0.9	1.05	0.05576	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_073	GEN-2016-045345.00 345KV	1.333544	1.311597	0.021947	1.27799	0.9	1.05	0.05293	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_073	GEN-2016-045345.00 345KV	1.359207	1.336691	0.0225165	1.30243	0.9	1.05	0.05293	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_073	GEN-2016-045345.00 345KV	1.307155	1.285756	0.0213988	1.27799	0.9	1.05	0.04826	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_073	GEN-2016-045345.00 345KV	1.33231	1.310347	0.0219632	1.30243	0.9	1.05	0.04826	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_073	GEN-2016-045345.00 345KV	1.307585	1.287215	0.0203704	1.27799	0.9	1.05	0.03934	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_073	GEN-2016-045345.00 345KV	1.332749	1.311835	0.0209147	1.30243	0.9	1.05	0.03934	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_073	GEN-2016-045345.00 345KV	1.307585	1.287215	0.0203704	1.27799	0.9	1.05	0.03934	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_073	GEN-2016-045345.00 345KV	1.332749	1.311835	0.0209147	1.30243	0.9	1.05	0.03934	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_073	GEN-2016-045345.00 345KV	1.309628	1.288992	0.0206367	1.28029	0.9	1.05	0.08074	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_073	GEN-2016-045345.00 345KV	1.334832	1.313646	0.0211858	1.30477	0.9	1.05	0.08074	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_073	GEN-2016-045345.00 345KV	1.33437	1.312243	0.0221272	1.28029	0.9	1.05	0.05996	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_073	GEN-2016-045345.00 345KV	1.360049	1.33735	0.0226998	1.30477	0.9	1.05	0.05996	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_073	GEN-2016-045345.00 345KV	1.308164	1.286876	0.0212878	1.28029	0.9	1.05	0.05135	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_073	GEN-2016-045345.00 345KV	1.333339	1.311489	0.0218499	1.30477	0.9	1.05	0.05135	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_073	GEN-2016-045345.00 345KV	1.309077	1.2882	0.020877	1.28029	0.9	1.05	0.04557	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_073	GEN-2016-045345.00 345KV	1.334269	1.312838	0.0214309	1.30477	0.9	1.05	0.04557	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_073	GEN-2016-045345.00 345KV	1.309077	1.2882	0.0208769	1.28029	0.9	1.05	0.04557	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_073	GEN-2016-045345.00 345KV	1.334269	1.312838	0.021431	1.30477	0.9	1.05	0.04557	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G16_073	GEN-2016-045345.00 345KV	1.305864	1.28671	0.0191541	1.27615	0.9	1.05	0.07832	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_073	GEN-2016-045345.00 345KV	1.330995	1.31132	0.019675	1.30055	0.9	1.05	0.07832	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_073	GEN-2016-045345.00 345KV	1.323208	1.303765	0.0194432	1.27615	0.9	1.05	0.05959	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_073	GEN-2016-045345.00 345KV	1.348673	1.328706	0.0199662	1.30055	0.9	1.05	0.05959	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_073	GEN-2016-045345.00 345KV	1.325717	1.30636	0.0193567	1.30055	0.9	1.05	0.04912	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20WP	G16_073	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.04382	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_073	GEN-2016-045345.00 345KV	1.329079	1.309798	0.0192806	1.30055	0.9	1.05	0.04382	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	25SP	G16_073	GEN-2016-045345.00 345KV	1.30271	1.283473	0.0192374	1.27732	0.9	1.05	0.06966	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	G16_073	GEN-2016-045345.00 345KV	1.327781	1.30802	0.0197607	1.30175	0.9	1.05	0.06966	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	G16_073	GEN-2016-045345.00 345KV	1.302807	1.2835	0.0193068	1.27732	0.9	1.05	0.06966	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_073	GEN-2016-045345.00 345KV	1.327879	1.308047	0.0198315	1.30175	0.9	1.05	0.06966	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_073	GEN-2016-045345.00 345KV	1.324474	1.304677	0.0197963	1.27732	0.9	1.05	0.06071	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_073	GEN-2016-045345.00 345KV	1.349963	1.329637	0.0203258	1.30175	0.9	1.05	0.06071	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_073	GEN-2016-045345.00 345KV	1.303018	1.283173	0.019845	1.27732	0.9	1.05	0.05518	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	25SP	G16_073	GEN-2016-045345.00 345KV	1.328094	1.307714	0.0203803	1.30175	0.9	1.05	0.05518	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_073	GEN-2016-057345.00 345KV	1.316044	1.296939	0.0191053	1.28969	0.9	1.05	0.07386	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	16WP	G16_073	GEN-2016-057345.00 345KV	1.315324	1.295967	0.0193568	1.28969	0.9	1.05	0.05811	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_073	GEN-2016-057345.00 345KV	1.341534	1.32188	0.019654	1.28969	0.9	1.05	0.05589	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_073	GEN-2016-057345.00 345KV	1.316217	1.296849	0.0193679	1.28969	0.9	1.05	0.04883	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	16WP	G16_073	GEN-2016-057345.00 345KV	1.318946	1.299931	0.0190147	1.28969	0.9	1.05	0.03804	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	16WP	G16_073	GEN-2016-057345.00 345KV	1.318946	1.299931	0.0190147	1.28969	0.9	1.05	0.03804	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	17SP	G16_073	GEN-2016-057345.00 345KV	1.320421	1.299306	0.0211154	1.2907	0.9	1.05	0.07585	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_073	GEN-2016-057345.00 345KV	1.320542	1.299373	0.0211695	1.2907	0.9	1.05	0.07585	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_073	GEN-2016-057345.00 345KV	1.317048	1.295896	0.0211525	1.2907	0.9	1.05	0.05576	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_073	GEN-2016-057345.00 345KV	1.346906	1.32465	0.0222567	1.2907	0.9	1.05	0.05293	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	17SP	G16_073	GEN-2016-057345.00 345KV	1.320253	1.298546	0.0217063	1.2907	0.9	1.05	0.04826	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	17SP	G16_073	GEN-2016-057345.00 345KV	1.320688	1.30002	0.0206672	1.2907	0.9	1.05	0.03934	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_073	GEN-2016-057345.00 345KV	1.320688	1.30002	0.0206672	1.2907	0.9	1.05	0.03934	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20SP	G16_073	GEN-2016-057345.00 345KV	1.322751	1.301815	0.0209361	1.29302	0.9	1.05	0.08074	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_073	GEN-2016-057345.00 345KV	1.347741	1.325302	0.0224383	1.29302	0.9	1.05	0.05996	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_073	GEN-2016-057345.00 345KV	1.321272	1.299678	0.0215942	1.29302	0.9	1.05	0.05135	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	00	0	20SP	G16_073	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.04557	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20SP	G16_073	GEN-2016-057345.00 345KV	1.322194	1.301015	0.0211788	1.29302	0.9	1.05	0.04557	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	20WP	G16_073	GEN-2016-057345.00 345KV	1.318949	1.29951	0.0194386	1.28884	0.9	1.05	0.07832	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_073	GEN-2016-057345.00 345KV	1.336467	1.316738	0.0197288	1.28884	0.9	1.05	0.05959	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_073	GEN-2016-057345.00 345KV	1.313719	1.294596	0.019123	1.28884	0.9	1.05	0.04912	CIMARRON - DRAPER LAKE 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	MONITORED ELEMENT	BC Voltage (PU)	TC Voltage (PU)	Voltage Differ (PU)	VINIT (PU)	VMIN (PU)	VMAX(PU)	TDF	CONTINGENCY
FDNS	00	0	20WP	G16_073	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.04382	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	20WP	G16_073	GEN-2016-057345.00 345KV	1.317051	1.298003	0.0190479	1.28884	0.9	1.05	0.04382	CIMARRON - MATHWSN7 345.00 345KV CKT 2
FDNS	00	0	25SP	G16_073	GEN-2016-057345.00 345KV	1.315764	1.29624	0.0195235	1.29003	0.9	1.05	0.06966	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	25SP	G16_073	GEN-2016-057345.00 345KV	1.315861	1.296268	0.0195937	1.29003	0.9	1.05	0.06966	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	25SP	G16_073	GEN-2016-057345.00 345KV	1.337745	1.31766	0.0200852	1.29003	0.9	1.05	0.06071	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_073	GEN-2016-057345.00 345KV	1.316075	1.295937	0.0201374	1.29003	0.9	1.05	0.05518	CIMARRON - DRAPER LAKE 345KV CKT 1
FDNS	08ALL	3	16WP	G16_073	LATHAMS7 345.00 345KV	0.969075	0.949315	0.01976	0.97613	0.95	1.05	0.10075	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	3	16WP	G16_073	LATHAMS7 345.00 345KV	0.959373	0.933596	0.025777	0.97613	0.95	1.05	0.09455	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	16WP	G16_073	LATHAMS7 345.00 345KV	0.968632	0.945971	0.0226614	0.97613	0.95	1.05	0.09455	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	20L	G16_073	LATHAMS7 345.00 345KV	0.964107	0.943001	0.0211062	0.97344	0.95	1.05	0.10920	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_073	LATHAMS7 345.00 345KV	0.955495	0.930404	0.0250909	0.97344	0.95	1.05	0.08410	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_073	LATHAMS7 345.00 345KV	0.964534	0.944871	0.0196626	0.97344	0.95	1.05	0.08410	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	08ALL	3	20WP	G16_073	LATHAMS7 345.00 345KV	0.965171	0.943586	0.0215849	0.973	0.95	1.05	0.09524	RANCHRD7 345.00 - SOONER 345KV CKT 1
FDNS	08ALL	3	20WP	G16_073	LATHAMS7 345.00 345KV	0.957222	0.930345	0.0268775	0.973	0.95	1.05	0.09358	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	08ALL	3	20WP	G16_073	LATHAMS7 345.00 345KV	0.965815	0.943574	0.0222406	0.973	0.95	1.05	0.09358	WAVERLY7 345.00 - WOLF CREEK 345KV CKT 1
FDNS	02ALL	2	17G	G16_073	MATHWSN7 345.00 345KV	1	1.057966	0.0579665	1.05205	0.9	1.05	0.05824	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL	2	17G	G16_073	MATHWSN7 345.00 345KV	1	1.060389	0.0603888	1.05205	0.9	1.05	0.05824	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNSLock	08ALL	3	20L	G16_073	NEOSHO 345KV	0.971991	0.947824	0.0241665	0.98191	0.95	1.05	0.08410	LACYGNE - WAVERLY7 345.00 345KV CKT 1
FDNS	09ALL	4	25SP	G16_075	ATWOOD 115KV	0.937465	0.89625	0.0412151	0.93305	0.9	1.05	0.12213	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G16_075	ATWOOD SWITCH 115KV	0.936343	0.896664	0.0396796	0.93238	0.9	1.05	0.12213	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G16_075	BVERVLLY 115.00 115KV	0.94028	0.89886	0.0414202	0.9356	0.9	1.05	0.12213	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	00	0	16WP	G16_075	GEN-2016-045345.00 345KV	1.302275	1.283203	0.0190725	1.27699	0.9	1.05	0.03550	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	16WP	G16_075	GEN-2016-045345.00 345KV	1.327337	1.307744	0.0195928	1.30141	0.9	1.05	0.03550	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_075	GEN-2016-045345.00 345KV	1.303982	1.283132	0.0208503	1.27799	0.9	1.05	0.03359	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_075	GEN-2016-045345.00 345KV	1.329077	1.307672	0.0214047	1.30243	0.9	1.05	0.03359	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_075	GEN-2016-045345.00 345KV	1.307321	1.286507	0.0208138	1.27799	0.9	1.05	0.03031	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_075	GEN-2016-045345.00 345KV	1.33248	1.311113	0.0213668	1.30243	0.9	1.05	0.03031	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_075	GEN-2016-045345.00 345KV	1.307442	1.286574	0.0208676	1.27799	0.9	1.05	0.03031	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	17SP	G16_075	GEN-2016-045345.00 345KV	1.332603	1.311181	0.0214216	1.30243	0.9	1.05	0.03031	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G16_075	GEN-2016-045345.00 345KV	1.309628	1.288992	0.0206367	1.28029	0.9	1.05	0.05193	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_075	GEN-2016-045345.00 345KV	1.334832	1.313646	0.0211858	1.30477	0.9	1.05	0.05193	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_075	GEN-2016-045345.00 345KV	1.33437	1.312243	0.0221272	1.28029	0.9	1.05	0.03214	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20SP	G16_075	GEN-2016-045345.00 345KV	1.360049	1.33735	0.0226998	1.30477	0.9	1.05	0.03214	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_075	GEN-2016-045345.00 345KV	1.305864	1.28671	0.0191541	1.27615	0.9	1.05	0.04947	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_075	GEN-2016-045345.00 345KV	1.330995	1.31132	0.019675	1.30055	0.9	1.05	0.04947	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_075	GEN-2016-045345.00 345KV	1.323208	1.303765	0.0194432	1.27615	0.9	1.05	0.03175	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_075	GEN-2016-045345.00 345KV	1.348673	1.328706	0.0199662	1.30055	0.9	1.05	0.03175	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_075	GEN-2016-045345.00 345KV	1.324474	1.304677	0.0197963	1.27732	0.9	1.05	0.03356	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_075	GEN-2016-045345.00 345KV	1.349963	1.329637	0.0203258	1.30175	0.9	1.05	0.03356	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	16WP	G16_075	GEN-2016-057345.00 345KV	1.315324	1.295967	0.0193568	1.28969	0.9	1.05	0.03550	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_075	GEN-2016-057345.00 345KV	1.317048	1.295896	0.0211525	1.2907	0.9	1.05	0.03359	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	00	0	17SP	G16_075	GEN-2016-057345.00 345KV	1.320421	1.299306	0.0211154	1.2907	0.9	1.05	0.03031	G15063_T 345.00 - MATHWSN7 345.00 345KV CKT 1
FDNS	00	0	17SP	G16_075	GEN-2016-057345.00 345KV	1.320542	1.299373	0.0211695	1.2907	0.9	1.05	0.03031	G15063_T 345.00 - WOODRING 345KV CKT 1
FDNS	00	0	20SP	G16_075	GEN-2016-057345.00 345KV	1.322751	1.301815	0.0209361	1.29302	0.9	1.05	0.05193	DBL-WWRD-TGA
FDNS	00	0	20SP	G16_075	GEN-2016-057345.00 345KV	1.347741	1.325302	0.0224383	1.29302	0.9	1.05	0.03214	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	20WP	G16_075	GEN-2016-057345.00 345KV	1.318949	1.29951	0.0194386	1.28884	0.9	1.05	0.04947	DBL-WWRD-TGA
FDNS	00	0	20WP	G16_075	GEN-2016-057345.00 345KV	1.336467	1.316738	0.0197288	1.28884	0.9	1.05	0.03175	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	00	0	25SP	G16_075	GEN-2016-057345.00 345KV	1.337745	1.31766	0.0200852	1.29003	0.9	1.05	0.03356	MATHWSN7 345.00 - NORTHWEST 345KV CKT 1
FDNS	09ALL	4	25SP	G16_075	LUDELL 3 115.00 115KV	0.936082	0.897028	0.0390532	0.93227	0.9	1.05	0.12213	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G16_075	LUDELL 3 115.00 115KV	0.938739	0.899773	0.0389661	0.93227	0.9	1.05	0.10542	MINGO - SETAB 345KV CKT 1
FDNS	09ALL	4	25SP	G16_075	LUDELLT3 115.00 115KV	0.936098	0.897045	0.0390525	0.93229	0.9	1.05	0.12213	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G16_075	LUDELLT3 115.00 115KV	0.938755	0.89979	0.0389654	0.93229	0.9	1.05	0.10542	MINGO - SETAB 345KV CKT 1
FDNS	02ALL	2	17G	G16_075	MATHWSN7 345.00 345KV	1	1.057966	0.0579665	1.05205	0.9	1.05	0.03574	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL	2	17G	G16_075	MATHWSN7 345.00 345KV	1	1.060389	0.0603888	1.05205	0.9	1.05	0.03574	TATONGA7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	09ALL	4	25SP	G16_075	MCDONLD3 115.00 115KV	0.940883	0.899428	0.041455	0.93614	0.9	1.05	0.12213	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G16_075	NORTH ATWOOD 115KV	0.936247	0.896563	0.0396842	0.93228	0.9	1.05	0.12213	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1
FDNS	09ALL	4	25SP	G16_075	NORTH ATWOOD 115KV	0.939221	0.899939	0.0392824	0.93228	0.9	1.05	0.10542	MINGO - SETAB 345KV CKT 1
FDNS	09ALL	4	25SP	G16_075	ONEOK 3 115.00 115KV	0.940149	0.898709	0.0414398	0.93547	0.9	1.05	0.12213	G16-050-TAP 345.00 - POST ROCK 345KV CKT 1

11.10 H-T: THERMAL POWER FLOW ANALYSIS (OTHER CONSTRAINTS NOT REQUIRING TRANSMISSION REINFORCEMENT)

Available upon request

11.11 H-T-AS: AFFECTED SYSTEM THERMAL POWER FLOW ANALYSIS (CONSTRAINTS FOR POTENTIAL UPGRADES)

SPP analysis results available upon request

Please see MPC's report on the next page.

Study Methodology & Assumptions

Study Criteria and Procedures

All interconnection requirements are based on the applicable MPC interconnection planning criteria and in accordance with the NERC Reliability Standards. Steady state violations of applicable planning criteria were attributed to the SPP generation request by the usage of MPC Generation Interconnection procedures found in the MPC Transmission Planning BPM.

MPC Criteria

The following is considered to be a high-level description of MPC generation interconnection procedures and criteria. For a more detailed description please refer to the MPC Planning Criteria and the MPC Transmission Planning BPM.

A branch is considered as a thermal injection constraint if the branch is loaded above its applicable normal or emergency rating in the post-change case, and any of the following conditions are met:

- The generator has a larger than 20% DF on the overloaded facility under post contingent condition or 5% DF under system intact condition, or
- The overloaded facility or the overload-causing contingency is at generator's outlet.
- The megawatt impact due to the generator is greater than or equal to 20% of the applicable rating (normal or emergency) of the overloaded facility

A bus is considered a voltage constraint if the bus voltage is outside of applicable normal or emergency limits for the post-change case, and the change in bus voltage is greater than 0.01 per unit.

Additionally if the cumulative MW impact of the group of study generators is greater than 20% of the rating of the overload facility any individual generator whose MW impact is greater than 5% of the rating of the facility shall participate in mitigation. If the cumulative voltage impact is greater than 1% than any individual generator whose voltage impact is greater than 0.33% shall participate in mitigation.

Contingency Criteria

A comprehensive list of contingencies was considered for steady-state analysis based on the MPC Group 2 Phase 1 System Impact Study contingency list:
NERC Category P0, P1, P2, P4, P5, and P7 in the OTP, WAPA, GRE, XCEL, MDU, and MP control areas.
Additionally contingencies involving MH-US contingencies that result in DC runbacks were included.

Model Development

The following MPC Group 2 System Impact Study Phase 1 models were used for the analysis:

- 2024 Summer Off-Peak (high export)

Post-queued generation was removed and the generators under study were dispatched 100% to SPP footprint generation (not including generation local to the projects under study) if that had not already been done in the Group 2 study models. The projects under study are as follows:

- 2016-004: 201.6 MW wind at Leland Olds 230 kV

- 2016-017: 250.7 MW wind on Leland Olds-Ft. Thompson 345 kV

Steady State Analysis

The following thermal overloads on the MPC system were identified in the 2021 Summer Off-Peak analysis. No voltage violations were identified. Results are shown in Table 1

The only constraint is an overload of the Center-Jamestown 345 kV line following a fault and breaker fail of CB 9182 at Jamestown 230 kV that effectively outages the entire bus. 2016-004 is solely required to mitigate this overload based on the results highlighted in yellow. Mitigation is not required for the extreme event and is included for informational purposes only.

TABLE 1: Thermal Constraints

Facility	Rating (MVA)	Group Impact			Individual 2016-004 Impact			Individual 2016-017 Impact			Total Overload %	Contingency
		Pre Flow (MW)	Post Flow (MW)	DF %	Pre Flow (MW)	Post Flow (MW)	DF %	Pre Flow (MW)	Post Flow (MW)	DF %		
620369 JAMESTN3 345.00 657791 CENTER 3 345.00 1	705	698.0	766.3	9.7%	713.5	766.3	26.2%	741.0	766.3	10.1%	108.7%	P24:230:UMZW:# 1033 #: JT in ND. Bus-tie Breaker Fault (9182)
620369 JAMESTN3 345.00 657791 CENTER 3 345.00 1	705	696.5	762.8	9.4%	712.1	762.8	25.2%	738.8	762.8	9.6%	108.2%	E2C:230:UMZW:# 1504 #: JT in ND. Loss of One Voltage Plus Transformers (Extreme Event)

11.12 H-V-AS: AFFECTED SYSTEM VOLTAGE POWER FLOW ANALYSIS (CONSTRAINTS FOR POTENTIAL UPGRADES)

SPP analysis results available upon request

11.13 I: POWER FLOW ANALYSIS (CONSTRAINTS FROM MULTI-CONTINGENCIES)

SPP analysis results available upon request

11.14 J: DYNAMIC STABILITY ANALYSIS REPORTS

11.14.1 J1: GROUP 1 DYNAMIC STABILITY ANALYSIS REPORT

S&C ELECTRIC COMPANY
Excellence Through Innovation

DISIS-2016-001-1 (GROUP 01)

LITTLE ROCK, AR

SOUTHWEST POWER POOL

DEFINITIVE INTERCONNECTION SYSTEM IMPACT STUDY

S&C PROJECT NUMBER: 12007

REVISION: 0

FINAL REPORT

CONFIDENTIAL

DECEMBER 6, 2017

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REPORT REVISION HISTORY:

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0	12/6/2017	ME	SK	SK	Final report issued.

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1. EXECUTIVE SUMMARY

S&C Electric Company (S&C) has performed several analyses as part of the Definitive Interconnection System Impact Study, DISIS-2016-001-1 (Group 1), in response to a request through Southwest Power Pool (SPP). Group 1 consists of six (6) new generator interconnection requests (GEN-2015-095, GEN-2016-003, GEN-2016-020, GEN-2016-045, GEN-2016-047, and GEN-2016-057).

S&C has performed a dynamic stability analysis for Group 1 using three (3) base cases (2016 Winter Peak (WP), 2017 Summer Peak (SP), and 2025 Summer Peak (SP)) provided by SPP. For each base case, all six new interconnection requests and prior-queued projects were studied at 100% of nameplate MW capacity.

The dynamics stability analysis demonstrated that the system remains stable under all studied contingency and all interconnection requests projects remain connected during and after the contingency. However, few contingencies caused instances of transient recovery over-voltages that violate the planning criteria. Further investigations revealed that the cause of the observed overvoltage instances is the step up transformer of the Sleeping Bear wind facility which was tapped at 1.05 p.u. in the original model. Revised modelling data received by SPP from the transmission owner indicated that the subject transformer should be tapped at 1 p.u. instead. Additionally, to mitigate the observed overvoltage instances, the reactive power output of the switched capacitor bank at the 34.5 kV bus of the Sleeping Bear wind farm was set to zero initially but its voltage control mode was left enabled. The dynamic analysis was repeated with these changes and no overvoltage instances were observed.

S&C has performed power factor analysis on the three base cases of Group 1. Power factor analysis reported the power factors at the study projects point of interconnection (POI) for all N-1 three-phase contingences. This analysis indicates that for interconnection requests GEN-2015-095, GEN-2016-003, and GEN-2016-020, the measured power factor was between 0.95 lagging to 0.95 leading power factor at the POIs under all studied contingencies. However, for interconnection requests GEN-2016-045 and GEN-2016-057, power factors beyond the normal capability (from 0.95 lagging to 0.95 leading) were observed in the base case and for most of the studied contingencies.

S&C has performed an analysis of low wind/low solar irradiance solar conditions for interconnection requests that are renewable energy projects. The low wind/low solar irradiance analysis was performed by taking the interconnection generation out of service and determining the Mvar size of a shunt reactor to offset the reactive power generated from the capacitance of the project's transmission lines and collector cables. The shunt reactor Mvars are given in Section 8.

S&C has performed a short-circuit analysis for the 2016 Winter Peak, 2017 Summer Peak, and 2025 Summer Peak cases and reported short-circuit results at all buses up to five (5) levels away from the POI of the study projects.

2. INTRODUCTION

S&C has performed several analyses as part of the Definitive Interconnection System Impact Study, DISIS-2016-001-1 (Group 1), in response to a request through SPP. Group 1 consist of six (6) new generator interconnection requests listed in Table 1 and twenty-seven (27) previously queued projects listed in Table 3

Table 1 – Generation Interconnection Requests

Request	Size (MW)	Generator Model	Point of Interconnection
GEN-2015-095	176	Vestas V110	Tap on Mooreland-Noel Switch 138 kV (#520999-520201) (DeGrasse 138 kV)(G15-095T, 560066)
GEN-2016-003	248.4	Vestas GS V126 3.45MW	Tap on Hitchland (523097) – Woodward (515375) 345 kV, ckt 1&2 (G16-003-TAP, 560071)
GEN-2016-020	150	Vestas V110 VCSS 2.0MW	Mooreland 138 kV (520999)
GEN-2016-045	500	GE 2.3MW	Mathewson 345 kV (515497)
GEN-2016-047	Uprate of 8MW SP/24MW WP (Total 118MW SP/134MW WP)	Combustion Turbine (GENROU)	Mustang 69 kV (514860)
GEN-2016-057	500	GE 2.3MW	Mathewson 345 kV (515497)

Table 2 – Prior-Queued Projects

Request	Size (MW)	Generator Model	Point of Interconnection
GEN-2001-037	102	GE 1.5MW	Moorland – Woodward 138 kV (515785)
GEN-2005-008	120	GE 1.5MW	Woodward 138 kV (514785)
GEN-2006-024S	18.9	Suzlon 2.1MW	Buffalo Bear 69 kV (521120)
GEN-2006-046	132	Mitsubishi 2.4MW	Dewey 138 kV (514787)
GEN-2007-021	200	GE 1.6MW	Tatonga 345 kV (515407)
GEN-2007-043	200	GE 1.6	Minco 345 kV (514801)
GEN-2007-044	299.2	GE 1.6MW	Tatonga 345 kV (515407)
GEN-2007-050	170.2	Siemens 2.3MW	Woodward 138 kV (515376)
GEN-2007-062	765	GE 1.5MW	Woodward 345 kV (515375)
GEN-2008-003	101.2	Siemens 2.3MW	Woodward 138 kV (515376)
GEN-2008-044	197.8	Siemens SWT 2.3MW	Tatonga 345 kV (515407)
GEN-2010-011	29.7	Siemens SWT 2.3MW	Tatonga 345 kV (515407) (Addition to Gen-2008-044 34.5 kV bus (515450)
GEN-2010-040	298.5	RePower 2.05MW	Cimarron 345 kV (514901)
GEN-2011-010	100.8	GE 1.6MW	Minco 345 kV (514801)
GEN-2011-019	299	Siemens 2.3MW	Woodward 345 kV (515375)
GEN-2011-020	299	Siemens 2.3MW	Woodward 345 kV (515375)
GEN-2011-054	298	Vestas V100 2.0MW	Cimarron 345 kV (514901)
GEN-2014-002	10.53 increase (Pmax=209.4)	GE 97.4m 1.79MW (579256)	Tatonga 345 kV (515407)
GEN-2014-003	15.84 increase (Pmax=315)	GE 97.4m 1.79MW (579271,579275)	Tatonga 345 kV (515407)
GEN-2014-005	5.67 increase (Pmax=106.5)	GE 97.4m 1.79MW (514113)	Minco 345 kV (514801)
GEN-2014-020	100.0	Vestas V110 2.0MW	Tuttle 138 kV (511501)
GEN-2014-056	250.0	GE 2.0MW	Minco 345 kV (514801)
GEN-2015-029	161.0	GE 2.3MW	Tatonga 345 kV (515407)
GEN-2015-048	200	Vestas V110	Cleo Corner 138 kV (#514778)
GEN-2015-057	100	G.E. 2.3MW	Minco 345 kV (#514801)
GEN-2015-093	250	G.E. 2MW	Gracemont – Lawton Eastside 345 kV
GEN-2015-095	176	Vestas V110	Tap on Mooreland-Noel Switch 138 kV (#520999-520201)

3. TRANSMISSION SYSTEM AND STUDY AREA

The interconnection requests in Group 1 will interconnect into Oklahoma Gas & Electric (OKGE, Area #524) and Western Farmers Electric Cooperative (WFEC, Area #525).

In addition to Areas #524 and #525, the following areas were monitored also:

- American Electric Power West (AEPW, Area #520)
- Southwestern Public Service (SPS, Area #526)
- Midwest Energy (MIDW, Area #531)
- Sunflower Electric Power Corporation (SUNC, Area #534)
- Westar Energy, Inc. (WERE, Area #536)

4. POWER FLOW BASE CASES

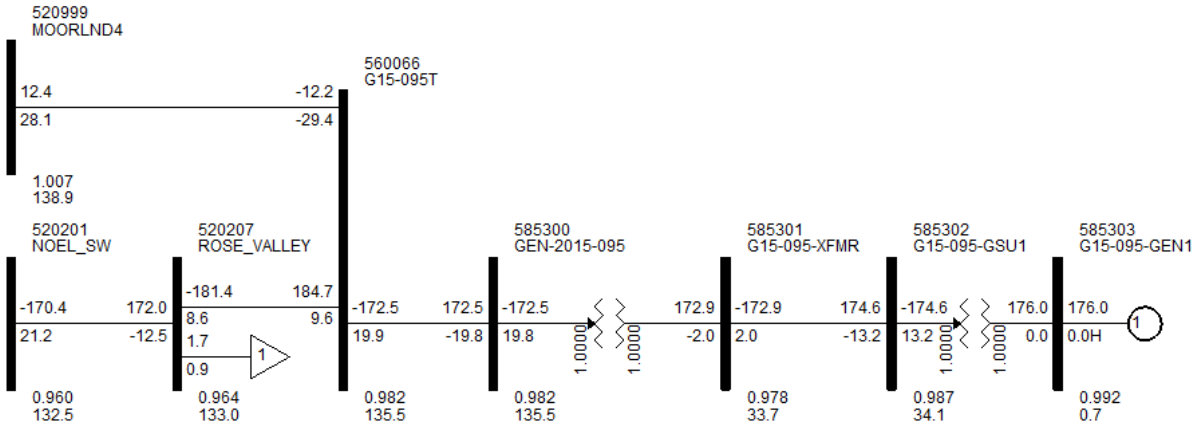
DISIS-2016-001-1 (Group 1) and prior-queued projects were modeled as aggregated generating units in the base cases from SPP.

Study Base Cases Scenario

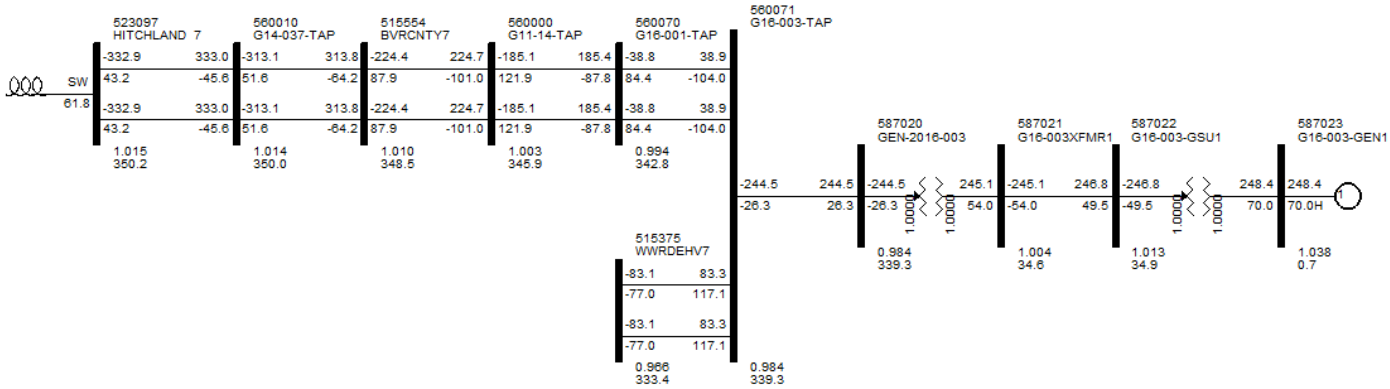
- **MDWG15-16WP_DIS1601_G01.sav** – 2016 Winter Peak Base Case for Group 1. New interconnection requests and prior-queued projects at 100% output power.
- **MDWG15-17SP_DIS1601_G01.sav** – 2017 Summer Peak Base Case for Group 1. New interconnection requests and prior-queued projects at 100% output power.
- **MDWG15-25SP_DIS1601_G01.sav** – 2025 Summer Peak Base Case for Group 1. New interconnection requests and prior-queued projects at 100% output power.

5. POWER FLOW MODEL

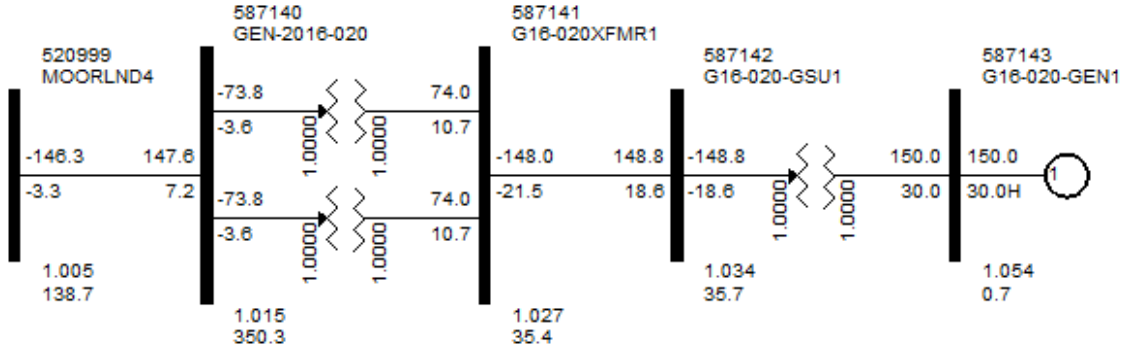
SPP's base case power flow models were built in PSS/E 32.2.1. In PSS/E of the same version, S&C created one-line diagrams depicted in Figure 1 for each interconnection request.



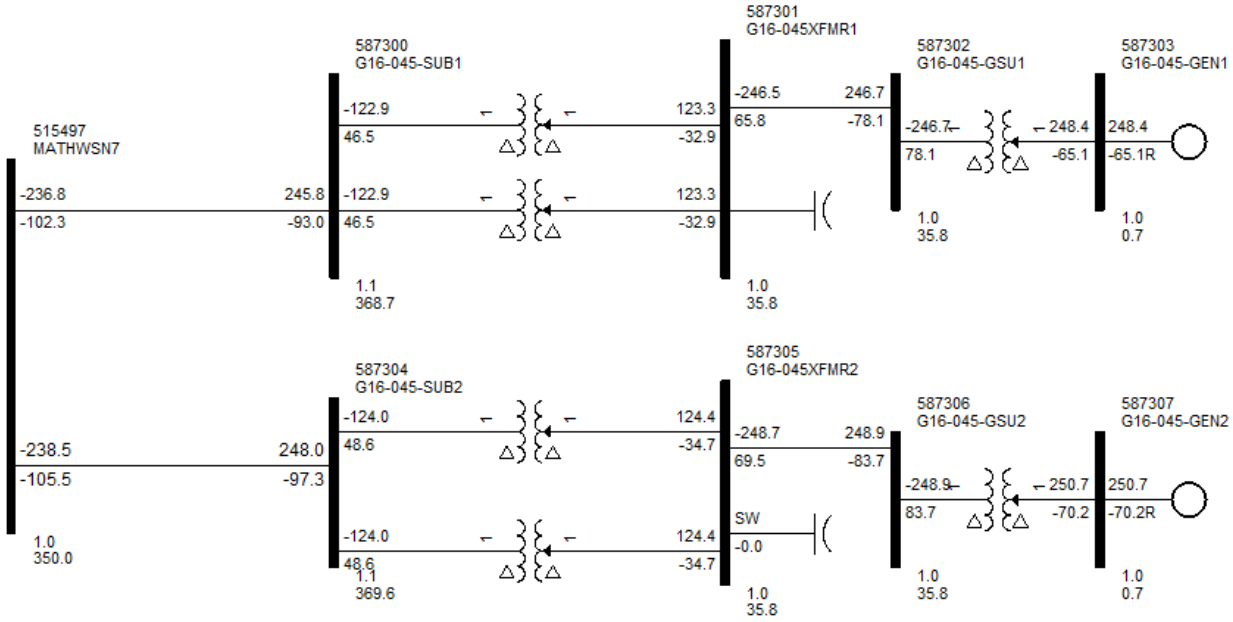
(a) Interconnection request GEN-2015-095



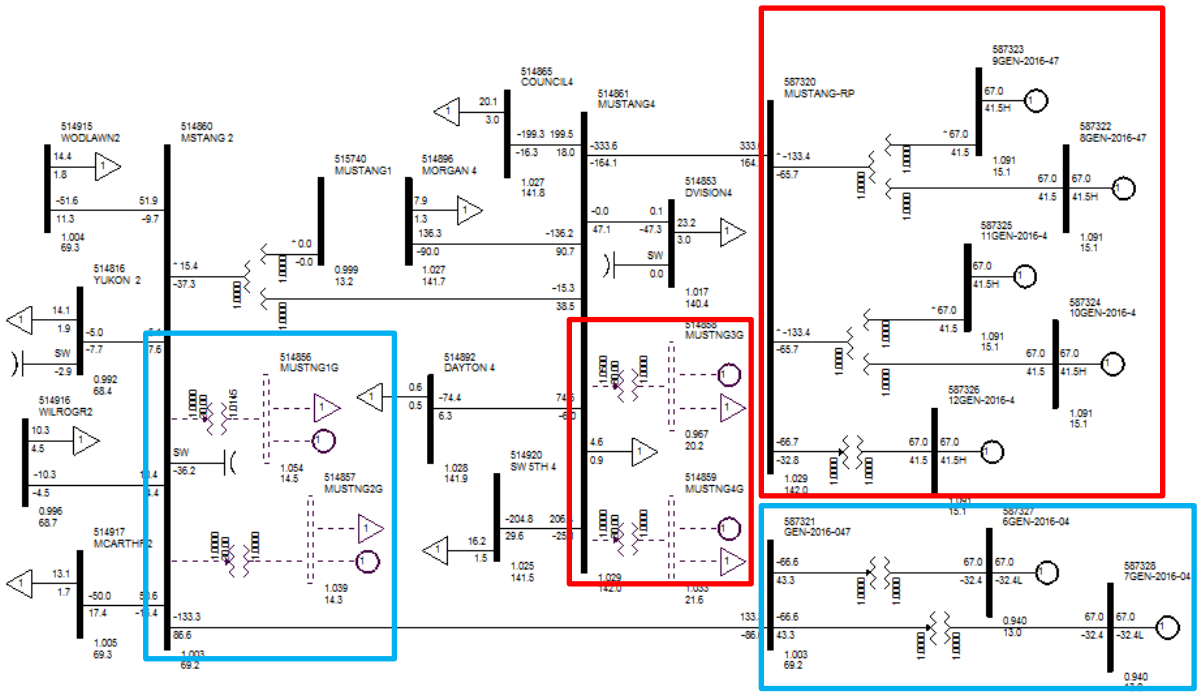
(b) Interconnection request GEN-2016-003



(c) Interconnection request GEN-2016-020

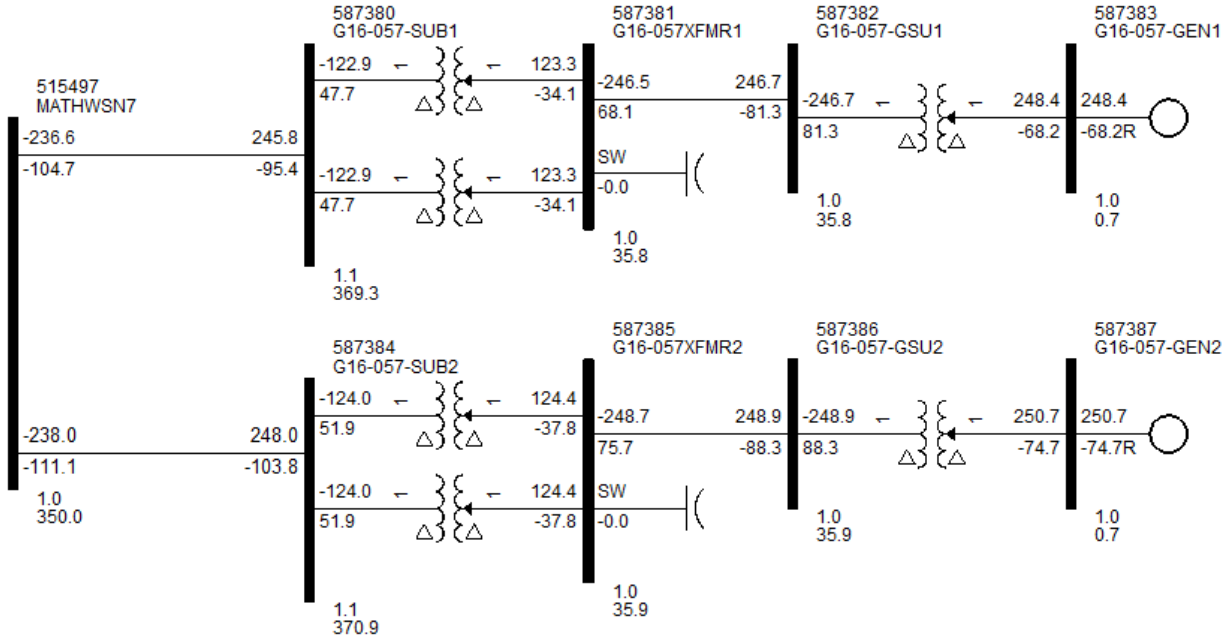


(d) Interconnection request GEN-2016-045



(e) Interconnection request GEN-2016-047

138 kV System in Red: Existing Generation (≈390MW) is dashed & New Generation (335/295MW WP/SP) is solid
Net Result: No 138kV Generation Added
69 kV System in Blue: Existing Generation (≈110MW) is dashed & New Generation (134/118MW WP/SP) is solid
Net Result: Uprate of 24/8MW WP/SP



(f) Interconnection request GEN-2016-057

Figure 1: One-line Diagrams of the Interconnection Request Projects

6. DYNAMIC STABILITY ANALYSIS

6.1. ASSUMPTIONS

Dynamic stability analysis was performed for all the SPP contingencies listed in Appendix A. Three phase faults were simulated as bolted faults, while single line-to-ground faults were simulated under the assumption that a single line-to-ground fault will cause a 40% drop in the positive-sequence voltage at the fault location.

6.2. STABILITY CRITERIA

Dynamic stability studies were performed to ensure system stability following critical faults on the system. The system is considered stable if the following conditions are met:

(1) Disturbances including three-phase and single-phase to ground faults, should not cause synchronous and asynchronous plants to disconnect from the transmission grid.

(2) The angular positions of synchronous machine rotor become constant following an aperiodic system disturbance.

(3) Voltage magnitudes and frequencies at terminals of asynchronous generators should not exceed magnitudes and durations that will cause protection elements to operate. Furthermore, the response after the disturbance at the terminals of the machine exhibits no sustained oscillations in power output, speed, frequency, etc.

(4) Voltage magnitudes and angles after the disturbance should settle to a constant and acceptable operating level. Frequencies should settle to the acceptable range within nominal 60 Hz power frequency.

In addition, performance of the transmission system is measured against the SPP Disturbance Criteria Requirements on Angular oscillations and Transient Voltage Recovery, detailed in Appendix B.

6.3. DYNAMIC STABILITY RESULTS

The dynamic stability study was performed for the three base case scenarios; 2016 WP, 2017 SP, and 2025 SP. Initially, the base case dynamic data was analyzed and stable initial runs were obtained. Then, the study was performed for all the SPP contingencies listed in Appendix A. Detailed plots of dynamic stability results for each contingency and each peak season are given in Appendices C-1 to C-3. These results demonstrate that the system remains stable under each studied contingency and all studied interconnection projects stay online during and after the contingency.

Post analysis of the results, however, shows that a few contingencies caused instances of transient recovery over-voltages that violates the planning criteria. Table 3 summarizes the observed voltage violations on high-voltage buses. Further investigations revealed that the cause of the observed overvoltage instances is the step up transformer of the Sleeping Bear wind facility which was tapped at 1.05 p.u. in the original model. Revised modelling data received by SPP from the transmission owner indicated that the subject transformer should be tapped at 1 p.u. instead. Additionally, to mitigate the observed overvoltage instances, the reactive power output of the switched capacitor bank at the 34.5 kV bus of the Sleeping Bear wind farm was set to zero initially but its voltage control mode was left enabled. The dynamic analysis was repeated with these changes and no overvoltage instances were observed.

Table 3 – Observed Voltage Violations on High Voltage Buses

Contingency	Bus No	Base Voltage (kV)	Maximum Voltage (p.u.)	Minimum Voltage* (p.u.)
2016 Winter Peak				
FLT31-3PH	520920	138.0	1.25	1.13
FLT57-3PH	520920	138.0	1.27	1.13
FLT62-1PH	520920	138.0	1.28	1.12
2017 Summer Peak				
FLT57-3PH	520920	138.0	1.23	1.09
FLT62-1PH	520920	138.0	1.21	1.03

** minimum voltage is defined as the minimum voltage observed 2.5 seconds after the fault was cleared, per SPP criteria*

7. Power Factor Analysis

The power factor analysis was performed for each base case and for all N-1 three-phase contingencies shown in the Fault Definition table in Appendix A. Single-phase contingencies, N-1-1 contingencies, and N-2 contingencies were excluded from the study. Prior to the run, the base cases were slightly altered, by turning off the renewable energy projects and replacing them by a generator at the high-voltage bus with the MW rating of the renewable project at that POI and no reactive power capability. A new reactive power generator was placed at each renewable energy project high voltage bus for supporting the reactive power. The reactive power generators were set to hold the voltage schedule at the interconnection project consistent with the voltage schedules in the provided base case or 1.0 p.u. voltage (whichever is higher).

Table 4 gives the voltage schedule at each interconnection request location in the original base cases. As shown in Figure 1 (d) and (f) the connection arrangement for interconnection requests GEN-2016-057 and GEN-2016-045 consists of two substations each with a separate high voltage buses that connects to the POI through a separate tap line. Therefore, for the sake of power factor analysis, each substation was considered separately and equivalent generators was created for each of them at their respective HV buses.

Table 4 – Base Case Voltages at the Interconnection Request POI Bus

Request	POI	2016 Winter Peak (p.u.)	2017 Summer Peak (p.u.)	2025 Summer Peak (p.u.)
GEN-2015-095	560066	1.0007	0.9939	0.9913
GEN-2016-003	560071	1.0058	1.0045	1.0092
GEN-2016-020	520999	1.0189	1.0151	1.0140
GEN-2016-045	515497	1.0144	1.0189	1.0205
GEN-2016-047	514860	1.0076	1.0060	1.0055
GEN-2016-057	515497	1.0144	1.0189	1.0205

The power factor analysis results for Group 1 interconnection requests for each N-1 three phase contingency are presented in Appendix D. The measured power factor for interconnection requests GEN-2015-095, GEN-2016-003 and GEN-2016-020 is between 0.95 lagging to 0.95 leading power factor at the POIs. However, for interconnection requests GEN-2016-045 and GEN-2016-057, power factors beyond the normal required capability (from 0.95 lagging to 0.95

leading) were observed in the base case and for most of the studied contingencies. Note that, interconnection request GEN-2016-047 is not a renewable energy project (combustion turbine) and is therefore not included in the power factor analysis.

Table 5 provides a summary of the maximum leading/lagging reactive power demand and power factor, corresponding to the worst-case contingencies for each project, found by the power factor analysis at the POIs.

Table 5 – Summary of Power Factor Analysis at the POI

Request	Capacity	POI	Reactive Power/Power Factor at the POI	
			Leading (absorbing vars)	Lagging (providing vars)
GEN-2015-095	176 MW	560066	-40.7 Mvar / 0.974	13.5 Mvar / 0.997
GEN-2016-003	248.4 MW	560071	-37.4 Mvar / 0.989	298.6 Mvar / 0.639
GEN-2016-020	150 MW	520999	-28 Mvar / 0.983	67.9 Mvar / 0.909
GEN-2016-045-SUB1	248.4 MW	515497	*	111 Mvar / 0.907
GEN-2016-045-SUB2	250.7	515497	*	122.5 Mvar/0.891
GEN-2016-057-SUB1	248.4 MW	515497	*	117.8 Mvar/0.897
GEN-2016-057-SUB2	250.7	515497	*	141.6 Mvar/0.861

** For Gen-2016-045 and Gen-2016-057 interconnection requests, no leading power factor condition was observed under studied contingencies.*

8. Low Wind/Low Solar irradiance Conditions Analysis

S&C has performed an analysis of low wind/low solar irradiance conditions for the interconnection requests that is a renewable energy project. The low wind/low solar irradiance analysis was performed for the three base case scenarios, 2016 WP, 2017 SP, and 2025 SP, by taking the interconnection renewable energy project out of service and placing a shunt reactor at the project substation high side to offset the reactive power generated from the capacitance of the project's transmission lines and collector cables. The size of the shunt reactor was adjusted such that the net Mvar flow into the POI from the studied renewable energy project was approximately zero. Table 6 gives the shunt reactor Mvars for the studied projects.

Table 6 – Shunt Reactor Mvar Determined by Low Wind/Low Irradiance Study

Request	POI	2016 Winter Peak	2017 Summer Peak	2025 Summer Peak
GEN-2015-095	560066	14.6	14.6	14.6
GEN-2016-003	560071	6.7	6.7	6.7
GEN-2016-020	520999	3.9	3.9	3.9
GEN-2016-045-SUB1	515497	294	294	294
GEN-2016-045-SUB2	515497	310.5	310.5	310.5
GEN-2016-057-SUB1	515497	302.5	302.5	302.5
GEN-2016-057-SUB2	515497	330	330	330

** GEN-2016-047 is not a renewable energy project (combustion turbine) and is therefore not included in this analysis*

9. SHORT-CIRCUIT STUDY

A short-circuit study has been performed on the power flow models for the 2016 Winter Peak, 2017 Summer Peak and 2025 Summer Peak base cases for each generator. Short-circuit analysis includes applying a 3-phase fault on buses up to 5 levels away from the POI of each interconnection request project. PSS/E "Automatic Sequence Fault Calculation (ASCC)" fault analysis module was used for the purpose of short-circuit analysis. The results of the short-circuit analysis have been recorded for all the buses up to five levels away from the point of interconnection of each interconnection request project. Summary of short circuit levels at studied buses is provided in Appendix E-1 and detailed short-circuit study results are provided in Appendix E-2.

10. CONCLUSIONS AND RECOMMENDATIONS

Analysis of Group 1 dynamic simulation results revealed that the system remains stable under all studied contingency and all interconnection requests projects remain connected during and after the contingency. However, few contingencies caused instances of transient recovery over-voltages that violate the planning criteria. Further investigations revealed that the cause of the observed overvoltage instances is the step up transformer of the Sleeping Bear wind facility which was tapped at 1.05 p.u. in the original model. Revised modelling data received by SPP from the transmission owner indicated that the subject transformer should be tapped at 1 p.u. instead. Additionally, to mitigate the observed overvoltage instances, the reactive power output of the switched capacitor bank at the 34.5 kV bus of the Sleeping Bear wind farm was set to zero initially but its voltage control mode was left enabled. The dynamic analysis was repeated with these changes and no overvoltage instances were observed.

The results of power factor analysis indicate that for interconnection requests GEN-2015-095, GEN-2016-003, and GEN-2016-020, the measured power factor was between 0.95 lagging to 0.95 leading power factor at the POIs under all studied contingencies. However, for interconnection requests GEN-2016-045 and GEN-2016-057, power factors beyond the normal required capability (from 0.95 lagging to 0.95 leading) were observed in the base case and for most of the studied contingencies. Note that, interconnection request GEN-2016-047 is not a renewable energy project (combustion turbine) and is therefore not included in the power factor analysis.

The project's low wind/low solar irradiance study suggested that to offset the reactive power from the capacitance of the project's transmission lines and collector cables during the low wind/low irradiance conditions, a 14.6 Mvar shunt reactor size is required for GEN-2015-095, 6.7 Mvar for GEN-2016-003, 3.9 Mvar for GEN-2016-020, 294 Mvar for GEN-2016-045-SUB1, 310 Mvar for GEN-2016-045-SUB2, 302.5 Mvar for GEN-2016-057-SUB1 and a 330 Mvar for GEN-2016-057-SUB2.

A short-circuit study has been performed on the power flow models for the 2016 Winter Peak Season, 2017 Summer Peak Season, and 2025 Summer Peak Season for each generator. A

3-phase fault is applied on buses up to 5 levels away from the POI of each interconnection request project and the results of the study have been presented.

APPENDIX A

SPP GROUP 1 FAULT DEFINITIONS

Table 3 – Fault Definitions

	Cont. Name	Description
1	FLT01-3PH	3 phase fault on CIMARON7 345 kV (514901) to MATHWSN7 345 kV (515497) CKT 1, near CIMARON7. a. Apply fault at the CIMARON7 345 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
2	FLT02-3PH	3 phase fault on CIMARON7 345 kV (514901) to NORTWST7 345 kV (514880), near CIMARON7. a. Apply fault at the CIMARON7 345 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
3	FLT03-3PH	3 phase fault on CIMARON7 345 kV (514901) to MINCO 7 345 kV (514801), near CIMARON7. a. Apply fault at the CIMARON7 345 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
4	FLT04-3PH	3 phase fault on CIMARON7 345 kV (514901) to DRAPER 7 345 kV (514934), near CIMARON7. a. Apply fault at the CIMARON7 345 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
5	FLT05-3PH	3 phase fault on the CIMARON7 345 kV (514901) to CIMARON4 138 kV (514898) to CIMARO11 13.8 kV (515714) XFMR, near CIMARON7 345 kV. a. Apply fault at the CIMARON7 345 kV bus. b. Clear fault after 5 cycles and trip the faulted transformer.
6	FLT15-SB	**Stuck Breaker at CIMARON7 (514901)** a. Apply single phase fault at CIMARON7 bus. b. Clear fault after 16 cycles and trip the following elements c. CIMARON7 (514901) - NORTWST7 (514880) d. CIMARON7 (514901) - DRAPER 7 (514934)
7	FLT16-SB	**Stuck Breaker at CIMARON7 (514901)** a. Apply single phase fault at CIMARON7 bus. b. Clear fault after 16 cycles and trip the following elements c. CIMARON7 (514901) - MINCO 7 (514801) d. CIMARON7 345kV (514901) / CIMARON4 138 kV (514898) / CIMARO11 13.8 kV (515714) transformer

Table 3 – Fault Definitions

	Cont. Name	Description
8	FLT17-SB	**Stuck Breaker at CIMARON7 (514901)** a. Apply single phase fault at CIMARON7 bus. b. Clear fault after 16 cycles and trip the following elements c. CIMARON7 (514901) - MATHWSN7 (515497), CKT 1 d. CIMARON7 (514901) - NORTWST7 (514880)
9	FLT18-SB	**Stuck Breaker at CIMARON7 (514901)** a. Apply single phase fault at CIMARON7 bus. b. Clear fault after 16 cycles and trip the following elements c. CIMARON7 (514901) - MATHWSN7 (515497), CKT 1 d. CIMARON7 (514901) - MINCO 7 (514801)
10	FLT19-SB	**Stuck Breaker at CIMARON7 (514901)** a. Apply single phase fault at CIMARON7 bus. b. Clear fault after 16 cycles and trip the following elements c. CIMARON7 (514901) - MATHWSN7 (515497), CKT 1 d. CIMARON7 (514901) - DRAPER 7 (514934)
11	FLT20-SB	**Stuck Breaker at CIMARON7 (514901)** a. Apply single phase fault at CIMARON7 bus. b. Clear fault after 16 cycles and trip the following elements c. CIMARON7 (514901) - MATHWSN7 (515497), CKT 1 d. CIMARON7 345kV (514901) / CIMARON4 138 kV (514898) / CIMARO11 13.8 kV (515714) transformer
12	FLT21-PO	**Prior Outage of CIMARON7 (514901) to NORTWST7 (514880) line;** 3 phase fault on CIMARON7 (514901) – DRAPER 7 (514934) near CIMARON7 a. Apply fault at the CIMARON7 bus. b. Clear fault after 5 cycles and trip the faulted line.
13	FLT22-PO	**Prior Outage of CIMARON7 (514901) - MINCO 7 (514801) line;** 3 phase fault on the CIMARON7 345kV (514901) / CIMARON4 138 kV (514898) / CIMARO11 13.8 kV (515714) transformer near CIMARON7 a. Apply fault at the CIMARON7 bus. b. Clear fault after 5 cycles and trip the faulted transformer.

Table 3 – Fault Definitions

	Cont. Name	Description
14	FLT23-3PH	3 phase fault on G15-095T 138 kV (560066) to ROSE_VALLEY 138 kV (520207), near G15-095T. a. Apply fault at the G15-095T 138 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
15	FLT24-3PH	3 phase fault on G15-095T 138 kV (560066) to MOORLND4 138 kV (520999), near G15-095T. a. Apply fault at the G15-095T 138 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
16	FLT25-3PH	3 phase fault on ROSE_VALLEY 138 kV (520207) to NOEL_SW 138 kV (520201), near ROSE_VALLEY. a. Apply fault at the ROSE_VALLEY 138 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
17	FLT26-3PH	3 phase fault on MOORLND4 138 kV (520999) to KNOBHIL4 138 kV (514795), near MOORLND4. a. Apply fault at the MOORLND4 138 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
18	FLT27-3PH	3 phase fault on MOORLND4 138 kV (520999) to MOORLND2 69 kV (520995) to MLNDTERT 13.8 kV (521180) XFMR, near MOORLND4 138 kV. a. Apply fault at the MOORLND4 138 kV bus. b. Clear fault after 5 cycles and trip the faulted transformer.
19	FLT28-3PH	3 phase fault on MOORLND4 138 kV (520999) to WINDFRM4 138 kV (515785), near MOORLND4. a. Apply fault at the MOORLND4 138 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
20	FLT29-3PH	3 phase fault on MOORLND4 138 kV (520999) to BEARCAT 138 kV (520500), near MOORLND4. a. Apply fault at the MOORLND4 138 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
21	FLT30-3PH	3 phase fault on MOORLND4 138 kV (520999) to PIC4 138 kV (520425), near MOORLND4. a. Apply fault at the MOORLND4 138 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

Table 3 – Fault Definitions

	Cont. Name	Description
22	FLT31-3PH	3 phase fault on MOORLND4 138 kV (520999) to IODINE 4 138 kV (520957), near MOORLND4. a. Apply fault at the MOORLND4 138 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
23	FLT32-3PH	3 phase fault on MOORLND4 138 kV (520999) to GLASMTN4 138 kV (514788), near MOORLND4. a. Apply fault at the MOORLND4 138 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
24	FLT33-3PH	3 phase fault on MOORLND4 138 kV (520999) to TALOGA 4 138 kV (521065), near MOORLND4. a. Apply fault at the MOORLND4 138 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
25	FLT34-SB	**Stuck Breaker at NOEL_SW (520201)** a. Apply single phase fault at NOEL_SW bus. b. Clear fault after 16 cycles and trip the following elements c. NOEL_SW (520201) - SALT_PLAINS (520208) d. NOEL_SW (520201) - KNOBHIL4 (514795)
26	FLT35-SB	**Stuck Breaker at MOORLND4 (520999)** a. Apply single phase fault at MOORLND4. b. Clear fault after 16 cycles and trip the following elements c. MOORLND4 (520999) - BEARCAT (520500) d. MOORLND4 (520999) - PIC4 (520425)
27	FLT36-PO	**Prior Outage of NOEL_SW (520201) to SALT_PLAINS (520208) line;** 3 phase fault on NOEL_SW (520201) – KNOBHIL4 (514795) near NOEL_SW a. Apply fault at the NOEL_SW bus. b. Clear fault after 5 cycles and trip the faulted line.
28	FLT37-PO	**Prior Outage of MOORLND4 (520999) to BEARCAT (520500) line;** 3 phase fault on MOORLND4 (520999) - PIC4 (520425) near MOORLND4 a. Apply fault at the MOORLND4 bus. b. Clear fault after 5 cycles and trip the faulted line.
29	FLT38-3PH	3 phase fault on G16-003-TAP 345 kV (560071) to G16-001-TAP 345 kV (560070) CKT 1, near G16-003-TAP. a. Apply fault at the G16-003-TAP 345 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

Table 3 – Fault Definitions

	Cont. Name	Description
30	FLT39-3PH	3 phase fault on G16-003-TAP 345 kV (560071) to WWRDEHV7 345 kV (515375) CKT 1, near G16-003-TAP. a. Apply fault at the G16-003-TAP 345 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
31	FLT40-3PH	3 phase fault on HITCHLAND 7 345 kV (523097) to HITCHLAND 6 230 kV (523095) to HITCHLD_TR01 13.2 kV (523091) XFMR, near HITCHLAND 7 345 kV. a. Apply fault at the HITCHLAND 7 345 kV bus. b. Clear fault after 5 cycles and trip the faulted transformer.
32	FLT41-3PH (16WP ONLY)	3 phase fault on HITCHLAND 7 345 kV (523097) to FINNEY 7 345 kV (523853), near HITCHLAND 7. a. Apply fault at the HITCHLAND 7 345 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
33	FLT42-3PH	3 phase fault on HITCHLAND 7 345 kV (523097) to POTTER_CO 7 345 kV (523961), near HITCHLAND 7. a. Apply fault at the HITCHLAND 7 345 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
34	FLT43-3PH	3 phase fault on WWRDEHV7 345 kV (515375) to THISTLE7 345 kV (539801) CKT1, near WWRDEHV7. a. Apply fault at the WWRDEHV7 345 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
35	FLT44-3PH	3 phase fault on WWRDEHV7 345 kV (515375) to BORDER 7 345 kV (515458), near WWRDEHV7. a. Apply fault at the WWRDEHV7 345 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
36	FLT45-3PH	3 phase fault on WWRDEHV7 345 kV (515375) to WWRDEHV4 138 kV (515376) to WWDEHV31 13.8 kV (515795) XFMR, near WWRDEHV7 345 kV. a. Apply fault at the WWRDEHV7 345 kV bus. b. Clear fault after 5 cycles and trip the faulted transformer.
37	FLT46-3PH	3 phase fault on WWRDEHV7 345 kV (515375) to G11-051-TAP 345 kV (562075), near WWRDEHV7. a. Apply fault at the WWRDEHV7 345 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

Table 3 – Fault Definitions

	Cont. Name	Description
38	FLT47-SB	**Stuck Breaker at G16-003-TAP (560071)** a. Apply single phase fault at G16-003-TAP bus. b. Clear fault after 16 cycles and trip the following elements c. G16-003-TAP (560071) - G16-001-TAP (560070), CKT 1 d. G16-003-TAP (560071) - WWRDEHV7 (515375), CKT 1
39	FLT48-SB	**Stuck Breaker at WWRDEHV7 (515375)** a. Apply single phase fault at WWRDEHV7 bus. b. Clear fault after 16 cycles and trip the following elements c. WWRDEHV7 (515375) - THISTLE7 (539801), CKT 1 d. WWRDEHV7 345kV (515375) / WWRDEHV4 138 kV (515376) / WWDEHV31 13.8 kV (515795) transformer
40	FLT49-PO	**Prior Outage of G16-003-TAP (560071) to G16-001-TAP (560070), CKT 1;** 3 phase fault on G16-003-TAP (560071) - WWRDEHV7 (515375), CKT 1 near G16-003-TAP a. Apply fault at the G16-003-TAP bus. b. Clear fault after 5 cycles and trip the faulted line.
41	FLT50-PO	**Prior Outage of WWRDEHV7 (515375)-THISTLE7 (539801), CKT1;** 3 phase fault on the WWRDEHV7 345kV (515375) / WWRDEHV4 138 kV (515376) / WWDEHV31 13.8 kV (515795) transformer near WWRDEHV7 a. Apply fault at the WWRDEHV7 bus. b. Clear fault after 5 cycles and trip the faulted line.
42	FLT51-3PH	3 phase fault on KNOBHIL4 138 kV (514795) to NOEL_SW 138 kV (520201), near KNOBHIL4. a. Apply fault at the KNOBHIL4 138 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
43	FLT52-3PH	3 phase fault on KNOBHIL4 138 kV (514795) to KNOBHIL2 69 kV (514794) to KNOBHIL1 13.2 kV (515732) XFMR, near KNOBHIL4 138 kV. a. Apply fault at the KNOBHIL4 138 kV bus. b. Clear fault after 5 cycles and trip the faulted transformer.
44	FLT53-3PH	3 phase fault on MOORLND2 69 kV (520995) to CRTSJCT2 69 kV (521197), near MOORLND2. a. Apply fault at the MOORLND2 69 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

Table 3 – Fault Definitions

	Cont. Name	Description
45	FLT54-3PH	3 phase fault on WINDFRM4 138 kV (515785) to WOODWRD4 138 kV (514785), near WINDFRM4. a. Apply fault at the WINDFRM4 138 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
46	FLT55-3PH	3 phase fault on BEARCAT 138 kV (520500) to NINMILE 4 138 kV (521128), near BEARCAT. a. Apply fault at the BEARCAT 138 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
47	FLT56-3PH	3 phase fault on PIC4 138 kV (520425) to CEDRDAL4 138 kV (520848), near PIC4. a. Apply fault at the PIC4 138 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
48	FLT57-3PH	3 phase fault on IODINE 4 138 kV (520957) to FTSUPLY4 138 kV (520920), near IODINE 4. a. Apply fault at the IODINE 4 138 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
49	FLT58-3PH	3 phase fault on GLASMTN4 138 kV (514788) to CLEOCOR4 138 kV (514778), near GLASMTN4. a. Apply fault at the GLASMTN4 138 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
50	FLT59-3PH	3 phase fault on TALOGA 4 138 kV (521065) to DEWEY 4 138 kV (514787), near TALOGA 4. a. Apply fault at the TALOGA 4 138 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
51	FLT60-3PH	3 phase fault on TALOGA 4 138 kV (521065) to TALOGA 2 69 kV (521064) to TLGTERT 13.8 kV (521178) XFMR, near TALOGA 4 138 kV. a. Apply fault at the TALOGA 4 138 kV bus. b. Clear fault after 5 cycles and trip the faulted transformer.
52	FLT61-SB	**Stuck Breaker at MOORLND4 (520999)** a. Apply single phase fault at MOORLND4. b. Clear fault after 16 cycles and trip the following elements c. MOORLND4 (520999) - KNOBHIL4 (514795) d. MOORLND4 138kV (520999) / MOORLND2 69 kV (520995) / MLNDTERT 13.8 kV (521180) transformer

Table 3 – Fault Definitions

	Cont. Name	Description
53	FLT62-SB	**Stuck Breaker at MOORLND4 (520999)** a. Apply single phase fault at MOORLND4. b. Clear fault after 16 cycles and trip the following elements c. MOORLND4 (520999) - IODINE 4 (520957) d. MOORLND4 (520999) - GLASMTN4 (514788)
54	FLT63-PO	**Prior Outage of MOORLND4 (520999) to KNOBHIL4 (514795) line;** 3 phase fault on MOORLND4 138kV (520999) / MOORLND2 69 kV (520995) / MLNDTERT 13.8 kV (521180) transformer near MOORLND4 a. Apply fault at the MOORLND4 bus. b. Clear fault after 5 cycles and trip the faulted transformer.
55	FLT64-PO	**Prior Outage of MOORLND4 (520999) to IODINE 4 (520957) line;** 3 phase fault on MOORLND4 (520999) - GLASMTN4 (514788) near MOORLND4 a. Apply fault at the MOORLND4 bus. b. Clear fault after 5 cycles and trip the faulted line.
56	FLT65-3PH	3 phase fault on MATHWSN7 345 kV (515497) to TATONGA7 345 kV (515407) CKT1, near MATHWSN7. a. Apply fault at the MATHWSN7 345 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
57	FLT66-3PH	3 phase fault on MATHWSN7 345 kV (515497) to G15-063T 345 kV (560055), near MATHWSN7. a. Apply fault at the MATHWSN7 345 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
58	FLT67-3PH	3 phase fault on MATHWSN7 345 kV (515497) to NORTWST7 345 kV (514880), near MATHWSN7. a. Apply fault at the MATHWSN7 345 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
59	FLT68-3PH	3 phase fault on NORTWST7 345 kV (514880) to NORTWST4 138 kV (514879) to NORTWS41 13.8 kV (514885) XFMR, near NORTWST7 345 kV. a. Apply fault at the NORTWST7 345 kV bus. b. Clear fault after 5 cycles and trip the faulted transformer.
60	FLT69-3PH	3 phase fault on NORTWST7 345 kV (514880) to ARCADIA7 345 kV (514908), near NORTWST7. a. Apply fault at the NORTWST7 345 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

Table 3 – Fault Definitions

	Cont. Name	Description
61	FLT70-3PH	3 phase fault on NORTWST7 345 kV (514880) to SPRNGCK7 345 kV (514881), near NORTWST7. a. Apply fault at the NORTWST7 345 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
62	FLT71-3PH	3 phase fault on TATONGA7 345 kV (515407) to G11-051-TAP 345 kV (562075), near TATONGA7. a. Apply fault at the TATONGA7 345 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
63	FLT72-3PH	3 phase fault on G15-063T 345 kV (560055) to WOODRNG7 345 kV (514715), near G15-063T. a. Apply fault at the G15-063T 345 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
64	FLT73-SB	**Stuck Breaker at MATHWSN7 (515497)** a. Apply single phase fault at MATHWSN7. b. Clear fault after 16 cycles and trip the following elements c. MATHWSN7 (515497) - NORTWST7 (514880) d. MATHWSN7 (515497) - CIMARON7 (514901), CKT 1
65	FLT74-SB	**Stuck Breaker at MATHWSN7 (515497)** a. Apply single phase fault at MATHWSN7. b. Clear fault after 16 cycles and trip the following elements c. MATHWSN7 (515497) - TATONGA7 (515407), CKT 1 d. MATHWSN7 (515497) - G15-063T (560055)
66	FLT75-PO	**Prior Outage of MATHWSN7 (515497) to NORTWST7 (514880) line;** 3 phase fault on MATHWSN7 (515497) - CIMARON7 (514901), CKT 1 near MATHWSN7 a. Apply fault at the MATHWSN7 bus. b. Clear fault after 5 cycles and trip the faulted line.
67	FLT76-PO	**Prior Outage of MATHWSN7 (515497) to TATONGA7 (515407) CKT 1;** 3 phase fault on MATHWSN7 (515497) - G15-063T (560055) near MATHWSN7 a. Apply fault at the MATHWSN7 bus. b. Clear fault after 5 cycles and trip the faulted line.

Table 3 – Fault Definitions

	Cont. Name	Description
68	FLT77-3PH	3 phase fault on MSTANG 2 69 kV (514860) to YUKON 2 69 kV (514816), near MSTANG 2. a. Apply fault at the MSTANG 2 69 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
69	FLT78-3PH	3 phase fault on MSTANG 2 69 kV (514860) to MCARTHR2 69 kV (514917), near MSTANG 2. a. Apply fault at the MSTANG 2 69 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
70	FLT79-3PH	3 phase fault on MSTANG 2 69 kV (514860) to MUSTANG4 138 kV (514861) to MUSTANG1 13.2 kV (515740) XFMR, near MSTANG 2 69 kV. a. Apply fault at the MSTANG 2 69 kV bus. b. Clear fault after 5 cycles and trip the faulted transformer.
71	FLT80-3PH	3 phase fault on MSTANG 2 69 kV (514860) to WODLAWN2 69 kV (514915), near MSTANG 2. a. Apply fault at the MSTANG 2 69 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
72	FLT81-3PH	3 phase fault on YUKON 2 69 kV (514816) to SVCELRN2 69 kV (514817), near YUKON 2. a. Apply fault at the YUKON 2 69 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
73	FLT82-3PH	3 phase fault on MUSTANG4 138 kV (514861) to DVISION4 138 kV (514853), near MUSTANG4. a. Apply fault at the MUSTANG4 138 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
74	FLT83-3PH	3 phase fault on MUSTANG4 138 kV (514861) to MORGAN 4 138 kV (514896), near MUSTANG4. a. Apply fault at the MUSTANG4 138 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
75	FLT84-3PH	3 phase fault on MUSTANG4 138 kV (514861) to COUNCIL4 138 kV (514865), near MUSTANG4. a. Apply fault at the MUSTANG4 138 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

Table 3 – Fault Definitions

	Cont. Name	Description
76	FLT85-3PH	3 phase fault on MUSTANG4 138 kV (514861) to DAYTON 4 138 kV (514892), near MUSTANG4. a. Apply fault at the MUSTANG4 138 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
77	FLT86-3PH (16WP & 17SP ONLY)	3 phase fault on MUSTANG4 138 kV (514861) to SW 5TH 4 138 kV (514920), near MUSTANG4. a. Apply fault at the MUSTANG4 138 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
78	FLT87-3PH	3 phase fault on WODLAWN2 69 kV (514915) to BETHANY2 69 kV (514914), near WODLAWN2. a. Apply fault at the WODLAWN2 69 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
79	FLT88-SB	**Stuck Breaker at MSTANG 2 (514860)** a. Apply single phase fault at MSTANG 2. b. Clear fault after 16 cycles and trip the following elements c. MSTANG 2 (514860) - YUKON 2 (514816) d. MSTANG 2 69 kV (514860) / MUSTANG4 138 kV (514861) / MUSTANG1 13.2 kV (515740) transformer
80	FLT89-SB	**Stuck Breaker at MSTANG 2 (514860)** a. Apply single phase fault at MSTANG 2. b. Clear fault after 16 cycles and trip the following elements c. MSTANG 2 (514860) - MCARTHR2 (514917) d. MSTANG 2 (514860) - WODLAWN2 (514915)
81	FLT90-PO	**Prior Outage of MSTANG 2 (514860) to YUKON 2 (514816) line;** 3 phase fault on MSTANG 2 69 kV (514860) / MUSTANG4 138 kV (514861) / MUSTANG1 13.2 kV (515740) transformer near MSTANG 2 a. Apply fault at the MSTANG 2 bus. b. Clear fault after 5 cycles and trip the faulted transformer.
82	FLT91-PO	**Prior Outage of MSTANG 2 (514860) to MCARTHR2 (514917) line;** 3 phase fault on MSTANG 2 (514860) - WODLAWN2 (514915) near MSTANG 2 a. Apply fault at the MSTANG 2 bus. b. Clear fault after 5 cycles and trip the faulted line.

APPENDIX B

SOUTHWEST POWER POOL DISTURBANCE PERFORMANCE REQUIREMENTS (SUBMITTED IN A SEPARATE FILE)

APPENDIX C

DYNAMIC STABILITY PLOTS FOR GROUP 1 (SUBMITTED IN SEPARATE FILES FROM APPENDIX C-1 TO C-3)

C-1 Group 1 Dynamic Stability Plots for 2016 Winter Peak Case

C-2 Group 1 Dynamic Stability Plots for 2017 Summer Peak Case

C-3 Group 1 Dynamic Stability Plots for 2025 Summer Peak Case

Each contingency consists of (61) subplots:

- Subplot #1 is the system phase angle channels in the snapshot file provided by SPP.
- Subplot #2 to Subplot #53 are results for (52) generators in the scope of study.
- Subplots #54 to Subplot #57 are voltages at the POI buses in the scope of study.
- Subplots #58 to Subplot #61 are frequencies at the POI buses in the scope of study.

APPENDIX D

POWER FACTOR ANALYSIS RESULTS (SUBMITTED IN SEPARATE FILE FROM APPENDIX D-1 TO D-8)

D-1 Group 1 Power Factor Results for Interconnection Request GEN-2015-095 (#560066)

D-2 Group 1 Power Factor Results for Interconnection Request GEN-2016-003 (#560071)

D-4 Group 1 Power Factor Results for Interconnection Request GEN-2016-020 (#520999)

D-5 Group 1 Power Factor Results for Interconnection Request GEN-2016-045-SUB1 (#515497)

D-6 Group 1 Power Factor Results for Interconnection Request GEN-2016-045-SUB2 (#515497)

D-7 Group 1 Power Factor Results for Interconnection Request GEN-2016-057-SUB1 (#515497)

D-8 Group 1 Power Factor Results for Interconnection Request GEN-2016-057-SUB2 (#515497)

Note: GEN-2016-047 is not a renewable energy project and is therefore not included here

APPENDIX E

SHORT-CIRCUIT STUDY RESULTS (SUBMITTED IN A SEPARATE FILE FROM APPENDIX E-1 TO E-6)

E-1 Group 1 16WP Short-Circuit Study Results Summary

E-2 Group 1 17SP Short-Circuit Study Results Summary

E-3 Group 1 25SP Short-Circuit Study Results Summary

E-4 Group 1 16WP Detailed Short-Circuit Study Results

E-5 Group 1 17SP Detailed Short-Circuit Study Results

E-6 Group 1 25SP Detailed Short-Circuit Study Results

11.14.2 J2: GROUP 2 DYNAMIC STABILITY ANALYSIS REPORT

Group 2 Stability Impact Study

DISIS-2016-001-1

December 2017
Generator Interconnection

SPP Southwest Power Pool

Revision History

Date	Author	Change Description
11/27/2017	SPP	DISIS-2016-001-1 Group 2 Stability Report Issued
12/15/2017	SPP	Revised document to correct reference errors to figures and tables.

Executive Summary

DISIS-2016-001-1 Group 2 Interconnection Customers have requested a Definitive Interconnection System Impact Study detailing the impacts of interconnecting the generation projects shown below.

- GEN-2015-082– 200.0 MW wind generation facility using one hundred (100) GE 2.0 MW wind generators interconnecting to the Oklahoma Gas and Electric (OKGE) transmission system at a tap on the Woodward to Beaver County 345 kV line.
- GEN-2016-070– 5.3 MW wind generation facility uprate using fifty-three (53) GE 1.6 MW wind turbine generators interconnecting to the Southwestern Public Service (SPS) transmission system at the existing Martin Switching 115kV Station.

A stability cluster impact analysis was performed for the generation project from the DISIS-2016-001-1 Group 2 study. The analysis was performed on three (3) seasonal models including 2016 winter peak (16WP), the 2017 summer peak (17SP), and the 2025 summer peak (25SP) cases. These cases are modified versions of the 2015 model series of Model Development Working Group (MDWG) dynamic study models. A total of forty-eight (48) contingencies were evaluated for the three (3) seasonal cases.

Stability analysis has determined with all previously assigned Network Upgrades in service, all generators in the monitored areas remained stable and within the pre-contingency, voltage recovery, and post fault voltage recovery criterion of 0.7pu to 1.2pu for the entire modeled disturbances. Under certain system conditions the interconnection requests may be required to curtail generation output to maintain system reliability.

Power factor analysis for each generation project was performed on the current study 2016 winter peak, 2017 summer peak, and 2025 summer peak cases with identified system upgrades.

A reduced generation analysis was conducted for wind farms to determine reactor inductive amounts to compensate the capacitive effects on the transmission system during low or reduced wind conditions cause by the interconnecting project's generator lead transmission line and collector systems. Each request may be required to install the following reactors on their facilities: GEN-2015-082 – 24.0 Mvar and GEN-2016-070 – 3.4 Mvar.

Short Circuit analysis was conducted using the current study upgrade 2017 summer peak and 2025 summer peak cases.

Nothing in this study should be construed as a guarantee of delivery or transmission service. If the customer wishes to sell power from the facility, a separate request for transmission service must be requested on Southwest Power Pool's OASIS by the Customer.

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1. Introduction

DISIS-2016-001-1 Group 2 Interconnection Customers have requested a Definitive Interconnection System Impact Study detailing the impacts of interconnecting the generation projects shown **Table 1-1** below.

Table 1-1: Group 2 Interconnection Requests

Request	Capacity (MW)	Generator Model	Point of Interconnection
GEN-2015-082	200.0	GE 2.0MW	Tap on Woodward (515375) to Beaver (515554) 345kV (G11-14-TAP, 560000)
GEN-2016-070	5.3MW Uprate (Total 84.8MW)	GE 1.6MW	Martin Switching Station 115kV (523928)

The previously queued generation projects in the Group 2 area are listed in **Table 1-2** below.

Table 1-2: Prior Queued Projects

Request	Size (MW)	Generator Model	Point of Interconnection
Llano Estacado (White Deer)	80.0	WTG1 (523815)	Tap on Kingsmill (523712) to MIDSTRM Tap (523817) (523815)
GEN-2002-008	240	GE 1.5MW (523121, 523122, 523123)	Hitchland 345kV (523097)
GEN-2002-009	79.8	Suzlon 2.1MW (523201)	Hansford 115kV (523195)
GEN-2002-022	240	Siemens 2.3MW (524285, 524287)	Bushland 230kV (524267)
GEN-2003-020	159.1	GE 1.5/1.6 MW (523941, 523942)	Martin Switching Station 115kV (523928)
GEN-2006-020S	20	D8.2 2.0MW (599044)	Frisco Wind 115kV (523160)
GEN-2006-044	370	DeWind D9.2 2.0MW	Hitchland 345kV (523097)
GEN-2007-046	200.0	Vestas V100/V110 2.0MW (523170, 523171)	Hitchland 115kV (523093)
GEN-2008-047	300	GE 1.7MW (573506,573510)	Beaver County 345kV (515554)
GEN-2008-051	322	Siemens 2.3MW (599106, 579413)	Potter 345kV (523961)
GEN-2010-001	300	GE 1.85MW (578545, 578548)	Beaver County 345kV (515554)
GEN-2010-014	358.8	Siemens SWT 2.3MW (576400, 576410)	Hitchland 345kV (523097)
ASGI-2011-002	20	DeWind D8.2 2.0MW (579383)	Herring 115kV (523359)
GEN-2011-014	201	Siemens 3.0MW (581115, 581119)	Beaver County 345kV (515554)
GEN-2011-022	299	Siemens 2.3MW (581153, 581154)	Hitchland 345kV (523097)
ASGI-2013-001	11.5	Siemens 2.3 (523936)	PanTex South 115kV(523945)
GEN-2013-030	300	Vestas 2.0 MW VCSS (583763, 583766)	Beaver County 345kV (515554)
GEN-2014-037	200.0	Vestas V110 2.0MW (584213, 584216)	Tap on Hitchland to Beaver County 345kV (Optima 345kV – 560010)

A stability analysis was performed for the addition of the generation projects in Group 2. The analysis was performed on three (3) seasonal models including 2016 winter peak (16WP), the 2017 summer peak (17SP), and the 2025 summer peak (25SP) cases. These cases are modified versions of the 2015 model series of Model Development Working Group (MDWG) dynamic study models.

The stability analysis determines the impacts of the new interconnecting project on the stability and voltage recovery of the nearby systems and the ability of the interconnecting project to meet FERC Order 661A. If problems with stability or voltage recovery are identified, the need for reactive compensation or system upgrades is investigated. The contingencies listed in **Table 3-1** were used in the stability analysis.

The power factor analysis determines the power factor at the point of interconnection (POI) for the wind interconnection projects for pre-contingency and post-contingency conditions. The contingencies (**Table 3-3**) used in the power factor analysis are a subset of the stability analysis contingencies shown in **Table 3-1**.

A reduced generation analysis was conducted for wind farms to determine reactor inductive amounts to compensate the capacitive effects on the transmission system during low or reduced wind conditions cause by the interconnecting project's generator lead transmission line and collector systems. **Table 5-1** displays the minimum reactor inductive amount requirement to compensate capacitive effects from the GEN-2015-082 and GEN-2016-070 facilities.

Short Circuit analysis was conducted using the current study upgrade 2017 summer peak and 2025 summer peak cases. The results from the Short circuit analysis are show in Appendix F.

Nothing in this System Impact Study constitutes a request for transmission service or grants the Interconnection Customer any rights to transmission service. If the customer wishes to sell power from the facility, a separate request for transmission service must be requested on Southwest Power Pool's OASIS by the Customer.

2. Facilities

A one-line PSS/E slider drawing from the 16WP case for each of the generation interconnection requests in this study is shown in **Figure 2-1** through **2-2**.

Figure 2-1*:* GEN-2015-082 One-line Diagram

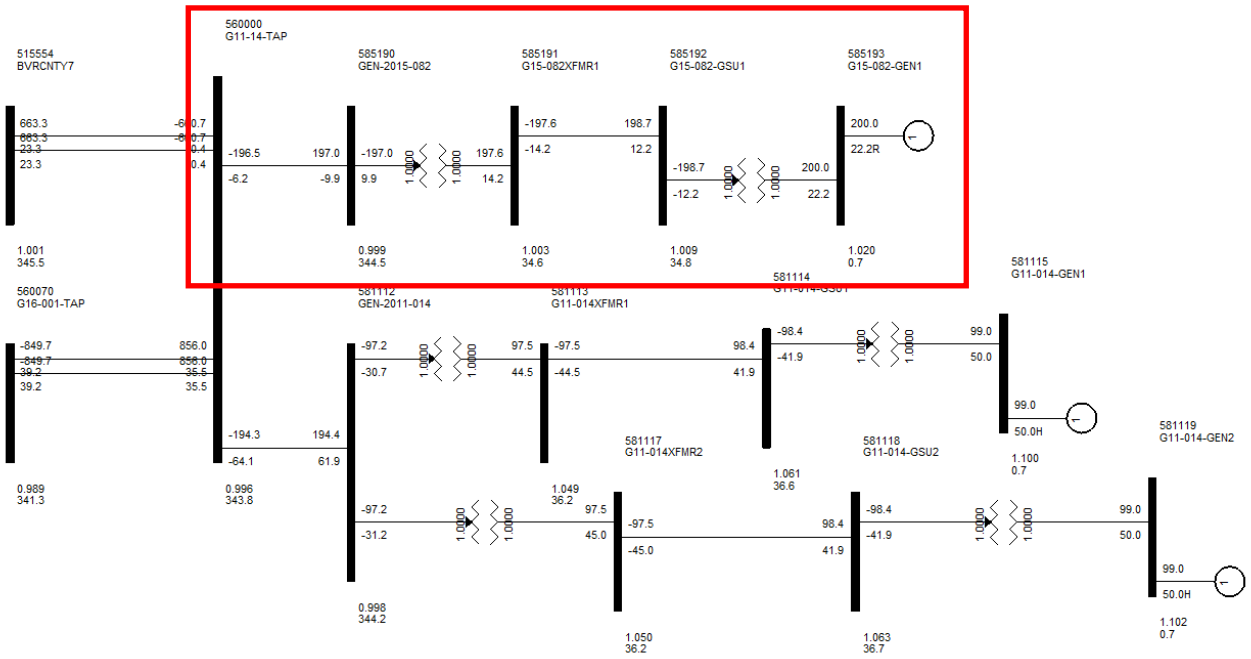
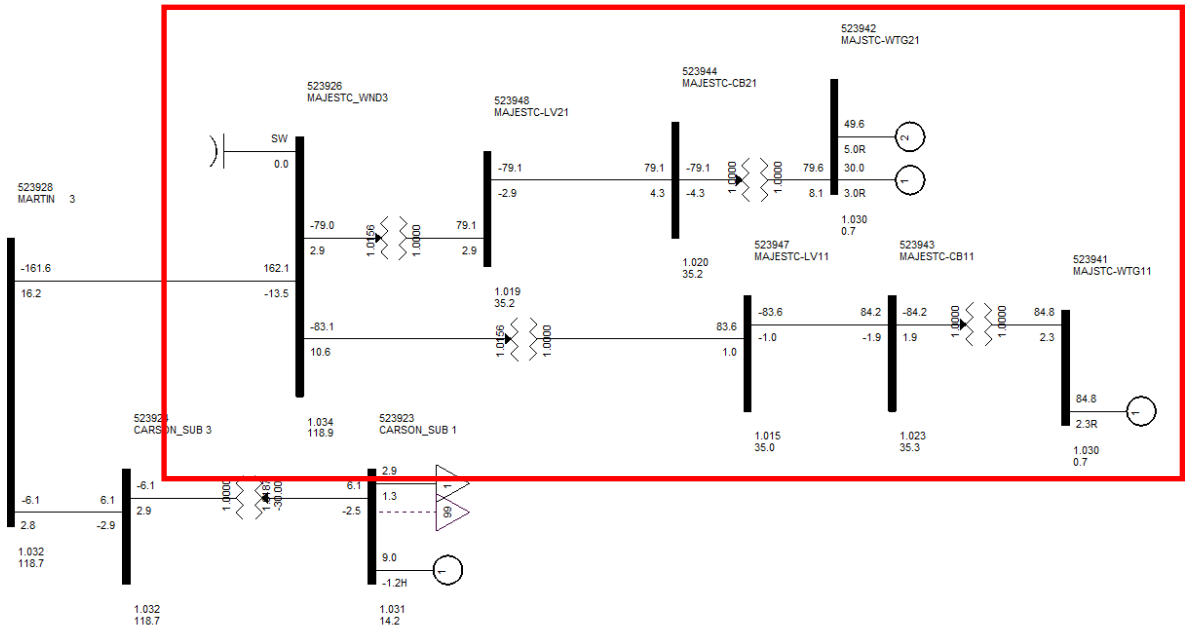


Figure 2-2*:* GEN-2016-070 One-line Diagram



3. Stability Analysis

Transient stability analysis is used to determine if the transmission system can maintain angular stability and ensure bus voltages stay within planning criteria bandwidth during and after a disturbance while considering the addition of a generator interconnection request.

Model Preparation

Transient stability analysis was performed using modified versions of the 2015 series of Model Development Working Group (MDWG) dynamic study models including the 2016 winter peak, 2017 summer peak, and the 2025 summer peak seasonal models. The cases are then loaded with prior queued interconnection requests and network upgrades assigned to those interconnection requests. Finally the prior queued and study generation are dispatched into the SPP footprint. Initial simulations are then carried out for a no-disturbance run of twenty (20) seconds to verify the numerical stability of the model.

Disturbances

Forty-eight (48) contingencies were identified for use in this study and are listed in **Table 3-1**. These contingencies are faults at locations defined by SPP Generation Interconnection Staff. These contingencies include three-phase N-1, single-phase stuck breaker, and three-phase prior outage faults. Single-phase line faults were simulated by applying fault impedance to the positive sequence network at the fault location to represent the effect of the negative and zero sequence networks on the positive sequence network. The fault impedance was computed to give a positive sequence voltage at the specified fault location of approximately 60% of pre-fault voltage. This method is in agreement with SPP current practice.

Except for transformer faults, the typical sequence of events for a three-phase fault is as follows:

1. apply fault at particular location
2. continue fault for five (5) cycles, clear the fault by tripping the faulted facility
3. after an additional twenty (20) cycles, re-close the previous facility back into the fault
4. continue fault for five (5) additional cycles
5. trip the faulted facility and remove the fault

Transformer faults are typically modeled as three-phase faults, unless otherwise noted. The sequence of events for a transformer fault is as follows:

1. apply fault for five (5) cycles
2. clear the fault by tripping the affected transformer facility (unless otherwise noted there will be no re-closing into a transformer fault)

The SPP areas monitored during the stability analysis were:

- 520: American Electric Power (AEPW)
- 524: Oklahoma Gas and Electric Company (OKGE)
- 526: Southwestern Public Service (SPS)
- 534: Sunflower Electric Power Corp. (SUNC)
- 536: Westar Energy, Inc. (WERE)

Table 3-1: Contingencies Evaluated

Cont. No.	Contingency Name	Description
0	FLT_000_NOFAULT	No Fault Conditions
1	FLT_01_G11014Tap_G16001Tap_345kV_3PH	3 phase fault on the G11-014-Tap (560000) to G16-001-Tap (560070) 345 kV line circuit 1, near G11-014-Tap. a. Apply fault at the G11-014-Tap 345 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
2	FLT_02_G11014Tap_BeaverCo_345kV_3PH	3 phase fault on the G11-014-Tap (560000) to Beaver County (515554) 345 kV line circuit 1, near G11-014-Tap. a. Apply fault at the G11-014-Tap 345 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
3	FLT_03_G16001Tap_G16003Tap_345kV_3PH	3 phase fault on the G16-001-Tap (560070) to G16-003-Tap (515375) 345 kV line circuit 1, near G16-001-Tap. a. Apply fault at the G16-001-Tap 345 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
4	FLT_04_G16003Tap_Woodward_345kV_3PH	3 phase fault on the G16-003-Tap (560071) to Woodward (515375) 345 kV line circuit 1, near G16-003-Tap. a. Apply fault at the G16-003-Tap 345 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
5	FLT_05_Woodward_Border_345kV_3PH	3 phase fault on the Woodward (515375) to Border (515458) 345 kV line circuit 1, near Woodward. a. Apply fault at the Woodward 345 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
6	FLT_06_Woodward_Tatonga_345kV_3PH	3 phase fault on the Woodward (515375) to Tatonga (515407) 345 kV line circuit 1, near Woodward. a. Apply fault at the Woodward 345 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
7	FLT_07_BeaverCo_Optima_345kV_3PH	3 phase fault on the Beaver County (515554) to Optima (560010) 345 kV line circuit 1, near Beaver County. a. Apply fault at the Beaver County 345 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
8	FLT_08_Hitchland_Optima_345kV_3PH	3 phase fault on the Hitchland (523097) to Optima (560010) 345 kV line circuit 1, near Hicthland. a. Apply fault at the Hicthland 345 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
9	FLT_09_Woodward_Woodward138_345_138kV_3PH	3 phase fault on the Woodward 345kV (515375) to Woodward 138kV (515376) Woodward 13.8kV (515799) XFMR CKT 2, near Woodward 345kV. a. Apply fault at the Woodward 345kV bus. b. Clear fault after 5 cycles and trip the faulted transformer.
10	FLT_10_Thistle_Woodward_345kV_3PH	3 phase fault on the Thistle (539801) to Woodward (515375) 345kV CKT 1, near Woodward. a. Apply fault at the Woodward 345kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
11	FLT_11_Hitchland_WalkTap_345kV_3PH (17SP and 25SP Only)	3 phase fault on the Hitchland 345kV (523097) to Walk Tap 345kV (531512) CKT 1, near Hitchland. a. Apply fault at the Hitchland 345kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

Table 3-1: Contingencies Evaluated

Cont. No.	Contingency Name	Description
12	FLT_12_Hitchland_Finney_345kV_3PH (16WP only)	3 phase fault on the Hitchland 345kV (523097) to Finney 345kV (523853) CKT 1, near Hitchland. a. Apply fault at the Hitchland 345kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
13	FLT_13_Hitchland_Hitchland230_345_230kV_3PH	3 phase fault on the Hitchland 345kV (523097) to Hitchland 230kV (523095) Hitchland 13.2kV (523091) XFMR CKT 1, near Hitchland 345kV. a. Apply fault at the Hitchland 345kV bus. b. Clear fault after 5 cycles and trip the faulted transformer.
14	FLT_14_Hitchland_PotterCo_345kV_3PH	3 phase fault on the Hitchland 345kV (523097) to Potter County 345kV (523961) CKT 1, near Hitchland. a. Apply fault at the Hitchland 345kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
15	FLT_15_Hitchland230_MooreCo_230kV_3PH	3 phase fault on the Hitchland 230kV (523095) to Moore County 230kV (523309) CKT 1, near Hitchland. a. Apply fault at the Hitchland 230kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
16	FLT_16_Hitchland230_Hitchland115_230_115kV_	3 phase fault on the Hitchland 230kV (523095) to Hitchland 115kV (523093) Hitchland 13.2kV (523092) XFMR CKT 1, near Hitchland 230kV. a. Apply fault at the Hitchland 230kV bus. b. Clear fault after 5 cycles and trip the faulted transformer.
17	FLT_17_MartinSw_PantexN_115kV_3PH	3 phase fault on Martin Switching Station 115kV (523928) to Pantex North 115kV (523938) CKT 1, near Martin Switching Station. a. Apply fault at the Martin Switching Station 115kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
18	FLT_18_MartinSw_HutchisonS_115kV_3PH	3 phase fault on Martin Switching Station 115kV (523928) to Hutchison South 115kV (523546) CKT 1, near Martin Switching Station. a. Apply fault at the Martin Switching Station 115kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
19	FLT_19_HutchisonS_Hutchison230_115_230kV_3P	3 phase fault on the Hutchison South 115kV (523546) to Hutchison 230kV (523551) Hutchison 13.2kV (523541) XFMR CKT 1, near Hutchison South 115kV. a. Apply fault at the Hutchison South 115kV bus. b. Clear fault after 5 cycles and trip the faulted transformer.
20	FLT_20_HutchisonS_Hutchison69_115_69kV_3PH	3 phase fault on the Hutchison South 115kV (523546) to Hutchison 69kV (523543) Hutchison 13.2kV (523542) XFMR CKT 1, near Hutchison South 115kV. a. Apply fault at the Hutchison South 115kV bus. b. Clear fault after 5 cycles and trip the faulted transformer.
21	FLT_21_HutchisonS_Riverview_115kV_3PH	3 phase fault on Hutchison South 115kV (523546) to Riverview 115kV (523377) CKT 1, near Hutchison South. a. Apply fault at the Hutchison South 115kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
22	FLT_22_HutchisonS_GrayCo_115kV_3PH	3 phase fault on Hutchison South 115kV (523546) to Gray County 115kV (523636) CKT 1, near Hutchison South. a. Apply fault at the Hutchison South 115kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
23	FLT_23_HutchisonN_Blackhawk_115kV_3PH	3 phase fault on Hutchison North 115kV (523544) to Blackhawk 115kV (523344) CKT 1, near Hutchison North. a. Apply fault at the Hutchison North 115kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

Table 3-1: Contingencies Evaluated

Cont. No.	Contingency Name	Description
24	FLT_24_PantexS_HighlandTap_115kV_3PH	3 phase fault on Pantex South 115 kV (523945) to Highland Tap 115kV (523931) to Asarco Tap 115kV (524018) CKT 1, near Pantex South. a. Apply fault at the Pantex South 115kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
25	FLT_25_Nichols_AmarilloS_230kV_3PH	3 phase fault on Nichols 230kV (524044) to Amarillo South 230kV (524415) CKT 1, near Nichols. a. Apply fault at the Nichols 230kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
26	FLT_26_HarringtonW_Rollhills_230kV_3PH	3 phase fault on Harrington West 230kV (523977) to Rollhills 230kV (524010) CKT 1, near Harrington West. a. Apply fault at the Harrington West 230kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
27	FLT_27_Harrington_Nichols_230kV_3PH	3 phase fault on the Harrington (523978) to Nichols (524044) 230 kV line circuit 1, near Harrington. a. Apply fault at the Harrington 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
28	FLT_28_HarringtonW_Nichols_230kV_3PH	3 phase fault on the Harrington West (523977) to Nichols (524044) 230 kV line circuit 1, near Harrington West. a. Apply fault at the Harrington West 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
29	FLT_29_HarringtonW_EastPlant_230kV_3PH	3 phase fault on the Harrington West (523977) to East Plant (524163) 230 kV line circuit 1, near Harrington West. a. Apply fault at the Harrington West 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
30	FLT_30_G11014Tap_G16001TapSB_345kV_1PH	G11-14-Tap 345kV Stuck Breaker a. Apply single phase fault at the G11-14-Tap (560000) 345kV bus b. Wait 16 cycles, and then drop G11-14-Tap (560000) – G16-001-TAP (560070) 345kV circuit 1 and remove fault.
31	FLT_31_G16001Tap_G16003TapSB_345kV_1PH	G16-001-Tap 345kV Stuck Breaker a. Apply single phase fault at the G16-001-Tap (560070) 345kV bus b. Wait 16 cycles, and then drop G16-001-Tap (560070) – G16-003-TAP (560071) 345kV circuit 1 and remove fault.
32	FLT_32_Woodward_TatongaSB_345kV_1PH	Woodward 345kV Stuck Breaker a. Apply single phase fault at the Woodward (515375) 345kV bus on the Woodward – Tatonga (515407) 345kV circuit 1 b. Wait 16 cycles, and then drop Woodward (515375) 345kV to Thistle (539801) 345kV CKT 1 c. Trip Woodward to Tatonga 345kV CKT 1 and remove the fault
33	FLT_33_Hitchland_OptimaSB_345kV_1PH	Hitchland 345kV Stuck Breaker a. Apply single phase fault at the Hitchland (523097) 345kV bus b. Wait 16 cycles, and then drop Hitchland – Optima (560010) 345kV circuit 1 and remove fault
34	FLT_34_Hitchland_FinneySB_345kV_1PH	Hitchland 345kV Stuck Breaker a. Apply single phase fault at the Hitchland (523097) 345kV bus b. Wait 16 cycles, and then drop Hitchland – Finney (523853) 345kV circuit 1 and remove fault
35	FLT_35_BeaverCo_G11014TapSB_345kV_1PH	Beaver 345kV Stuck Breaker a. Apply single phase fault at the Beaver County (515554) 345kV bus b. Wait 16 cycles, and then drop Beaver County – G11-14-Tap (560000) 345kV circuit 1 and remove fault
36	FLT_36_Woodward_BorderSB_345kV_1PH	Woodward 345kV Stuck Breaker a. Apply single phase fault at the Woodward (515375) 345kV bus b. Wait 16 cycles, and then drop Woodward (515375) – Border (515458) 345kV circuit 1 and remove fault

Table 3-1: Contingencies Evaluated

Cont. No.	Contingency Name	Description
37	FLT_37_MartinSw_HutchisonSSB_115kV_1PH	Martin Switching Station 115kV Stuck Breaker a. Apply single phase fault at the Martin Switching Station (523928) 115kV to Hutchison South (523546) 115kV CKT 1, near Martin Switching Station. b. Wait 16 cycles, and then drop Martin Switching Station (523928) 115kV to Hutchison South (523546) 115kV CKT 1. c. Martin Switching Station (523928) 115kV to Carson (523924) 115kV CKT 1. d. Trip Carson (523923) unit 1, disconnect buses 523923 and 523924 and remove the fault.
38	FLT_38_Nichols_HarringtonSB_230kV_1PH	Nichols 230 kV Stuck Breaker a. Apply single phase fault at the Nichols (524044) to Harrington (523978) 230kV CKT 1, near Martin Switching Station. b. Wait 16 cycles, and then the Nichols (524044) to Harrington (523978) 230kV CKT 1 and remove the fault.
39	FLT_39_G11014Tap_G16001TapPO_345kV_3PH	**PRIOR OUTAGE: G11-014-Tap (560000) to G16-001-Tap (560070) 345 kV line circuit 1** 3 phase fault on the G11-014-Tap (560000) to G16-001-Tap (560070) 345 kV line circuit 2, near G11-014-Tap. a. Apply fault at the G11-014-Tap 345 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
40	FLT_40_G11014Tap_BeaverCoPO_345kV_3PH	**PRIOR OUTAGE: G11-014-Tap (560000) to Beaver County (515554) 345 kV line circuit 1** 3 phase fault on the G11-014-Tap (560000) to Beaver County (515554) 345 kV line circuit 2, near G11-014-Tap. a. Apply fault at the G11-014-Tap 345 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
41	FLT_41_G16001Tap_G16003TapPO_345kV_3PH	**PRIOR OUTAGE: G16-001-Tap (560070) to G16-003-Tap (515375) 345 kV line circuit 2** 3 phase fault on the G16-001-Tap (560070) to G16-003-Tap (515375) 345 kV line circuit 1, near G16-001-Tap. a. Apply fault at the G16-001-Tap 345 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
42	FLT_42_G16003Tap_WoodwardPO_345kV_3PH	**PRIOR OUTAGE: 16-003-Tap (560071) to Woodward (515375) 345 kV line circuit 2** 3 phase fault on the G16-003-Tap (560071) to Woodward (515375) 345 kV line circuit 1, near G16-003-Tap. a. Apply fault at the G16-003-Tap 345 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
43	FLT_43_Woodward_TatongaPO_345kV_3PH	**PRIOR OUTAGE: Woodward (515375) to Tatonga (515407) 345 kV line circuit 2** 3 phase fault on the Woodward (515375) to Tatonga (515407) 345 kV line circuit 1, near Woodward. a. Apply fault at the Woodward 345 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
44	FLT_44_BeaverCo_OptimaPO_345kV_3PH	**PRIOR OUTAGE: Beaver County (515554) to Optima (560010) kV line circuit 2** 3 phase fault on the Beaver County (515554) to Optima (560010) 345 kV line circuit 1, near Beaver County. a. Apply fault at the Beaver County 345 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
45	FLT_45_Hitchland_OptimaPO_345kV_3PH	**PRIOR OUTAGE: Hitchland (523097) to Optima (560010) 345 kV line circuit 2** 3 phase fault on the Hitchland (523097) to Optima (560010) 345 kV line circuit 1, near Hitchland. a. Apply fault at the Hitchland 345 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

Table 3-1: Contingencies Evaluated

Cont. No.	Contingency Name	Description
46	FLT_46_Thistle_WoodwardPO_230_345kV_3PH	**PRIOR OUTAGE: Thistle (539801) to Woodward (515375) 345kV line circuit 2** 3 phase fault on the Thistle (539801) to Woodward (515375) CKT 1, near Woodward. a. Apply fault at the Woodward 345kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
47	FLT_47_Tuco_OKU_345kV_3PH	3 phase fault on the Tuco (525832) to OKU (511456) 345 kV line circuit 1, near Tuco a. Apply fault at the Tuco 345 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
48	FLT_48_Border_Tuco_345kV_3PH	3 phase fault on the Border (515458) to Tuco (525832) 345 kV line circuit 1, near Border. a. Apply fault at the Border 345 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

+Results

The stability analysis was performed and the results are summarized in **Table 3-2**, below. The stability plots will be available upon customer request.

Table 3-2: Results

Contingency Number and Name		DISIS-2016-001-1 **G8 Cluster**		
		2016WP	**2017SP**	**2025SP**
0	FLT_000_NOFAULT	STABLE	STABLE	STABLE
1	FLT_01_G11014Tap_G16001Tap_345kV_3PH	STABLE	STABLE	STABLE
2	FLT_02_G11014Tap_BeaverCo_345kV_3PH	STABLE	STABLE	STABLE
3	FLT_03_G16001Tap_G16003Tap_345kV_3PH	STABLE	STABLE	STABLE
4	FLT_04_G16003Tap_Woodward_345kV_3PH	STABLE	STABLE	STABLE
5	FLT_05_Woodward_Border_345kV_3PH	STABLE	STABLE	STABLE
6	FLT_06_Woodward_Tatonga_345kV_3PH	STABLE	STABLE	STABLE
7	FLT_07_BeaverCo_Optima_345kV_3PH	STABLE	STABLE	STABLE
8	FLT_08_Hitchland_Optima_345kV_3PH	STABLE	STABLE	STABLE
9	FLT_09_Woodward_Woodward138_345_138kV_3PH	STABLE	STABLE	STABLE
10	FLT_10_Thistle_Woodward_345kV_3PH	STABLE	STABLE	STABLE
11	FLT_11_Hitchland_WalkTap_345kV_3PH (17SP and 25SP Only)		STABLE	STABLE
12	FLT_12_Hitchland_Finney_345kV_3PH (16WP only)	STABLE		
13	FLT_13_Hitchland_Hitchland230_345_230kV_3PH	STABLE	STABLE	STABLE
14	FLT_14_Hitchland_PotterCo_345kV_3PH	STABLE	STABLE	STABLE
15	FLT_15_Hitchland230_MooreCo_230kV_3PH	STABLE	STABLE	STABLE
16	FLT_16_Hitchland230_Hitchland115_230_115kV_	STABLE	STABLE	STABLE
17	FLT_17_MartinSw_PantexN_115kV_3PH	STABLE	STABLE	STABLE
18	FLT_18_MartinSw_HutchisonS_115kV_3PH	STABLE	STABLE	STABLE
19	FLT_19_HutchisonS_Hutchison230_115_230kV_3P	STABLE	STABLE	STABLE
20	FLT_20_HutchisonS_Hutchison69_115_69kV_3PH	STABLE	STABLE	STABLE
21	FLT_21_HutchisonS_Riverview_115kV_3PH	STABLE	STABLE	STABLE
22	FLT_22_HutchisonS_GrayCo_115kV_3PH	STABLE	STABLE	STABLE
23	FLT_23_HutchisonN_Blackhawk_115kV_3PH	STABLE	STABLE	STABLE
24	FLT_24_PantexS_HighlandTap_115kV_3PH	STABLE	STABLE	STABLE
25	FLT_25_Nichols_AmarilloS_230kV_3PH	STABLE	STABLE	STABLE
26	FLT_26_HarringtonW_Rollhills_230kV_3PH	STABLE	STABLE	STABLE
27	FLT_27_Harrington_Nichols_230kV_3PH	STABLE	STABLE	STABLE
28	FLT_28_HarringtonW_Nichols_230kV_3PH	STABLE	STABLE	STABLE
29	FLT_29_HarringtonW_EastPlant_230kV_3PH	STABLE	STABLE	STABLE
30	FLT_30_G11014Tap_G16001TapSB_345kV_1PH	STABLE	STABLE	STABLE
31	FLT_31_G16001Tap_G16003TapSB_345kV_1PH	STABLE	STABLE	STABLE
32	FLT_32_Woodward_TatongaSB_345kV_1PH	STABLE	STABLE	STABLE
33	FLT_33_Hitchland_OptimaSB_345kV_1PH	STABLE	STABLE	STABLE
34	FLT_34_Hitchland_FinneySB_345kV_1PH (16WP only)	STABLE		
35	FLT_35_BeaverCo_G11014TapSB_345kV_1PH	STABLE	STABLE	STABLE
36	FLT_36_Woodward_BorderSB_345kV_1PH	STABLE	STABLE	STABLE
37	FLT_37_MartinSw_HutchisonSSB_115kV_1PH	STABLE	STABLE	STABLE
38	FLT_38_Nichols_HarringtonSB_230kV_1PH	STABLE	STABLE	STABLE
39	FLT_39_G11014Tap_G16001TapPO_345kV_3PH	STABLE[1]	STABLE[1]	STABLE[1]
40	FLT_40_G11014Tap_BeaverCoPO_345kV_3PH	STABLE[1]	STABLE[1]	STABLE[1]
41	FLT_41_G16001Tap_G16003TapPO_345kV_3PH	STABLE[1]	STABLE[1]	STABLE[1]
42	FLT_42_G16003Tap_WoodwardPO_345kV_3PH	STABLE[1]	STABLE[1]	STABLE[1]
43	FLT_43_Woodward_TatongaPO_345kV_3PH	STABLE[1]	STABLE[1]	STABLE[1]
44	FLT_44_BeaverCo_OptimaPO_345kV_3PH	STABLE[1]	STABLE[1]	STABLE[1]
45	FLT_45_Hitchland_OptimaPO_345kV_3PH	STABLE[1]	STABLE[1]	STABLE[1]
46	FLT_46_Thistle_WoodwardPO_230_345kV_3PH	STABLE[1]	STABLE[1]	STABLE[1]
47	FLT_47_Tuco_OKU_345kV_3PH	STABLE[1]	STABLE[1]	STABLE[1]
48	FLT_48_Border_Tuco_345kV_3PH	STABLE	STABLE	STABLE

[1] The loss of both 345kV circuits along the Woodward - Hitchland would require curtailments.

FERC LVRT Compliance

FERC Order #661A places specific requirements on wind farms through its Low Voltage Ride Through (LVRT) provisions. For Interconnection Agreements signed after December 31, 2006, wind farms shall stay on line for faults at the POI that draw the voltage down at the POI to 0.0 pu. The faults listed below in **Table 3-3** were tested to meet Order 661A LVRT provisions. The results are listed in **Table 3-2**.

Table 3-3 LVRT Contingencies

Contingency Number and Name	Description
FLT_01_G11014Tap_G16001Tap_345kV_3PH	3 phase fault on the G11-014-Tap (560000) to G16-001-Tap (560070) 345 kV line circuit 1, near G11-014-Tap. a. Apply fault at the G11-014-Tap 345 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
FLT_02_G11014Tap_BeaverCo_345kV_3PH	3 phase fault on the G11-014-Tap (560000) to Beaver County (515554) 345 kV line circuit 1, near G11-014-Tap. a. Apply fault at the G11-014-Tap 345 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
FLT_17_MartinSw_PantexN_115kV_3PH	3 phase fault on Martin Switching Station 115kV (523928) to Pantex North 115kV (523938) CKT 1, near Martin Switching Station. a. Apply fault at the Martin Switching Station 115kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
FLT_18_MartinSw_HutchisonS_115kV_3PH	3 phase fault on Martin Switching Station 115kV (523928) to Hutchison South 115kV (523546) CKT 1, near Martin Switching Station. a. Apply fault at the Martin Switching Station 115kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

4. Power Factor Analysis

The power factor analysis was performed for each project included in this study and is designed to demonstrate the reactive power requirements at the point of interconnection (POI) using the current study upgrade cases.

Model Preparation

For each project included in this study, as well as previous queued projects modeled at the same POI, the projects were turned off for the power factor analysis. The projects were replaced by an equivalent generator located at the POI producing the total MW of the project at that POI and 0.0 Mvar capability.

An Mvar generator without limits was modeled at the interconnection project POI to hold a voltage schedule at the POI consistent with the greater of the voltage schedule in the base case or unity (1.0 pu) voltage.

Disturbances

Each N-1 contingency evaluated in the Stability Analysis found in **Table 3-1** was also included in the determination of the power factor requirements.

Results

The power factor ranges are summarized in **Table 4-1** and the resultant ranges are shown in **Tables D-1** to **D-2** in **Appendix D**. The analysis showed that reactive power is required for the study project, the final requirement in the Generation Interconnection Agreement (GIA) for each project will be the pro-forma 95% lagging to 95% leading at the POI.

For analyzing power factor results a positive Q (Mvar) output indicates that the equivalent generator is supplying reactive power to the system, implying a lagging power factor. A negative Q (Mvar) output indicates that the equivalent generator is absorbing reactive power from the system, implying a leading power factor.

Table 4-1*:* Summary of Power Factor Analysis at the POI

Request	Capacity (MW)	Point of Interconnection (POI)	Fuel	Generator	Lagging (providing Mvars)	Leading (absorbing Mvars)
GEN-2015-082	200	G11-014-Tap 345 kV (560000)	Wind	GE 2.0 MW	0.50	1
GEN-2016-070	5.3	Martin Switching Station 115kV (523928	Wind	GE 1.6 MW	1	0.98

5. Reduced Wind Generation Analysis

A low wind analysis has been performed for the GEN-2015-082 and GEN-2016-070 Interconnection Requests. SPP performed this low wind analysis for excessive capacitive charging current for the addition of the Interconnection Request facilities. The high side of the each Interconnection Customer's transformer will interconnect to The Point of Interconnection (POI).

The project generators and capacitors (if any) were turned off in the base case. The resulting reactive power injection into the transmission network comes from the capacitance of the project's transmission lines and collector cables is shown in **Figure E-1** through **E-4** in **Appendix E**.

Final shunt reactor requirement for each project with the model information provided to SPP is shown in **Table 5-1**. It is the interconnection customer's responsibility to design and install the reactive compensation equipment necessary to control the reactive power injection at the POI. If an equivalent means of compensation is installed, the reactive power required may vary with system conditions (e.g. a higher compensation amount is required for voltages above unity at the POI and a lower compensation amount is required for voltages below unity at the POI).

Table 5-1*:* Summary of Reduced Wind Generation Analysis

Request	Point of Interconnection (POI)	Reactor Size (Mvar)
GEN-2015-082	G11-014-Tap 345 kV (560000)	24.0
GEN-2016-070	Martin Switching Station 115kV (523928	3.4

6. Short Circuit Analysis

The short circuit analysis was performed on the 2017 summer peak and 2025 summer peak power flow cases using the PSS/E ASCC program. Since the power flow model does not contain negative and zero sequence data, only three-phase symmetrical fault current levels were calculated at the point of interconnection up to and including five levels away.

Short Circuit Analysis was conducting using flat conditions with the following PSS/E ASCC program settings:

- BUS VOLTAGES SET TO 1 PU AT 0 PHASE ANGLE
- GENERATOR P=0, Q=0
- TRANSFORMER TAP RATIOS=1.0 PU and PHASE ANGLES=0.0
- LINE CHARGING=0.0 IN +/-/0 SEQUENCE
- LOAD=0.0 IN +/- SEQUENCE, CONSIDERED IN ZERO SEQUENCE
- LINE/FIXED/SWITCHED SHUNTS=0.0 AND MAGNETIZING ADMITTANCE=0.0 IN +/-/0 SEQUENCE
- DC LINES AND FACTS DEVICES BLOCKED
- TRANSFORMER ZERO SEQUENCE IMPEDANCE CORRECTIONS IGNORED

Results

The results of the short circuit analysis are shown in **Appendix F**.

7. Conclusion

DISIS-2016-001-1 Group 2 Interconnection Customer(s) have requested an Impact Study to determine the impacts of interconnecting generation to the SPP Transmission System.

A stability cluster impact analysis was performed for the generation projects from the DISIS-2016-001-1 Group 2 study. The analysis was performed on three (3) seasonal models including 2016 winter peak (16WP), the 2017 summer peak (17SP), and the 2025 summer peak (25SP) cases. These cases are modified versions of the 2015 model series of Model Development Working Group (MDWG) dynamic study models. A total of forty-eight (48) contingencies were evaluated for the three (3) seasonal cases.

The stability analysis has determine with all previously assigned network upgrades, all generators in the monitored areas remained stable and within the pre-contingency, voltage recovery, and post fault voltage recovery criterion of 0.7pu to 1.2pu for the entire modeled disturbances. Under certain system conditions the interconnection requests may be required to curtail generation output to maintain system reliability.

In addition to the cluster impact stability analysis, a stand-alone stability analysis was conducted for each request.

Power factor analysis for each generation project was performed on the current study 2016 winter peak, 2017 summer peak, and 2025 summer peak cases with identified system upgrades.

A reduced generation analysis was conducted for wind farms to determine reactor size necessary to compensate the capacitive effects on the transmission system during low or reduced wind conditions caused by the interconnecting project's generator lead transmission line and collector systems. Each request may be required to install the following reactors on their facilities: GEN-2015-082 – 24.0 Mvar and GEN-2016-070 – 3.4 Mvar.

Short Circuit analysis was conducted using the current study 2017 summer peak and 2025 summer peak cases with identified system upgrades.

Nothing in this study should be construed as a guarantee of delivery or transmission service. If the customer wishes to sell power from the facility, a separate request for transmission service must be requested on Southwest Power Pool's OASIS by the Customer.

Appendix A – 2016 Winter Peak Stability Plots

(Available on request)

Appendix B – 2017 Summer Peak Stability Plots

(Available on request)

Appendix C – 2025 Summer Peak Stability Plots

(Available on request)

Appendix D – Power Factor Analysis Results

Table D-1: GEN-2015-082 Power Factor Analysis Results

DISIS-2016-001-1 **Group 02** **Leading power factor is absorbing vars; Lagging power factor is providing vars**										
GEN-2015-082 POI: G11-14-TAP 345kV (560000) **Power at POI: 200.0**		2016 Winter Peak POI Voltage = 1.002 pu			2017 Summer Peak POI Voltage = 1.015 pu			2025 Summer Peak POI Voltage = 1.015 pu		
	Contingency Name	**Mvars at POI**	**Power Factor**		**Mvars at POI**	**Power Factor**		**Mvars at POI**	**Power Factor**	
0	FLT_00_NoFault	67.78	0.947	LAG	55.46	0.964	LAG	50.08	0.97	LAG
1	FLT_01_G11014Tap_G16001Tap_345kV	119.24	0.859	LAG	100.35	0.894	LAG	95.72	0.903	LAG
2	FLT_02_G11014Tap_BeaverCo_345kV	95.33	0.903	LAG	75.46	0.936	LAG	62.94	0.955	LAG
3	FLT_03_G16001Tap_G16003Tap_345kV	104.47	0.886	LAG	86.46	0.918	LAG	82.25	0.927	LAG
4	FLT_04_G16003Tap_Woodward_345kV	114.86	0.867	LAG	92.33	0.908	LAG	86.45	0.921	LAG
5	FLT_05_Woodward_Border_345kV	84.62	0.921	LAG	58.83	0.959	LAG	42.91	0.979	LAG
6	FLT_06_Woodward_Tatonga_345kV	99.03	0.896	LAG	71.97	0.941	LAG	62.16	0.957	LAG
7	FLT_07_BeaverCo_Optima_345kV	70.56	0.943	LAG	57.92	0.961	LAG	52.37	0.969	LAG
8	FLT_08_Hitchland_Optima_345kV	67.55	0.947	LAG	55.13	0.964	LAG	51.2	0.971	LAG
9	FLT_09_Woodward_Woodward138_345_138kV	72.57	0.94	LAG	58.41	0.96	LAG	53.21	0.969	LAG
10	FLT_10_Thistle_Woodward_230_345kV	93.23	0.906	LAG	71.24	0.942	LAG	66.57	0.953	LAG
11	FLT_11_Hitchland_WalkTap_345kV	347.65	0.499	LAG	240.7	0.639	LAG	189.7	0.744	LAG
12	FLT_13_Hitchland_Hitchland230_345_230kV	68.82	0.946	LAG	58.08	0.96	LAG	58.27	0.965	LAG
13	FLT_14_Hitchland_PotterCo_345kV	81.03	0.927	LAG	79.5	0.929	LAG	83.8	0.931	LAG
14	FLT_15_Hitchland230_MooreCo_230kV	74.79	0.937	LAG	62.95	0.954	LAG	66.46	0.955	LAG
15	FLT_16_Hitchland230_Hitchland115_230_115kV	67.56	0.947	LAG	51.79	0.968	LAG	55.82	0.968	LAG
16	FLT_17_MartinSw_PantexN_115kV	69.54	0.945	LAG	56.87	0.962	LAG	55.49	0.969	LAG
17	FLT_18_MartinSw_HutchisonS_115kV	66.09	0.95	LAG	53.79	0.966	LAG	53.33	0.971	LAG
18	FLT_19_HutchisonS_Hutchison230_115_230kV	68.55	0.946	LAG	55.96	0.963	LAG	55.41	0.969	LAG
19	FLT_20_HutchisonS_Hutchison69_115_69kV	67.83	0.947	LAG	55.39	0.964	LAG	54.96	0.97	LAG
20	FLT_21_HutchisonS_Riverview_115kV	67.88	0.947	LAG	55.62	0.963	LAG	55.6	0.97	LAG
21	FLT_22_HutchisonS_GrayCo_115kV	70.35	0.943	LAG	57.49	0.961	LAG	57.51	0.968	LAG
22	FLT_23_HutchisonN_Blackhawk_115kV	68.45	0.946	LAG	56.13	0.963	LAG	56.8	0.969	LAG
23	FLT_24_PantexS_HighlandTap_115kV	69.61	0.944	LAG	56.96	0.962	LAG	57.38	0.969	LAG
24	FLT_25_Nichols_AmarilloS_230kV	68.78	0.946	LAG	56.94	0.962	LAG	58.55	0.968	LAG
25	FLT_26_HarringtonW_Rollhills_230kV	68.96	0.945	LAG	58.75	0.959	LAG	60.96	0.965	LAG
26	FLT_27_Harrington_Nichols_230kV	67.93	0.947	LAG	55.58	0.963	LAG	56.94	0.97	LAG
27	FLT_28_HarringtonW_Nichols_230kV	67.95	0.947	LAG	55.59	0.963	LAG	57.2	0.97	LAG
28	FLT_29_HarringtonW_EastPlant_230kV	70.81	0.943	LAG	56.93	0.962	LAG	58.6	0.969	LAG
29	FLT_47_Tuco_OKU_345kV	121.86	0.854	LAG	70.42	0.943	LAG	51.75	0.976	LAG
30	FLT_48_Border_Tuco_345kV	66.6	0.949	LAG	47.21	0.973	LAG	40.4	0.985	LAG

Table D-2: GEN-2016-070 Power Factor Analysis Results

DISIS-2016-001-1 **Group 02**

Leading power factor is absorbing vars; Lagging power factor is providing vars

	GEN-2016-070 POI: Martin 115 kV (523928) Power at POI (MW): 5.3	2016 Winter Peak POI Voltage = 1.027 pu			2017 Summer Peak POI Voltage = 1.019 pu			2025 Summer Peak POI Voltage = 1.010 pu		
	Contingency Name	**Mvars at POI**	**Power Factor**		**Mvars at POI**	**Power Factor**		**Mvars at POI**	**Power Factor**	
0	FLT_00_NoFault	-0.79	0.989	LEAD	-0.91	0.986	LEAD	-0.62	0.993	LEAD
1	FLT_01_G11014Tap_G16001Tap_345kV	-0.74	0.99	LEAD	-0.89	0.986	LEAD	-0.6	0.994	LEAD
2	FLT_02_G11014Tap_BeaverCo_345kV	-0.76	0.99	LEAD	-0.9	0.986	LEAD	-0.61	0.993	LEAD
3	FLT_03_G16001Tap_G16003Tap_345kV	-0.75	0.99	LEAD	-0.89	0.986	LEAD	-0.6	0.994	LEAD
4	FLT_04_G16003Tap_Woodward_345kV	-0.73	0.991	LEAD	-0.89	0.986	LEAD	-0.6	0.994	LEAD
5	FLT_05_Woodward_Border_345kV	-0.78	0.989	LEAD	-0.9	0.986	LEAD	-0.61	0.993	LEAD
6	FLT_06_Woodward_Tatonga_345kV	-0.69	0.992	LEAD	-0.88	0.986	LEAD	-0.61	0.993	LEAD
7	FLT_07_BeaverCo_Optima_345kV	-0.78	0.989	LEAD	-0.9	0.986	LEAD	-0.62	0.993	LEAD
8	FLT_08_Hitchland_Optima_345kV	-0.79	0.989	LEAD	-0.91	0.986	LEAD	-0.62	0.993	LEAD
9	FLT_09_Woodward_Woodward138_345_138kV	-0.79	0.989	LEAD	-0.91	0.986	LEAD	-0.62	0.993	LEAD
10	FLT_10_Thistle_Woodward_230_345kV	-0.76	0.99	LEAD	-0.9	0.986	LEAD	-0.61	0.993	LEAD
11	FLT_11_Hitchland_WalkTap_345kV	-0.54	0.995	LEAD	-0.83	0.988	LEAD	-0.56	0.994	LEAD
12	FLT_13_Hitchland_Hitchland230_345_230kV	-0.79	0.989	LEAD	-0.91	0.986	LEAD	-0.62	0.993	LEAD
13	FLT_14_Hitchland_PotterCo_345kV	-0.79	0.989	LEAD	-0.89	0.986	LEAD	-0.57	0.994	LEAD
14	FLT_15_Hitchland230_MooreCo_230kV	-0.77	0.99	LEAD	-0.88	0.986	LEAD	-0.59	0.994	LEAD
15	FLT_16_Hitchland230_Hitchland115_230_115kV	-0.78	0.989	LEAD	-0.89	0.986	LEAD	-0.62	0.993	LEAD
16	FLT_17_MartinSw_PantexN_115kV	-0.32	0.998	LEAD	-0.41	0.997	LEAD	-0.53	0.995	LEAD
17	FLT_18_MartinSw_HutchisonS_115kV	-0.62	0.993	LEAD	-0.73	0.991	LEAD	-0.1	1	LEAD
18	FLT_19_HutchisonS_Hutchison230_115_230kV	-0.65	0.993	LEAD	-0.8	0.989	LEAD	-0.49	0.996	LEAD
19	FLT_20_HutchisonS_Hutchison69_115_69kV	-0.89	0.986	LEAD	-0.99	0.983	LEAD	-0.72	0.991	LEAD
20	FLT_21_HutchisonS_Riverview_115kV	-0.8	0.989	LEAD	-0.92	0.985	LEAD	-0.64	0.993	LEAD
21	FLT_22_HutchisonS_GrayCo_115kV	-0.81	0.989	LEAD	-0.94	0.985	LEAD	-0.7	0.991	LEAD
22	FLT_23_HutchisonN_Blackhawk_115kV	-0.89	0.986	LEAD	-0.94	0.985	LEAD	-0.57	0.994	LEAD
23	FLT_24_PantexS_HighlandTap_115kV	-0.25	0.999	LEAD	-0.32	0.998	LEAD	-0.46	0.996	LEAD
24	FLT_25_Nichols_AmarilloS_230kV	-0.8	0.989	LEAD	-0.91	0.986	LEAD	-0.62	0.993	LEAD
25	FLT_26_HarringtonW_Rollhills_230kV	-0.77	0.99	LEAD	-0.9	0.986	LEAD	-0.61	0.993	LEAD
26	FLT_27_Harrington_Nichols_230kV	-0.79	0.989	LEAD	-0.91	0.986	LEAD	-0.62	0.993	LEAD
27	FLT_28_HarringtonW_Nichols_230kV	-0.79	0.989	LEAD	-0.91	0.986	LEAD	-0.62	0.993	LEAD
28	FLT_29_HarringtonW_EastPlant_230kV	-0.49	0.996	LEAD	-0.92	0.985	LEAD	-0.62	0.993	LEAD
29	FLT_47_Tuco_OKU_345kV	-0.73	0.991	LEAD	-0.9	0.986	LEAD	-0.62	0.993	LEAD
30	FLT_48_Border_Tuco_345kV	-0.79	0.989	LEAD	-0.9	0.986	LEAD	-0.6	0.994	LEAD

Appendix E – Reduced Wind Generation Analysis Results

Below figures are from the 2016WP model with identified upgrades in-service. The other two cases (2017SP and 2025SP) were almost identical since the Interconnection Request facilities design is the same in all cases.

Figure E-1: GEN-2015-082 with generators turned off

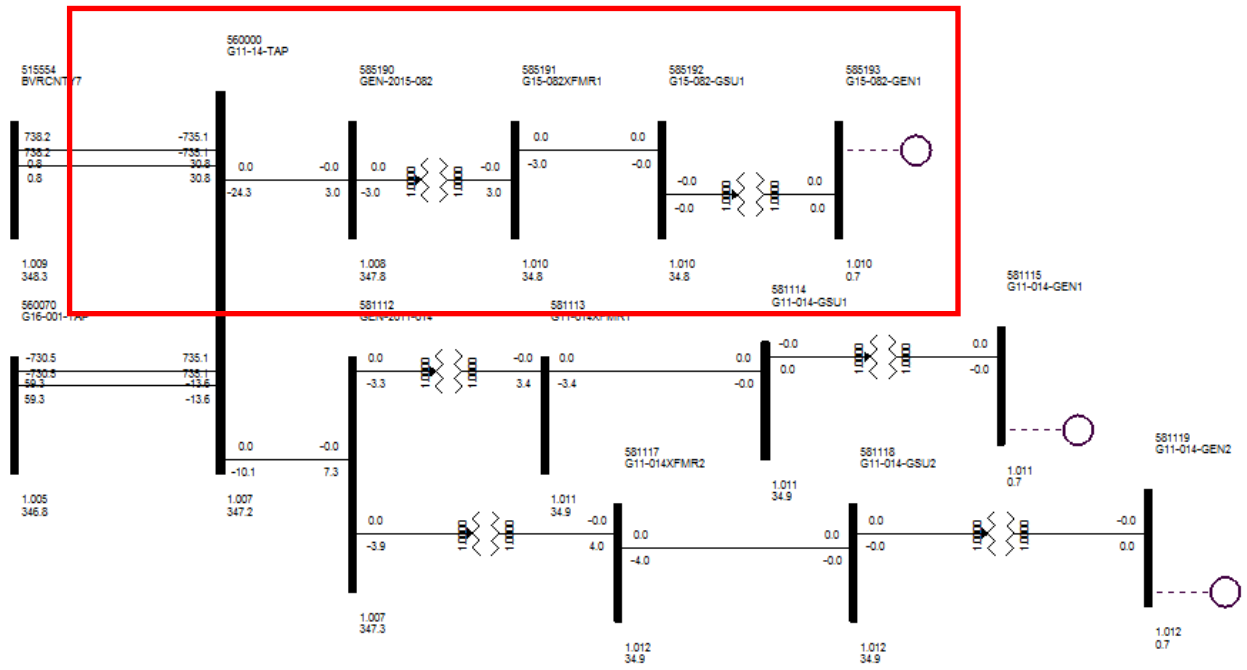


Figure E-2: GEN-2015-082 with generators turned off and shunt reactors added to the customer 34.5kV substation

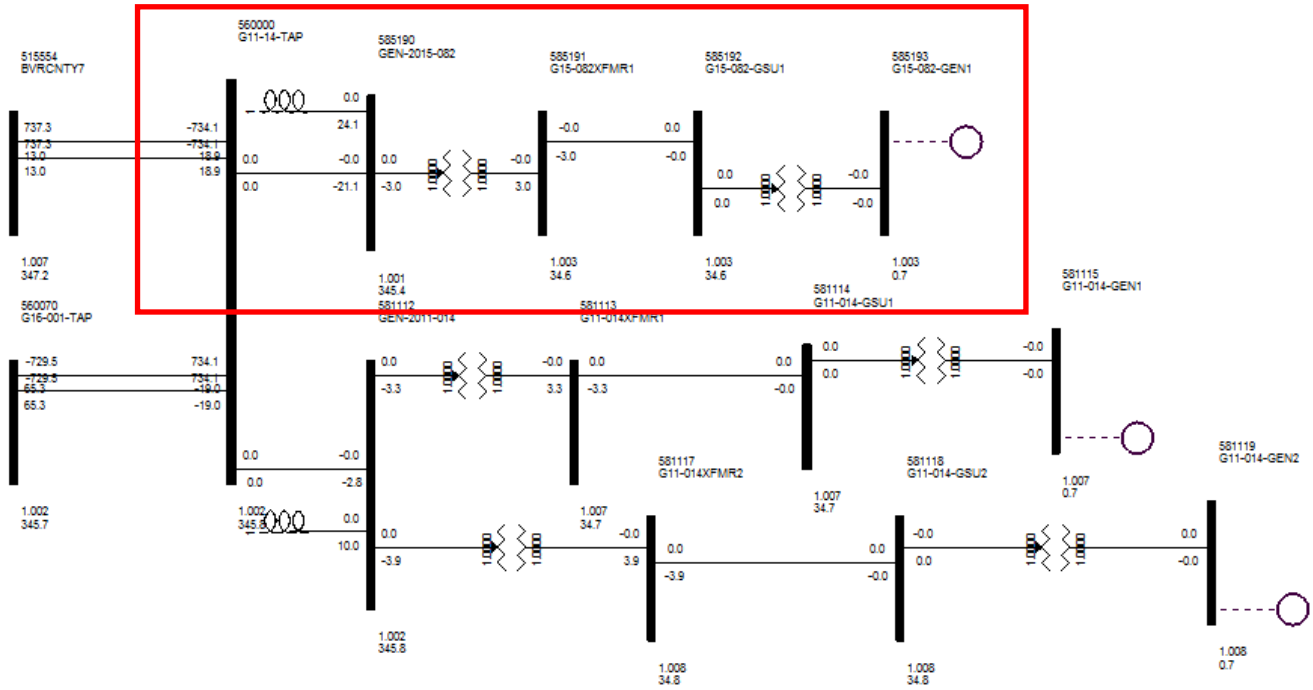


Figure E-3*:* GEN-2016-070 with generators turned off

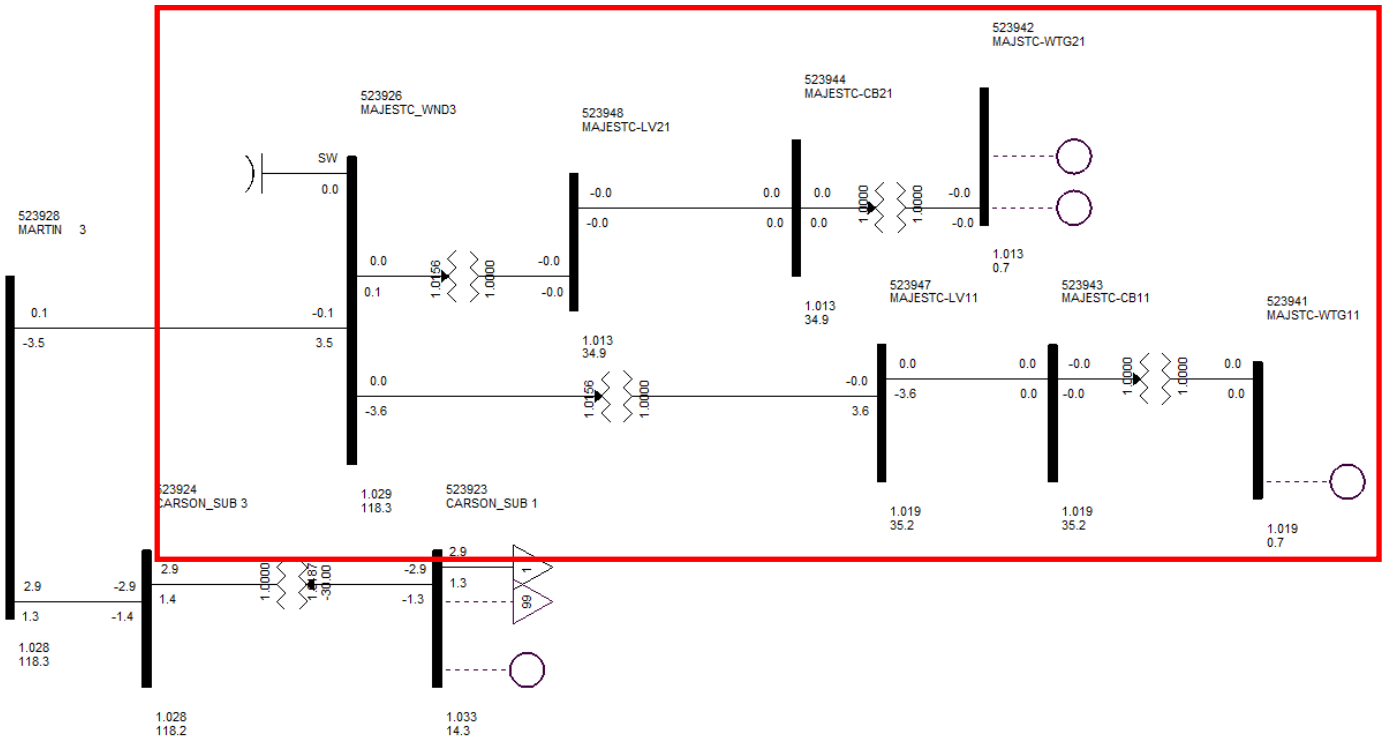
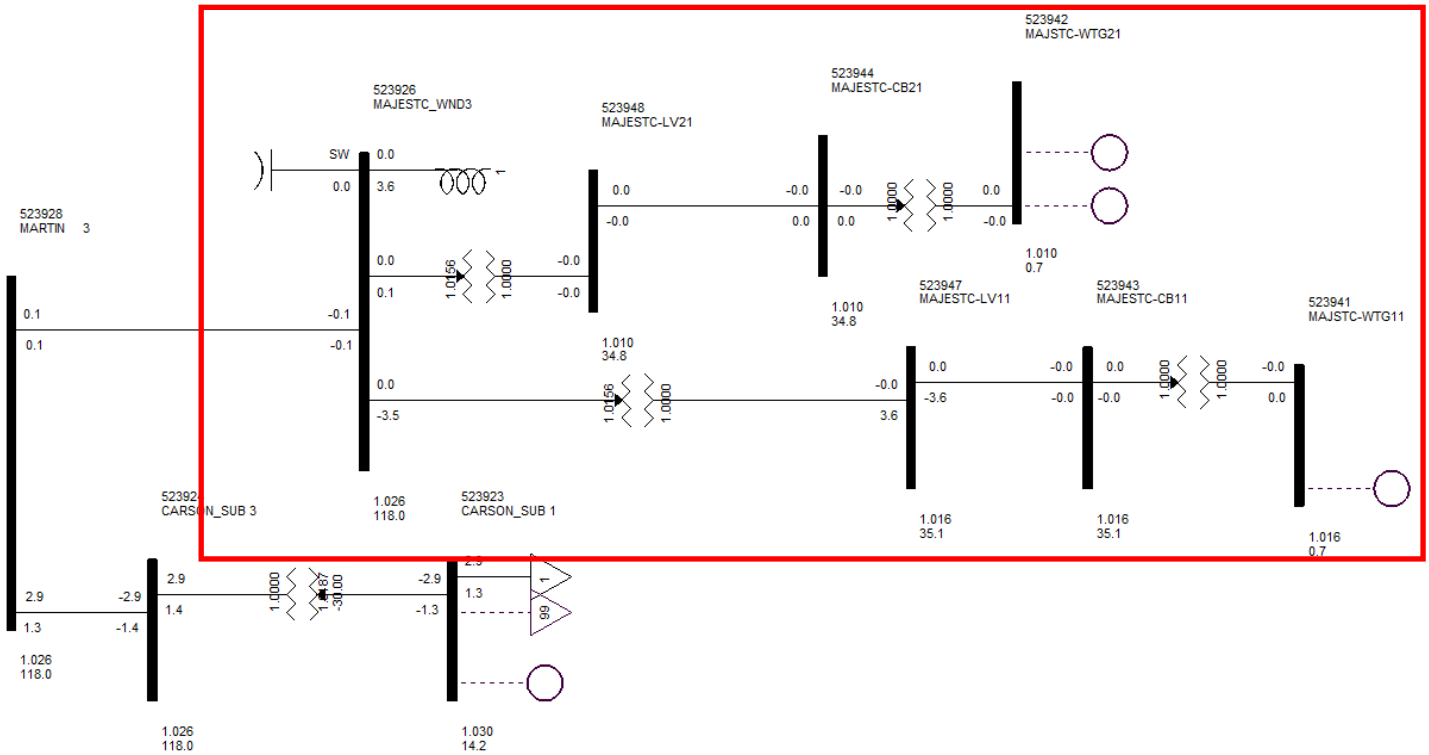


Figure E-4*:* GEN-2016-070 with generators turned off and shunt reactors added to the customer 34.5kV substation



Appendix F – Short Circuit Analysis Results

GEN-2015-082 Short Circuit Analysis Results

17SP:

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                            PSS®E-32.2.0 ASCC SHORT CIRCUIT CURRENTS          FRI, NOV 17 2017   9:54
2015 MDWG FINAL WITH 2013 MMWG, UPDATED WITH 2014 SERC & MRO
MDWG 17S WITH MMWG 15S, MRO 16W TOPO/16S PROF, SERC 16S

OPTIONS USED:
    - FLAT CONDITIONS
         - BUS VOLTAGES SET TO 1 PU AT 0 PHASE ANGLE
         - GENERATOR P=0, Q=0
         - TRANSFOMRER TAP RATIOS=1.0 PU and PHASE ANGLES=0.0
         - LINE CHARGING=0.0 IN +/-/0 SEQUENCE
         - LOAD=0.0 IN +/- SEQUENCE, CONSIDERED IN ZERO SEQUENCE
         - LINE/FIXED/SWITCHED SHUNTS=0.0 AND MAGNETIZING ADMITTANCE=0.0 IN +/-/0 SEQUENCE
         - DC LINES AND FACTS DEVICES BLOCKED
         - TRANSFORMER ZERO SEQUENCE IMPEDANCE CORRECTIONS IGNORED

                                 THREE PHASE FAULT
X---------- BUS ----------X         /I+/    AN(I+)
560000 [G11-14-TAP  345.00] AMP    13434.3   -86.39
515554 [BVRCNTY7    345.00] AMP    14529.2   -86.33
560070 [G16-001-TAP 345.00] AMP    12858.7   -86.31
581112 [GEN-2011-014345.00] AMP    12047.2   -86.16
585190 [GEN-2015-082345.00] AMP     6963.9   -85.55
515590 [PALDR2W7    345.00] AMP    12332.5   -86.04
560010 [G14-037-TAP 345.00] AMP    15403.9   -86.08
560071 [G16-003-TAP 345.00] AMP    13750.2   -86.23
578542 [GEN-2010-001345.00] AMP    11881.5   -85.20
583760 [GEN-2013-030345.00] AMP    11835.2   -85.83
515375 [WWRDEHV7    345.00] AMP    16618.4   -85.98
515634 [PALDR1W7    345.00] AMP    10555.8   -85.81
523097 [HITCHLAND  7345.00] AMP    15675.0   -86.00
584210 [GEN-2014-037345.00] AMP    11047.6   -83.41
587020 [GEN-2016-003345.00] AMP    13750.2   -86.23
515376 [WWRDEHV4    138.00] AMP    21444.9   -85.93
515407 [TATONGA7    345.00] AMP    10298.2   -86.72
515458 [BORDER     7345.00] AMP     4948.0   -86.21
515599 [G07621119-20345.00] AMP    11863.5   -85.57
523095 [HITCHLAND  6230.00] AMP    14899.4   -86.37
523101 [NOBLE_WND  7345.00] AMP    15608.0   -86.00
523112 [NOVUS1     7345.00] AMP    15383.2   -85.97
523961 [POTTER_CO  7345.00] AMP     7432.0   -86.52
531512 [WALKTAP7    345.00] AMP     7918.0   -84.98
539801 [THISTLE7    345.00] AMP    16088.5   -85.87
576395 [GEN-2010-014345.00] AMP    11451.3   -83.13
581148 [GEN-2011-022345.00] AMP    14263.9   -81.72
514796 [IODINE-4    138.00] AMP     7115.1   -79.86
515394 [KEENAN 4    138.00] AMP     7823.8   -84.87
515398 [OUSPRT 4    138.00] AMP     8573.9   -82.16
515448 [CRSRDSW7    345.00] AMP     8039.6   -85.95
515497 [MATHWSN7    345.00] AMP    30499.4   -85.66
515582 [SLNGWND7    345.00] AMP     6963.0   -85.73
515585 [MAMTHPW7    345.00] AMP     9138.4   -86.56
515997 [WWPAR4      138.00] AMP    16156.9   -84.07
523093 [HITCHLAND  3115.00] AMP    17820.6   -85.31
523103 [NOBLE_WND  3115.00] AMP    10738.4   -88.43
523111 [NOVUS1     3115.00] AMP    19641.3   -86.98
523155 [OCHILTREE  6230.00] AMP     4206.9   -82.37
523309 [MOORE_CNTY 6230.00] AMP     6696.2   -82.73
523853 [FINNEY     7345.00] AMP    10762.9   -85.93
523959 [POTTER_CO  6230.00] AMP    20217.9   -84.69
524296 [SPNSPUR_WND7345.00] AMP     4453.2   -85.60
525832 [TUCO_INT   7345.00] AMP     9897.1   -85.89
531510 [WALKTAP3    115.00] AMP    10292.4   -85.92
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539804 [THISTLE4    138.00] AMP    16621.9   -86.53
560033 [G1524&G1525T345.00] AMP    20797.6   -86.29
560072 [G16-005-TAP 345.00] AMP    13446.0   -85.17
576396 [G10-014-XFMR115.00] AMP    13393.0   -86.95
583090 [G1149&G1504 345.00] AMP     4535.6   -86.07
584700 [GEN-2015-029345.00] AMP     7266.1   -85.24
585410 [GREAT_WESTRN345.00] AMP     9225.4   -85.31
585430 [PRSIMN_CRK1 345.00] AMP    10584.6   -85.45
```

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25SP:                              PSS®E-32.2.0 ASCC SHORT CIRCUIT CURRENTS          FRI, NOV 17 2017   9:542015 MDWG FINAL
WITH 2013 MMWG, -UPDATED WITH 2014 SERC & MRO
MDWG 2025S WITH MMWG 2024S, MRO & SERC 2025 SUMMER
OPTIONS USED:
    - FLAT CONDITIONS
        - BUS VOLTAGES SET TO 1 PU AT 0 PHASE ANGLE
        - GENERATOR P=0, Q=0
        - TRANSFOMRER TAP RATIOS=1.0 PU and PHASE ANGLES=0.0
        - LINE CHARGING=0.0 IN +/-/0 SEQUENCE
        - LOAD=0.0 IN +/- SEQUENCE, CONSIDERED IN ZERO SEQUENCE
        - LINE/FIXED/SWITCHED SHUNTS=0.0 AND MAGNETIZING ADMITTANCE=0.0 IN +/-/0 SEQUENCE
        - DC LINES AND FACTS DEVICES BLOCKED
        - TRANSFORMER ZERO SEQUENCE IMPEDANCE CORRECTIONS IGNORED
                                   THREE PHASE FAULTX
X---------- BUS ----------X          /I+/    AN(I+)
560000 [G11-14-TAP  345.00] AMP    13808.3   -86.41
515554 [BVRCNTY7    345.00] AMP    14804.3   -86.34
560070 [G16-001-TAP 345.00] AMP    13473.0   -86.35
581112 [GEN-2011-014345.00] AMP    12344.9   -86.17
585190 [GEN-2015-082345.00] AMP     7057.9   -85.55
515590 [PALDR2W7    345.00] AMP    12527.2   -86.04
560010 [G14-037-TAP 345.00] AMP    15587.1   -86.08
560071 [G16-003-TAP 345.00] AMP    14779.5   -86.28
578542 [GEN-2010-001345.00] AMP    12061.7   -85.19
583760 [GEN-2013-030345.00] AMP    12009.3   -85.83
515375 [WWRDEHV7    345.00] AMP    18939.4   -86.06
515634 [PALDR1W7    345.00] AMP    10696.2   -85.81
523097 [HITCHLAND  7345.00] AMP    15844.3   -86.01
584210 [GEN-2014-037345.00] AMP    11137.3   -83.39
587020 [GEN-2016-003345.00] AMP    14779.5   -86.28
515376 [WWRDEHV4    138.00] AMP    22472.9   -86.11
515407 [TATONGA7    345.00] AMP    15868.1   -86.51
515458 [BORDER     7345.00] AMP     5072.7   -86.22
515599 [G07621119-20345.00] AMP    12857.7   -85.55
523095 [HITCHLAND  6230.00] AMP    14976.6   -86.39
523101 [NOBLE_WND  7345.00] AMP    15775.8   -86.01
523112 [NOVUS1     7345.00] AMP    15545.5   -85.98
523961 [POTTER_CO  7345.00] AMP     7444.5   -86.52
531512 [WALKTAP7    345.00] AMP     7941.1   -84.97
539801 [THISTLE7    345.00] AMP    16448.2   -85.89
576395 [GEN-2010-014345.00] AMP    11538.2   -83.11
581148 [GEN-2011-022345.00] AMP    14402.4   -81.68
514796 [IODINE-4    138.00] AMP     7175.7   -79.86
515394 [KEENAN 4    138.00] AMP     7956.7   -84.91
515398 [OUSPRT 4    138.00] AMP     8734.0   -82.16
515448 [CRSRDSW7    345.00] AMP    11073.2   -85.51
515497 [MATHWSN7    345.00] AMP    32584.8   -85.94
515582 [SLNGWND7    345.00] AMP     8965.2   -85.24
515585 [MAMTHPW7    345.00] AMP    13212.1   -86.30
515997 [WWPAR4      138.00] AMP    16631.5   -84.14
523093 [HITCHLAND  3115.00] AMP    17857.3   -85.31
523103 [NOBLE_WND  3115.00] AMP    10759.8   -88.43
523111 [NOVUS1     3115.00] AMP    19695.0   -86.99
523155 [OCHILTREE  6230.00] AMP     4212.1   -82.37
523309 [MOORE_CNTY 6230.00] AMP     6702.2   -82.72
523853 [FINNEY     7345.00] AMP    10808.0   -85.92
523959 [POTTER_CO  6230.00] AMP    20269.2   -84.69
524296 [SPNSPUR_WND7345.00] AMP     4457.4   -85.60
525832 [TUCO_INT   7345.00] AMP    12080.5   -86.10
531510 [WALKTAP3    115.00] AMP    10302.8   -85.92
539804 [THISTLE4    138.00] AMP    16841.5   -86.44
560033 [G1524&G1525T345.00] AMP    21327.5   -86.38
560072 [G16-005-TAP 345.00] AMP    13539.8   -85.17
576396 [G10-014-XFMR115.00] AMP    13423.6   -86.95
583090 [G1149&G1504 345.00] AMP     4637.2   -86.07
584700 [GEN-2015-029345.00] AMP     9581.4   -84.58
585410 [GREAT_WESTRN345.00] AMP     9765.3   -85.26
585430 [PRSIMN_CRK1 345.00] AMP    11356.3   -85.42
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GEN-2016-070 Short Circuit Analysis Results

17SP:

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                            PSS®E-32.2.0 ASCC SHORT CIRCUIT CURRENTS          FRI, NOV 17 2017   9:54
2015 MDWG FINAL WITH 2013 MMWG, UPDATED WITH 2014 SERC & MRO
MDWG 17S WITH MMWG 15S, MRO 16W TOPO/16S PROF, SERC 16S

OPTIONS USED:
    - FLAT CONDITIONS
         - BUS VOLTAGES SET TO 1 PU AT 0 PHASE ANGLE
         - GENERATOR P=0, Q=0
         - TRANSFOMRER TAP RATIOS=1.0 PU and PHASE ANGLES=0.0
         - LINE CHARGING=0.0 IN +/-/0 SEQUENCE
         - LOAD=0.0 IN +/- SEQUENCE, CONSIDERED IN ZERO SEQUENCE
         - LINE/FIXED/SWITCHED SHUNTS=0.0 AND MAGNETIZING ADMITTANCE=0.0 IN +/-/0 SEQUENCE
         - DC LINES AND FACTS DEVICES BLOCKED
         - TRANSFORMER ZERO SEQUENCE IMPEDANCE CORRECTIONS IGNORED

                                 THREE PHASE FAULT
X---------- BUS ----------X          /I+/    AN(I+)
523928 [MARTIN     3115.00] AMP     7470.9   -79.77
523546 [HUTCH_S    3115.00] AMP    15579.3   -82.37
523924 [CARSON_SUB 3115.00] AMP     6677.2   -77.96
523926 [MAJESTC_WND3115.00] AMP     6642.6   -80.11
523938 [PANTEX_N   3115.00] AMP     7503.4   -78.03
523377 [RIVERVIEW  3115.00] AMP    13275.0   -79.60
523543 [HUTCHISON  269.000] AMP     9041.7   -83.50
523544 [HUTCH_N    3115.00] AMP    15579.3   -82.37
523551 [HUTCHISON  6230.00] AMP     7191.7   -83.51
523636 [GRAY_CNTY  3115.00] AMP     3895.2   -77.54
523945 [PANTEX_S   3115.00] AMP     8026.9   -77.51
523266 [PRINGLE    3115.00] AMP    10665.5   -79.01
523344 [BLKHAWK_W  3115.00] AMP    11806.3   -84.09
523352 [HERRING_TP 3115.00] AMP     7252.3   -78.34
523376 [RIVERVIEW  269.000] AMP     8573.8   -82.68
523404 [CRMWA_#1TP 3115.00] AMP     7477.9   -76.09
523484 [CAMEX/TRNSP269.000] AMP     8459.1   -82.58
523485 [CAMX/AGR TP3115.00] AMP    13899.7   -80.97
523516 [W_BORGER_TP3115.00] AMP    12260.4   -79.42
523526 [WEATHERLY  269.000] AMP     7954.8   -81.60
523623 [CRMWA#22   269.000] AMP     7951.3   -79.67
523635 [GRAY_CNTY  269.000] AMP     6021.0   -79.22
523931 [HIGHLAND_TP3115.00] AMP    11367.5   -77.71
524044 [NICHOLS    6230.00] AMP    25220.8   -86.23
523186 [SPEARMAN   3115.00] AMP     8875.1   -78.14
523267 [PRINGLE    6230.00] AMP     4261.6   -82.76
523346 [BLKHAWK_E  3115.00] AMP    11806.3   -84.09
523359 [HERRING    3115.00] AMP     5127.2   -74.02
523366 [RB-SNEED   3115.00] AMP     6657.2   -78.28
523397 [ROCKYPOINT 269.000] AMP     4976.3   -74.09
523403 [CRMWA_#1   3115.00] AMP     6286.6   -75.62
523405 [CRMWA_#2   3115.00] AMP     7399.4   -76.04
523413 [INDUSTRIAL 269.000] AMP     8129.2   -82.12
523445 [BLACKHAWK  269.000] AMP    11917.2   -84.96
523470 [CPCOKER    3115.00] AMP    11705.8   -83.90
523478 [Q_RYTON_TP 3115.00] AMP    11287.3   -83.78
523486 [CAMEX/AGRM 3115.00] AMP    12821.5   -80.36
523498 [PHILLPREF1 269.000] AMP     9088.7   -83.47
523505 [PHILLPREF2 269.000] AMP     9317.4   -83.60
523518 [W_BORGER   3115.00] AMP     9667.6   -78.09
523602 [BURNETT    269.000] AMP     4387.2   -65.60
523616 [DAMRON     269.000] AMP     3356.6   -71.77
523647 [CRMWA#23TP 269.000] AMP     2313.4   -75.27
523653 [KITE       269.000] AMP     4269.6   -77.30
523711 [KINGSMILL  269.000] AMP     8227.6   -81.00
523771 [GRAPEVINE  6230.00] AMP     5567.7   -82.00
523977 [HARRNG_WST 6230.00] AMP    25957.0   -86.32
523978 [HARRNG_MID 6230.00] AMP    25957.0   -86.32
524018 [ASARCO_TP  3115.00] AMP    28529.3   -83.88
524043 [NICHOLS    3115.00] AMP    30496.8   -84.65
524065 [HIGHLAND   3115.00] AMP     5988.6   -71.16
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524415 [AMA_SOUTH  6230.00] AMP    13401.4   -83.52
523185 [SPEARMAN   269.000] AMP     4508.9   -85.88
523195 [HANSFORD   3115.00] AMP    10295.2   -80.45
523203 [SPEARMNSUB 3115.00] AMP     6154.0   -77.87
523304 [MOORE_W    3115.00] AMP    10997.5   -81.52
523339 [FAIN       3115.00] AMP     5273.0   -74.80
523410 [CRMWA_#4   3115.00] AMP     9703.4   -76.53
523421 [HUBER_GEN  269.000] AMP     6676.1   -78.71
523431 [SIDRICHARD 269.000] AMP     6821.1   -79.09
523492 [FRITCH     3115.00] AMP     6906.0   -75.72
523512 [SPRINGCREEK269.000] AMP     1529.0   -65.85
523609 [ROXANA     269.000] AMP     2630.8   -69.78
523646 [CRMWA#21   269.000] AMP     2303.2   -75.26
523649 [CRMWA#23   269.000] AMP     1418.4   -74.96
523701 [MCCULLOUGH 269.000] AMP     6825.3   -79.59
523712 [KINGSMILL  3115.00] AMP     5630.4   -80.19
523770 [GRAPEVINE  3115.00] AMP     7763.2   -82.02
523777 [WHEELER    6230.00] AMP     5386.6   -82.14
523817 [MIDSTRM_TP 3115.00] AMP     6706.1   -78.60
523979 [HARRNG_EST 6230.00] AMP    25957.0   -86.32
524007 [ROLLHILLS  3115.00] AMP    19298.2   -81.51
524010 [ROLLHILLS  6230.00] AMP    19247.5   -84.78
524016 [ASARCO     3115.00] AMP    26392.9   -79.29
524058 [WHITAKER   3115.00] AMP    21863.7   -82.59
524079 [CONWAY     3115.00] AMP     4991.2   -77.29
524163 [EAST_PLANT 6230.00] AMP    13643.1   -84.26
524365 [RANDALL    6230.00] AMP    14219.9   -83.67
524414 [AMA_SOUTH  3115.00] AMP    16573.9   -81.92
560050 [G15-031-TAP 230.00] AMP     8941.2   -82.45
```

25SP:

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                            PSS®E-32.2.0 ASCC SHORT CIRCUIT CURRENTS          FRI, NOV 17 2017   9:54
2015 MDWG FINAL WITH 2013 MMWG, UPDATED WITH 2014 SERC & MRO
MDWG 2025S WITH MMWG 2024S, MRO & SERC 2025 SUMMER

OPTIONS USED:
    - FLAT CONDITIONS
        - BUS VOLTAGES SET TO 1 PU AT 0 PHASE ANGLE
        - GENERATOR P=0, Q=0
        - TRANSFOMRER TAP RATIOS=1.0 PU and PHASE ANGLES=0.0
        - LINE CHARGING=0.0 IN +/-/0 SEQUENCE
        - LOAD=0.0 IN +/- SEQUENCE, CONSIDERED IN ZERO SEQUENCE
        - LINE/FIXED/SWITCHED SHUNTS=0.0 AND MAGNETIZING ADMITTANCE=0.0 IN +/-/0 SEQUENCE
        - DC LINES AND FACTS DEVICES BLOCKED
        - TRANSFORMER ZERO SEQUENCE IMPEDANCE CORRECTIONS IGNORED

                                  THREE PHASE FAULT
X---------- BUS ----------X          /I+/    AN(I+)
523928 [MARTIN     3115.00] AMP     7890.5   -82.17
523546 [HUTCH_S    3115.00] AMP    15650.2   -82.55
523924 [CARSON_SUB 3115.00] AMP     7018.1   -79.98
523926 [MAJESTC_WND3115.00] AMP     6959.9   -82.15
523938 [PANTEX_N   3115.00] AMP     8049.2   -81.51
523377 [RIVERVIEW  3115.00] AMP    13303.6   -79.67
523543 [HUTCHISON  269.000] AMP     9049.8   -83.53
523544 [HUTCH_N    3115.00] AMP    15650.2   -82.55
523551 [HUTCHISON  6230.00] AMP     7201.4   -83.56
523636 [GRAY_CNTY  3115.00] AMP     3897.6   -77.56
523945 [PANTEX_S   3115.00] AMP     8590.3   -80.91
523266 [PRINGLE    3115.00] AMP    10673.7   -79.01
523344 [BLKHAWK_W  3115.00] AMP    11822.0   -84.13
523352 [HERRING_TP 3115.00] AMP     7257.2   -78.35
523376 [RIVERVIEW  269.000] AMP     8580.2   -82.71
523404 [CRMWA_#1TP 3115.00] AMP     7482.8   -76.10
523484 [CAMEX/TRNSP269.000] AMP     8466.1   -82.61
523485 [CAMX/AGR TP3115.00] AMP    13952.3   -81.11
523516 [W_BORGER_TP3115.00] AMP    12293.5   -79.51
523526 [WEATHERLY  269.000] AMP     7960.9   -81.63
523623 [CRMWA#22   269.000] AMP     7957.9   -79.70
523635 [GRAY_CNTY  269.000] AMP     6022.1   -79.23
523931 [HIGHLAND_TP3115.00] AMP    11526.2   -78.59
524044 [NICHOLS    6230.00] AMP    25296.4   -86.27
523186 [SPEARMAN   3115.00] AMP     8880.7   -78.14
523267 [PRINGLE    6230.00] AMP     4263.3   -82.77
523346 [BLKHAWK_E  3115.00] AMP    11822.0   -84.13
523359 [HERRING    3115.00] AMP     5129.6   -74.03
523366 [RB-SNEED   3115.00] AMP     6660.3   -78.29
523397 [ROCKYPOINT 269.000] AMP     4978.6   -74.10
523403 [CRMWA_#1   3115.00] AMP     6290.1   -75.63
523405 [CRMWA_#2   3115.00] AMP     7404.0   -76.05
523413 [INDUSTRIAL 269.000] AMP     8135.3   -82.15
523445 [BLACKHAWK  269.000] AMP    11928.2   -84.99
523470 [CPCOKER    3115.00] AMP    11721.2   -83.94
523478 [Q_RYTON_TP 3115.00] AMP    11301.5   -83.83
523486 [CAMEX/AGRM 3115.00] AMP    12866.6   -80.49
523498 [PHILLPREF1 269.000] AMP     9095.5   -83.49
523505 [PHILLPREF2 269.000] AMP     9324.6   -83.63
523518 [W_BORGER   3115.00] AMP     9688.4   -78.15
523602 [BURNETT    269.000] AMP     4389.4   -65.61
523616 [DAMRON     269.000] AMP     3356.9   -71.78
523647 [CRMWA#23TP 269.000] AMP     2313.6   -75.27
523653 [KITE       269.000] AMP     4270.2   -77.30
523711 [KINGSMILL  269.000] AMP     8228.8   -81.00
523771 [GRAPEVINE  6230.00] AMP     5574.5   -82.00
523977 [HARRNG_WST 6230.00] AMP    26036.7   -86.35
523978 [HARRNG_MID 6230.00] AMP    26036.7   -86.35
524018 [ASARCO_TP  3115.00] AMP    28662.3   -84.04
524043 [NICHOLS    3115.00] AMP    30633.4   -84.80
524065 [HIGHLAND   3115.00] AMP     6037.8   -71.57
524415 [AMA_SOUTH  6230.00] AMP    13448.9   -83.58
523185 [SPEARMAN   269.000] AMP     4509.7   -85.88
523195 [HANSFORD   3115.00] AMP    10304.5   -80.44
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523203 [SPEARMNSUB 3115.00] AMP     6156.9   -77.87
523304 [MOORE_W    3115.00] AMP    11003.3   -81.52
523339 [FAIN       3115.00] AMP     5275.4   -74.80
523410 [CRMWA_#4   3115.00] AMP     9711.5   -76.54
523421 [HUBER_GEN  269.000] AMP     6680.3   -78.73
523431 [SIDRICHARD 269.000] AMP     6825.5   -79.11
523492 [FRITCH     3115.00] AMP     6909.3   -75.72
523512 [SPRINGCREEK269.000] AMP     1529.0   -65.85
523609 [ROXANA     269.000] AMP     2631.0   -69.78
523646 [CRMWA#21   269.000] AMP     2303.3   -75.26
523649 [CRMWA#23   269.000] AMP     1418.5   -74.96
523701 [MCCULLOUGH 269.000] AMP     6826.6   -79.59
523712 [KINGSMILL  3115.00] AMP     5630.9   -80.19
523770 [GRAPEVINE  3115.00] AMP     7770.6   -82.02
523777 [WHEELER    6230.00] AMP     5398.3   -82.13
523817 [MIDSTRM_TP 3115.00] AMP     6707.4   -78.60
523979 [HARRNG_EST 6230.00] AMP    26036.7   -86.35
524007 [ROLLHILLS  3115.00] AMP    19344.1   -81.55
524010 [ROLLHILLS  6230.00] AMP    19293.0   -84.79
524016 [ASARCO     3115.00] AMP    26500.3   -79.40
524058 [WHITAKER   3115.00] AMP    21936.5   -82.67
524079 [CONWAY     3115.00] AMP     4994.3   -77.30
524163 [EAST_PLANT 6230.00] AMP    13669.2   -84.29
524365 [RANDALL    6230.00] AMP    14275.8   -83.77
524414 [AMA_SOUTH  3115.00] AMP    16624.3   -81.99
560050 [G15-031-TAP 230.00] AMP     9039.2   -82.43
```

11.14.3 J3: GROUP 3 DYNAMIC STABILITY ANALYSIS REPORT

Previous stability analysis is still valid.

11.14.4 J4: GROUP 4 DYNAMIC STABILITY ANALYSIS REPORT

Previous stability analysis is still valid.

11.14.5 J6: GROUP 6 DYNAMIC STABILITY ANALYSIS REPORT

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Southwest Power Pool, Inc. (SPP)

DISIS-2016-001-1 (Group 06) Definitive Impact Study

Final Report

REP-0146
Revision #01

December 2017

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Report Revision Table

Revision	Reason for Revision	Date	Initials
0	Issue Final Report	12/8/2017	NWT
1	Update Table 2-3: Delete FLT195 and FLT196 due to no 765 kV contingencies examined (no 765 kV lines in study area)	12/12/2017	NWT

Title: **DISIS-2016-001-1 (Group 06) Definitive Impact Study: Final Report REP-0146**
Date: December 2017
Author: Nicholas W. Tenza; Engineer II, Power Systems Engineering Division *Nicholas W. Tenza*
Reviewed: Marcus Young; Principal Engineer, Power Systems Engineering Division *Marcus Young*
Approved: Donald J. Shoup; General Manager, Power Systems Engineering Division *Donald J. Shoup*

EXECUTIVE SUMMARY

SPP requested a Definitive Interconnection System Impact Study (DISIS). The DISIS required a Stability Analysis, Short Circuit Analysis, Power Factor Analysis, and Low Wind/No Wind Analysis detailing the impacts of the interconnecting projects as shown in Table ES-1.

Table ES-1
Interconnection Projects Evaluated

Request	Size (MW)	Generator Model	Point of Interconnection
GEN-2015-041	5 uprate to GEN-2013-016 (total power = 196 MW summer/208 MW winter)	GENROU (525845) (combustion turbine)	Tuco 345kV (525832)
ASGI-2016-001	2.5	Envision E110 2.5MW (wind) (587511)	Wolfforth 115kV (526524)
ASGI-2016-002	0.35 uprate to ASGI-2015-002; total power = 2.65MW)	GE 2.65MW (584723)(wind)	Hurlwood Substation 69/12.47kV) [Yuma Interchange 115/69kV (526469)]
ASGI-2016-004	10	3 x Alstom 3.2 MW & 4 x Renewtech 100 kW (587574/587573) (wind)	Palo Duro 115 kV (524530)
GEN-2016-015	100	TMEIC 1.667NW PV inverters (solar) (587113)	Andrews 230kV (528604)
GEN-2016-056	200	GE 2.0MW (wind) (587373)	Carlisle 230 kV (526161)
GEN-2016-062	250.7	GE 2.3MW (wind) (587423)	Andrews 230kV (528604)
GEN-2016-069	31.35	Hanwha 3.8MW & Hanwha 0.95MW (solar) (587473)	Chaves County 115kV (527482)

SUMMARY OF STABILITY ANALYSIS

The Stability Analysis determined that there were multiple contingencies across all seasons that resulted in system/voltage instability, generation tripping offline, and poor post-fault voltage recovery when all generation interconnection requests were at 100% output.

To mitigate the system/voltage instability, voltage violations, generation tripping offline, and poor post-fault steady-state voltages, the following upgrades were provided by SPP and implemented (upgrades provided here are required for 16WP season and thus, implemented in remaining years):

- Build Crawfish Draw to Tolk 345 kV Circuit #1
- Build Tolk to Potter County 345 kV Circuit #1
- Build Potter County 345/230 kV Transformer #2
- Build Potter County to Grapevine to Chisholm 345 kV Circuit #1
- Add +300 Mvar SVC at Border 345 kV
    - 600 total capacitive Mvars at Border 345 kV (300 Mvar switchable capacitor banks modeled as 6 blocks of 50 Mvar
- Add +/- 100 Mvar SVC at Oklaunion 345 kV
- Add 250 Mvar to existing switchable capacitor bank at Oklaunion 345kV (this brings total to 440 Mvar)
- Build Woodward to Tatonga to Mathewson 345 kV Circuit #2
    - Required to be implemented in 16WP and 17SP
    - Line exists in 20WP, 20SP, and 25SP
- Build Chaves County to Price to CV Pine to Capitan 115 kV Circuit #1
    - Required to be implemented in 16WP and 17SP
    - Line exists in 20WP, 20SP, and 25SP
- Convert existing Andrews 230 kV substation and Hobbs to Andrews 230 kV circuit to 345 kV

For a fault that results in the loss of the Tuco to Oklaunion 345 kV line, additional mitigation is required for 20WP conditions. After discussion with SPP, it was determined that area generation scheduled for retirement would be required to be retired for 20WP conditions.

Note due to the conversion of Andrews 230 kV substation and Hobbs to Andrews 230 kV circuit to 345 kV, FLT134 and FLT135 are no longer valid. Both of these faults are stuck breaker faults from the Hobbs 230 kV bus. However, if the Hobbs to Andrews 345 kV conversion does not take place, FLT134 and FLT135 will need to be mitigated because stability issues were identified.
For GEN-2016-015, the unit is observed to trip offline due to over frequency protection. For this study, the over frequency protection of the photovoltaic inverter model (PVGU1 and PVEU1) were set to 65 Hz to avoid instantaneous tripping. The GEN-2016-015 customer will need to coordinate

with the inverter manufacturer to verify that the generators will not trip for faults on the system with normal clearing time.

After implementing the above upgrades, the contingency analysis was re-simulated for all contingencies. With the upgrades, the Stability Analysis determined that there was no wind turbine tripping or system instability observed as a result of interconnecting all study projects at 100% output.

SUMMARY OF THE SHORT CIRCUIT ANALYSIS

The short circuit analysis was performed on the 2017 Summer Peak and 2025 Summer Peak power flows for all study projects. Refer to Table ES-2 and Table ES-3 for a list of maximum fault currents observed for each study project for the 17SP and 25SP cases, respectively.

Table ES-2
2017SP: List of Maximum Fault Currents Observed for Each Study Project

Study Project	Fault Current at POI (kA)	Maximum Fault Current (kA)	Fault Location	Bus Voltage (kV)
GEN-2015-041	16.68	30.64	Mathewson	345 kV
ASGI-2016-001	11.79	30.69	LP-Cook	69 kV
ASGI-2016-002	3.08	25.69	Tuco	230 kV
ASGI-2016-004	6.76	31.31	Nichols	115 kV
GEN-2016-015	6.46	32.84	Hobbs	115 kV
GEN-2016-056	12.51	30.69	LP-Cook	69 kV
GEN-2016-062	6.46	32.84	Hobbs	115 kV
GEN-2016-069	6.26	29.54	Cunningham	115 kV

Table ES-3
2025SP: List of Maximum Fault Currents Observed for Each Study Project

Study Project	Fault Current at POI (kA)	Maximum Fault Current (kA)	Fault Location	Bus Voltage (kV)
GEN-2015-041	16.86	35.17	LP-Cook	69 kV
ASGI-2016-001	11.92	35.17	LP-Cook	69 kV
ASGI-2016-002	3.09	26.11	Tuco	230 kV
ASGI-2016-004	6.77	31.51	Nichols	115 kV
GEN-2016-015	7.62	33.43	Hobbs	115 kV
GEN-2016-056	15.30	35.17	LP-Cook	69 kV
GEN-2016-062	7.62	33.43	Hobbs	115 kV
GEN-2016-069	6.36	30.12	Cunningham	115 kV

SUMMARY OF POWER FACTOR ANALYSIS

The upgrades identified in the Stability Analysis were implemented in the power flow cases and utilized for the Power Factor Analysis. Refer to Table ES-4 for the power factor analysis results for each study generator.

Table ES-4
Power Factor Analysis Summary for Study Projects

Study Project	Power Factor Range for Each Study Project[1]									
	16WP		17SP		20SP		20WP		25SP	
ASGI-2016-001	-0.148	0.369	-0.160	0.397	-0.158	0.370	-0.277	0.386	-0.111	0.347
ASGI-2016-002	-0.733	0.902	-0.716	0.832	-0.719	0.850	-0.840	0.907	-0.552	0.819
ASGI-2016-004	-0.315	0.845	-0.153	0.956	-0.525	0.926	-0.497	0.838	-0.533	0.577
GEN-2016-015	0.986	1.000	-0.972	0.999	0.931	0.999	0.932	0.996	0.908	0.995
GEN-2016-056	-0.986	0.979	-0.830	-0.998	-0.983	0.983	-0.997	0.989	-0.822	-0.977
GEN-2016-062	0.998	1.000	-0.995	1.000	0.988	1.000	0.988	0.999	0.984	0.999
GEN-2016-069	0.792	1.000	0.842	0.969	0.880	0.939	0.506	0.686	0.888	0.921

[1]Lagging power factors are negative and leading power factors are positive

SUMMARY OF LOW/NO WIND/IRRADIANCE ANALYSIS

The amount of reactive power injected into the transmission network was recorded at the point of interconnection for each wind and solar powered interconnection request for each season.

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SECTION 1: OBJECTIVES

The objective of this report is to provide Southwest Power Pool, Inc. (SPP) with the deliverables for the "DISIS-2016-001-1 (Group 06) Definitive Impact Study." SPP requested an Interconnection System Impact Study for eight (8) generation interconnections for 2016 Winter Peak, 2017 Summer Peak, 2020 Summer Peak, 2020 Winter Peak, and 2025 Summer Peak, which requires a Stability Analysis, Short Circuit Analysis, Power Factor Analysis, Low Wind/No Wind Analysis, and an Impact Study Report.

SECTION 2: BACKGROUND

The Siemens Power Technologies International PSS/E power system simulation program Version 32.2.2 was used for this study. SPP provided the stability database cases for 2016 Winter Peak, 2017 Summer Peak, 2020 Summer Peak, 2020 Winter Peak, and 2025 Summer Peak conditions. For this group study, the contingency list was modified from the DISIS-2016-001 Group 6 study and agreed upon by SPP. The model includes the study projects shown in Table 2-1 and the previously queued projects listed in Table 2-2. Refer to Appendix A for the steady-state and dynamic model data for the study projects. A power flow one-line diagram for each generation interconnection project is shown in Figures 2-1 through 2-7. Note that the one-line diagrams represent the 2017 Summer Peak case.

The Stability Analysis determined the impacts of the new interconnecting projects on the stability and voltage recovery of the nearby system and the ability of the interconnecting projects to meet FERC Order 661A. Three-phase faults and single line-to-ground faults were examined as listed in Table 2-3. The need for reactive compensation and system upgrades was investigated because stability and voltage recovery issues were identified.

A Short Circuit Analysis was performed on the 2017 Summer Peak and 2025 Summer Peak study years for each study generator. The study was performed five buses out from the study generator's point of interconnection and results were documented.

The Power Factor Analysis determined the power factor at the point of interconnection for the wind and solar interconnection projects for pre-contingency and post-contingency conditions. Table 2-3 lists the contingencies developed from the three-phase fault definitions provided in the group's interconnection impact study request.

The Low Wind/No Wind Analysis was completed for all wind farm and solar farm interconnections. This analysis determined that reactive support was required to have an Mvar flow of approximately zero at the point of interconnection (POI).

Table 2-1
Interconnection Projects Evaluated

Request	Size (MW)	Generator Model	Point of Interconnection
GEN-2015-041	5 uprate to GEN-2013-016 (total power = 196 MW summer/208 MW winter)	GENROU (525845) (combustion turbine)	Tuco 345kV (525832)
ASGI-2016-001	2.5	Envision E110 2.5MW (wind) (587511)	Wolfforth 115kV (526524)
ASGI-2016-002	0.35 uprate to ASGI-2015-002; total power = 2.65MW)	GE 2.65MW (584723)(wind)	Hurlwood Substation 69/12.47kV) [Yuma Interchange 115/69kV (526469)]
ASGI-2016-004	10	3 x Alstom 3.2 MW & 4 x Renewtech 100 kW (587574/587573)(wind)	Palo Duro 115 kV (524530)
GEN-2016-015	100	TMEIC 1.667NW PV inverters (solar) (587113)	Andrews 230kV (528604)
GEN-2016-056	200	GE 2.0MW (wind) (587373)	Carlisle 230 kV (526161)
GEN-2016-062	250.7	GE 2.3MW (wind) (587423)	Andrews 230kV (528604)
GEN-2016-069	31.35	Hanwha 3.8MW & Hanwha 0.95MW (solar) (587473)	Chaves County 115kV (527482)

Table 2-2
Previously Queued Nearby Interconnection Projects Included

Request	Size (MW)	Generator Model	Point of Interconnection
GEN-2001-033	180	Mitsubishi 1000	San Juan Mesa 230kV (524885)
GEN-2001-036	80	Mitsubishi 1000	Norton 115kV (524502)
GEN-2006-018	170	GENSAL	Tuco 230kV (525830)
GEN-2006-026	502	GENROU (527901, 527902, 527903)	Hobbs 115kV(527891) Hobbs 230kV (527894)
GEN-2008-022	300	Vestas	Tap on Eddy County – Tolk 345kV line (G08-022-POI, 560007)
GEN-2010-006	180 Summer 205 Winter	GENROU	Jones_bus2 230kV(526337)
ASGI-2010-010	42	GENSAL	Lovington 115kV (528334)
ASGI-2010-020	29.9	GE 2.3MW	Tap LE-Tatum to LE-Crsroads 69kV (AS10-020-POI, 560360)
ASGI-2010-021	15	Mitsubishi MPS-1000A 1.0MW	Tap LE-Saundrtp to LE-Anderson 69kV (ASGI-021-POI, 560364)
GEN-2010-046	56	GENSAL	Tuco 230kV (525830)
ASGI-2011-001	27.3	Suzlon 2.1MW	Lovington 115kV (528334)
ASGI-2011-003	10	Sany 2.0MW	Hendricks 69kV (525943)
ASGI-2011-004	19.8	Sany 1.8MW	Crosby 69kV (525915)
GEN-2011-025	78.76	GE 1.79MW	Tap on Floyd County - Crosby County 115kV line (G11-025-POI, 562004)
GEN-2011-045	180 Summer 205 Winter	GENROU	Jones_bus2 230kV (526337)
GEN-2011-046	23 Summer 27 Winter	GENROU	Quay County 115kV (524472)
GEN-2011-048	165 Summer 175 Winter	GENROU	Mustang 230kV (527151)

Request	Size (MW)	Generator Model	Point of Interconnection
GEN-2012-001	61.2	CCWE 3.6MW (WT4)	Tap Grassland to Borden 230kV (526679)
ASGI-2012-002	18.15	Vestas 1.65MW V82	Clovis 115kV (524808)
GEN-2012-020	477.12	GE 1.68MW	Tuco 230kV (525830)
GEN-2012-034	7 increase; total power = 157MW	GENROU (unit 4; 527164)	Mustang 230kV (527151)
GEN-2012-035	7 increase; total power = 157MW	GENROU (unit 5; 527165)	Mustang 230kV (527151)
GEN-2012-036	7 increase; total power = 172MW Summer/185MW Winter	GENROU (unit 6; 527166)	Mustang 230kV (527151)
GEN-2012-037	196 Summer 203 Winter	GENROU (525844)	Tuco 345kV (525832)
ASGI-2012-002	18	Vestas 1.65MW V82	Clovis 115kV (524808)
GEN-2013-016	191 Summer 203 Winter	GENROU (583456)	Tuco 345kV (525832)
ASGI-2013-002	18.4	Siemens 2.3MW VS (583613)	Tucumcari 115kV (524509)
ASGI-2013-003	18.4	Siemens 2.3MW VS (583623)	Clovis 115kV (524808)
ASGI-2013-005	1.65 increase; total power = 19.8 MW	Vestas V82 1.65MW (583283)	FE-Clovis 115kV (524808)

Request	Size (MW)	Generator Model	Point of Interconnection
ASGI-2013-006	2.0	Gamesa G114 2MW (583813)	Erskine 115kV (526109)
GEN-2013-022	25.0	Solaron 500kW (583313)	Caprock 115kV (524486)
GEN-2013-027	150.0	Siemens 2.3/2.415	Tap on Yoakum to Tolk 230kV (562480)
GEN-2014-012	186 Summer 225 Winter	GENROU (528607)	Tap Hobbs (527894 in 2015SP/WP, 527896 in 2025SP) to Andrews (528604) 230kV (345kV in 2025SP) (Tap bus is 528611)
ASGI-2014-001	2.5	GE 107m 2.5MW (583816)	Erskine 69kV (526109)
GEN-2014-033	70	17 X GE Prolec 4MVA, 2 X GE Prolec 1 MVA, & 5 X Schneider XC680 0.680 MVA PV inverter	Chaves County 115kV
GEN-2014-034	70	17 X GE Prolec 4MVA PVinverter	Chaves County 115kV
GEN-2014-035	30	8 X GE Prolec 4MVA PV inverter	Chaves County 115kV
GEN-2014-047	40	AE 500NX 0.5 MW PV inverters	Tap Tolk - Eddy County (Crossroads) 345kV
GEN-2014-074	152.0	Vestas V110 2.0MW (584443)	Tap Tuco – OKU 345kV (560027)
ASGI-2015-002	2.3	GE 2.3MW (584723)	Yuma Interchange 115/69kV (526469)

Request	Size (MW)	Generator Model	Point of Interconnection
GEN-2015-014	150.0	Vestas V110 2.0MW (584563)	Tap on Cochran – LG Plains 115kV (560030)
GEN-2015-020	100.0	Eaton Power Xpert Solar 1.67MW (584623)	Oasis 115kV (524874)
GEN-2015-022	112.0	GE LV5 4.0MW Inverters (584643)	Swisher 115kV (525212)
GEN-2015-031	150.53	60 X GE 2.3 MW & 7 X GE 1.79 MW (wind)	Swisher (525213) to Amarillo South (524415) 230 kV (560050)
GEN-2015-056	101.2	GE 2.3 MW (wind)	Crossroads 345kV (527656) (Tap Eddy (527802) to Tolk(525549)
GEN-2015-058	50.1	Power Electronics Solar 1.667 MW (solar)	Atoka 115kV (527786)
GEN-2015-068	300	GE 2.0 MW (wind)	Tuco 345kV (525832)
GEN-2015-075	50	GE 3.96 MW (solar)	Carlisle 69kV (526159)
GEN-2015-079	129.2	GE LV5 3.8 MW (solar)	Tap Yoakum (526935) to Hobbs (527894) 230 kV (560059)
GEN-2015-080	129.2	GE LV5 3.8 MW (solar)	Tap Yoakum (526935) to Hobbs (527894) 230 kV (560059)

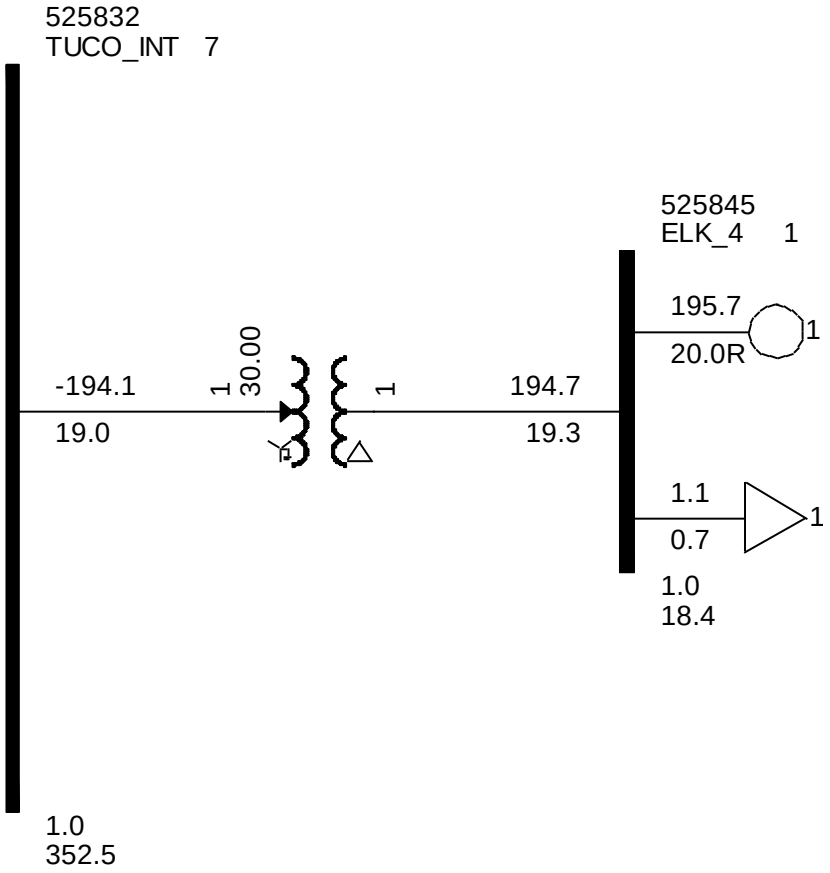

Figure 2-1. Power flow one-line diagram for interconnection project at the Tuco 345 kV POI (GEN-2015-041).

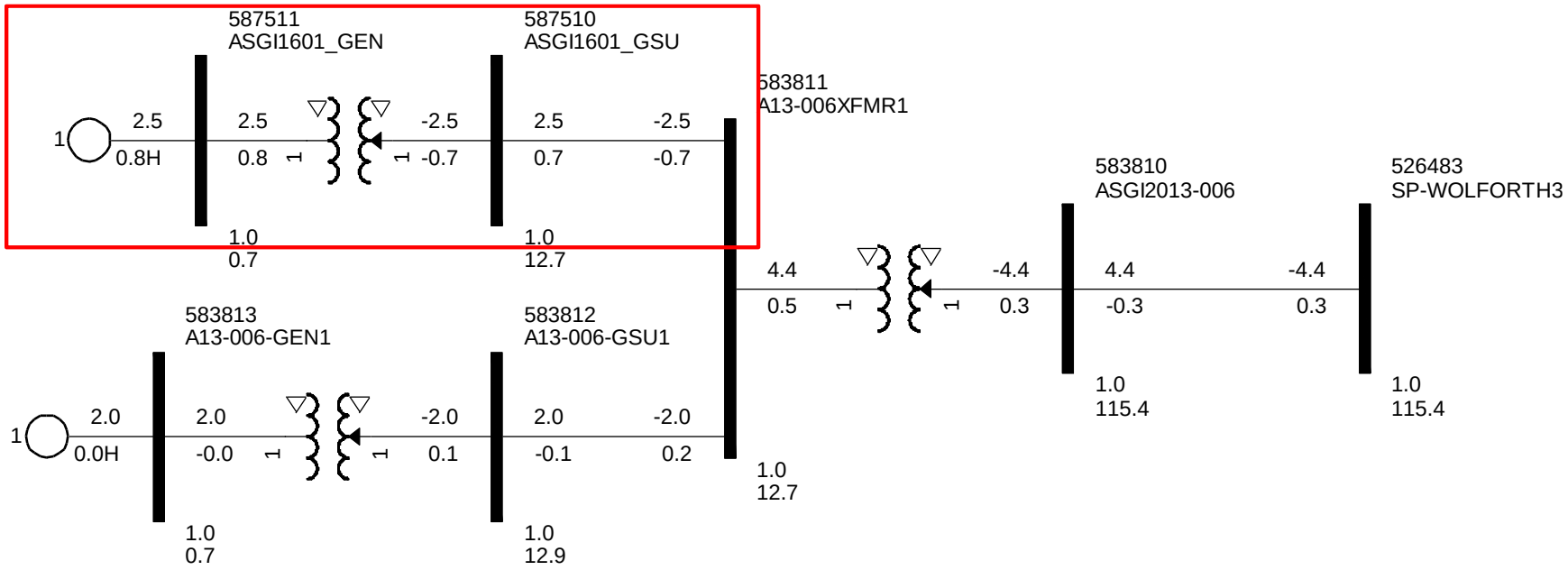

Figure 2-2. Power flow one-line diagram for interconnection project at the Wolfforth 115 kV POI (ASGI-2016-001).

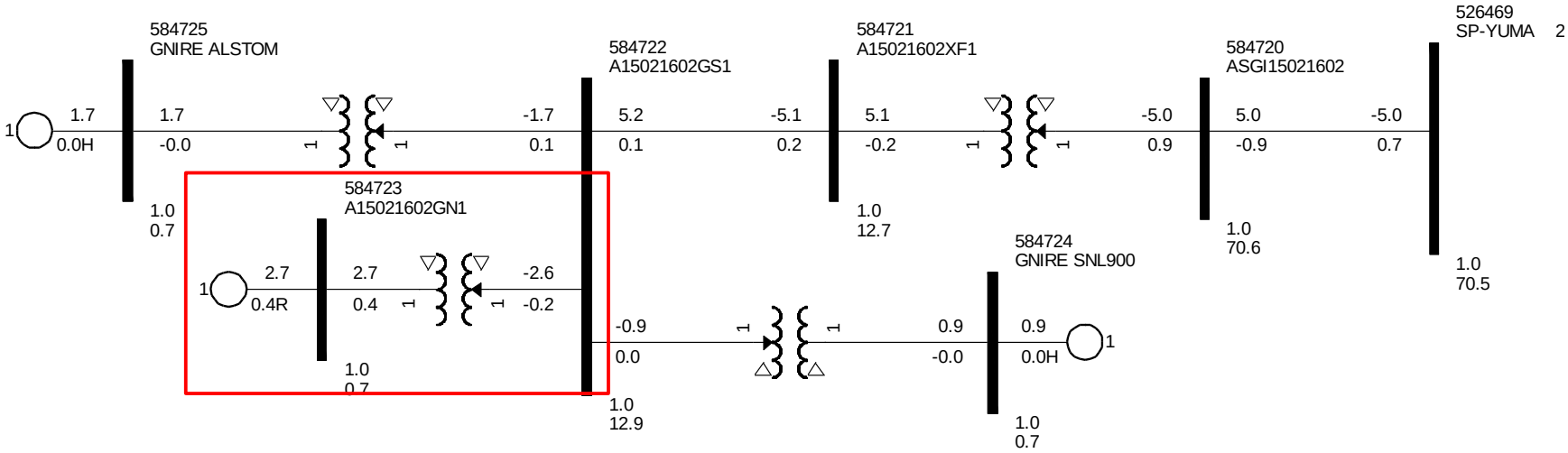

Figure 2-3. Power flow one-line diagram for interconnection project at the Hurlwood 69 kV POI (ASGI-2016-002).

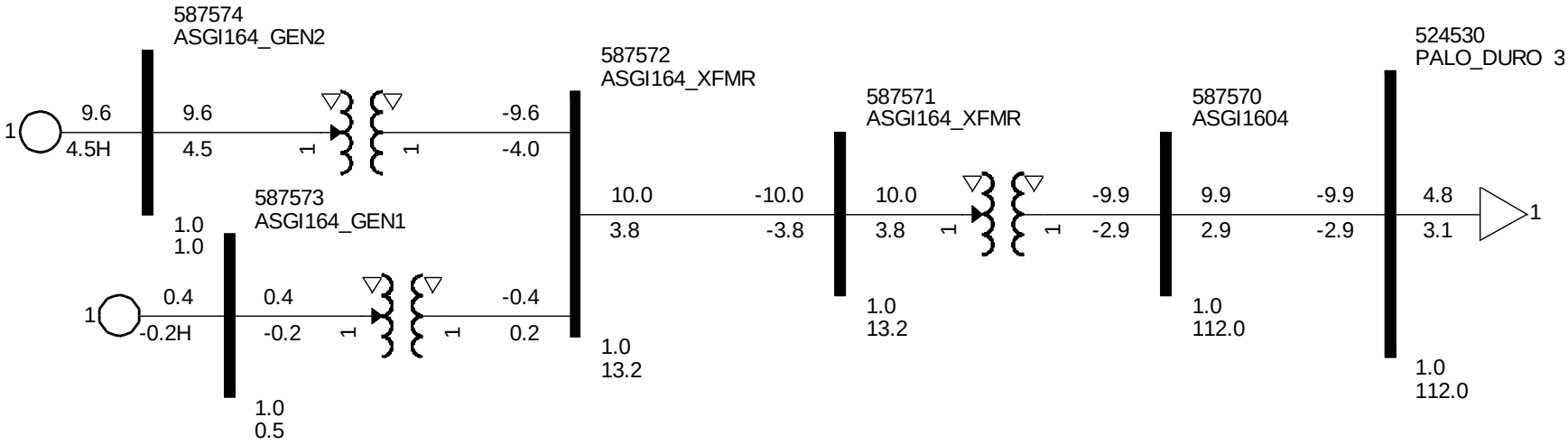

Figure 2-4. Power flow one-line diagram for interconnection project at the Palo Duro 115 kV POI (ASGI-2016-004).

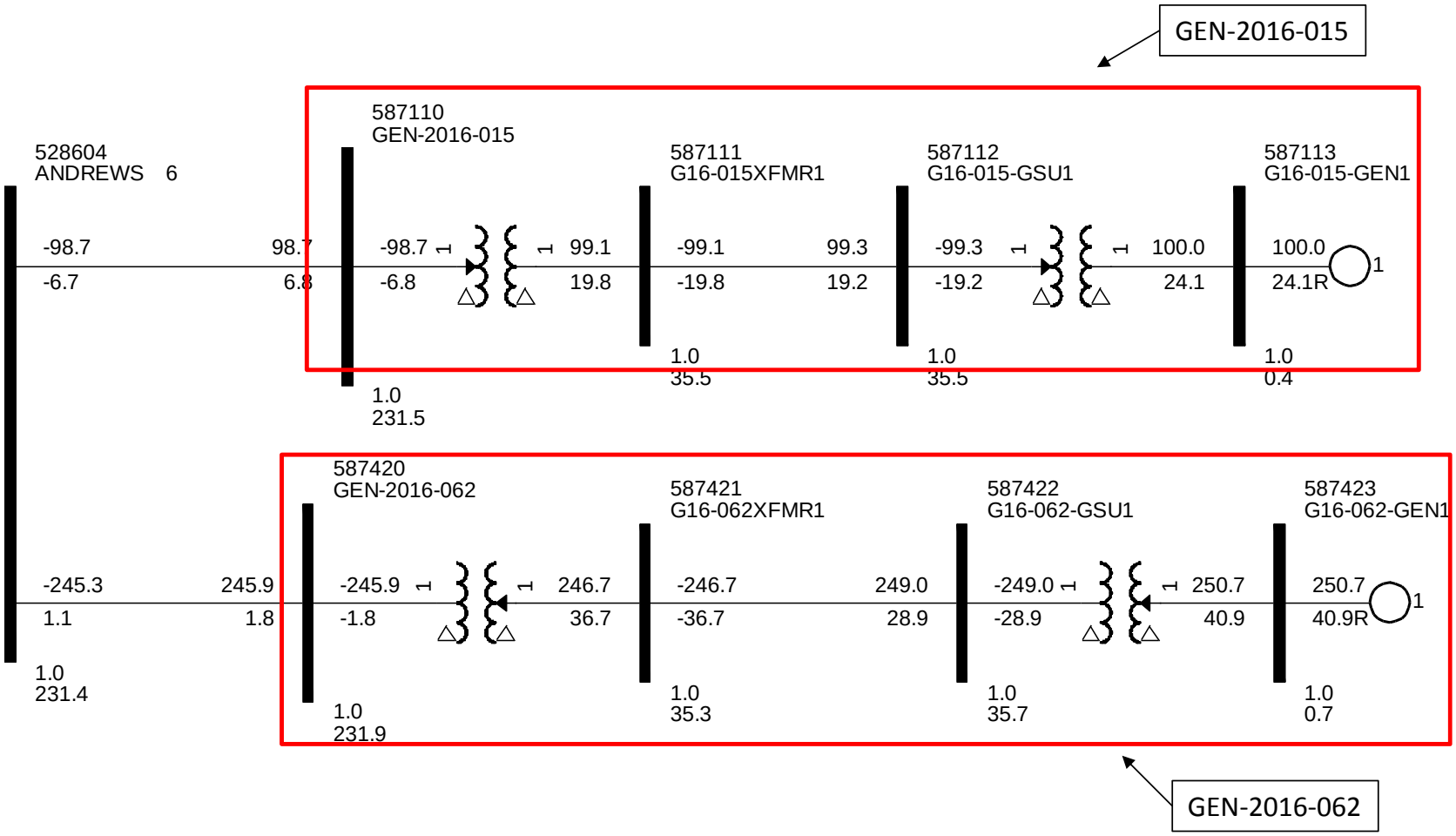

Figure 2-5. Power flow one-line diagram for interconnection project at the Andrews 230 kV POI (GEN-2016-015 and GEN-2016-062).

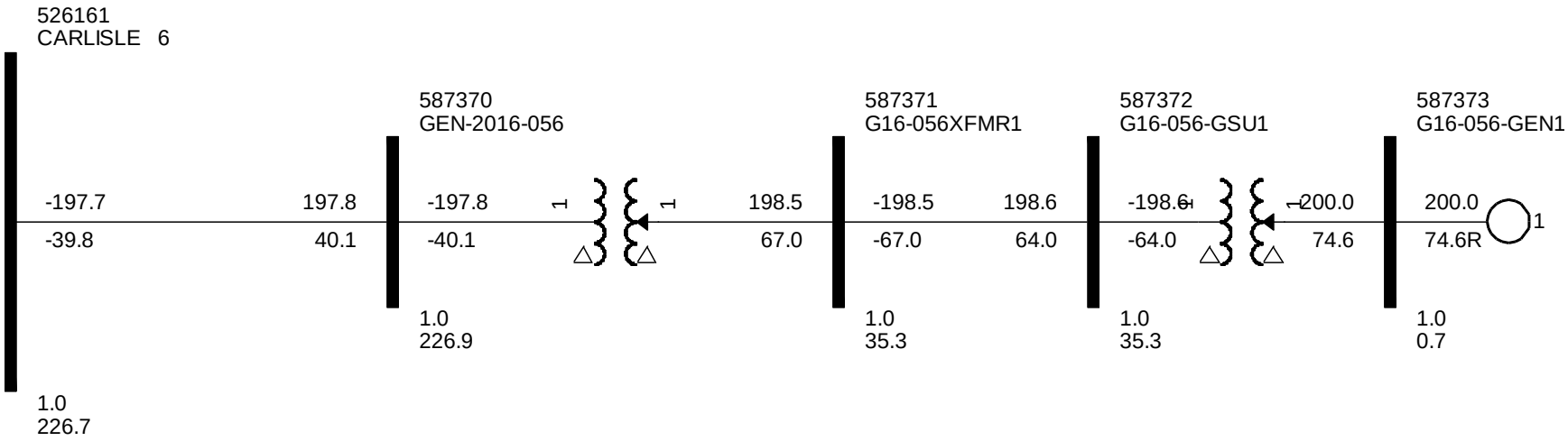

Figure 2-6. Power flow one-line diagram for interconnection project at the Carlisle 230 kV POI (GEN-2016-056).

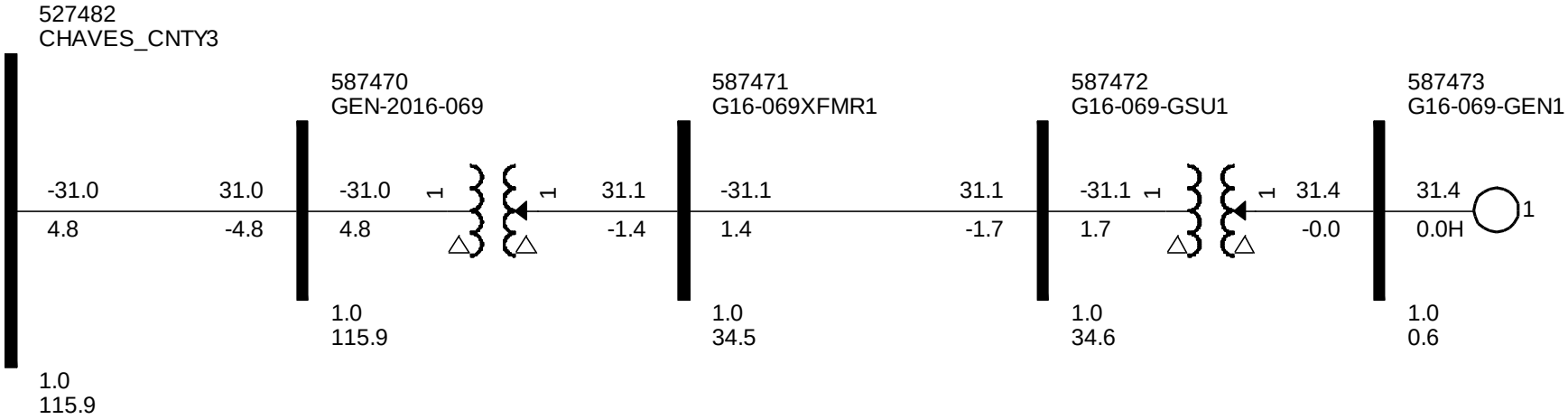

Figure 2-7. Power flow one-line diagram for interconnection project at the Chaves County 115 kV POI (GEN-2016-069).

Table 2-3
Case List with Contingency Description

Cont. No.	Cont. Name	Description
20	FLT20-3PH	3 phase fault on the Rio Blanco 345 kV (560027) to Tuco (525832) 345 kV line circuit 1, near Rio Blanco. a. Apply fault at the Rio Blanco 345 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
21	FLT21-3PH	3 phase fault on the Rio Blanco 345 kV (560027) to OKU (511456) 345 kV line circuit 1, near Rio Blanco. a. Apply fault at the Rio Blanco 345 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
22	FLT22-3PH	3 phase fault on the Tuco 2 (560022) to Border (515458) 345 kV line circuit 1, near Tuco. a. Apply fault at the Tuco 2 345 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
23	FLT23-3PH	3 phase fault on the Tuco 345 kV (525832) to Tuco 230 kV (525830) to Tuco 13.2 kV (525824) XFMR CKT 1, near Tuco 345 kV bus. a. Apply fault at the Tuco 345 kV bus. b. Clear fault after 5 cycles by tripping the transformer
24	FLT24-3PH	3 phase fault on the Tuco (525832) to Yoakam (526936) 345 kV line circuit 1, near Tuco. a. Apply fault at the Tuco (525832) 345 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
25	FLT25-3PH	3 phase fault on the OKU (511456) to Oklaun (599891) 345 kV line circuit 1, near OKU. a. Apply fault at the OKU 345 kV bus. b. Clear fault after 5 cycles by tripping the faulted line and remove the fault. c. Block the DC tie at OKU.
26	FLT26-3PH	3 phase fault on the OKU (511456) to L.E.S (511468) 345 kV line circuit 1, near OKU. a. Apply fault at the OKU 345 kV bus. b. Clear fault after 5 cycles by tripping the faulted line and remove the fault. c. Block the DC tie at OKU.

Cont. No.	Cont. Name	Description
27	FLT27-SB	**Single phase fault with stuck breaker** at **Tuco (525832)** a. Apply fault at the Tuco 345 kV bus. b. Clear fault after 16 cycles and trip the following elements c. Tuco 345 kV (525832) /230 kV (525830) /13.2 kV (525824) transformer d. Tuco (525832)- Rio Blanco (560027) 345 kV
28	FLT28-SB	**Single phase fault with stuck breaker at Tuco Int (525832)** a. Apply fault at the Tuco Int 345 kV bus. b. Clear fault after 16 cycles and trip the following elements c. Tuco Int (525832) – Rio Blanco (560027) 345 kV d. Tuco Int (525832) – Yoakum (526936) 345 kV
29	FLT29-SB	**Single phase fault with stuck breaker at Tuco 2 (560022)** a. Apply fault at the Tuco 2 345 kV bus. b. Clear fault after 16 cycles and trip the following elements c. Tuco 2 (560022) – Border (515458) 345 kV, Ckt 1 d. Tuco 2 (560022) – Border (515458) 345 kV, Ckt 2
30	FLT30-SB	**Single phase fault with stuck breaker at Tuco Int (525832)** a. Apply fault at the Tuco Int 345 kV bus. b. Clear fault after 16 cycles and trip the following elements c. Tuco Int (525832) – Tuco 2 (560022) 345 kV d. Tuco Int (525832) – Yoakum (526936) 345 kV
31	FLT31-PO	**Prior Outage of the Tuco 345 kV (525832) to Tuco 230 kV (525830) to Tuco 13.2 kV (525824) XFMR CKT 1;** 3 phase fault on the Rio Blanco 345 kV (560027) to OKU (511456) 345 kV line circuit 1, near Rio Blanco. a. Apply fault at the Rio Blanco 345 kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
32	FLT32-PO	**Prior Outage of the Tuco 345 kV (525832) to Tuco 230 kV (525830) to Tuco 13.2 kV (525824) XFMR CKT 1;** 3 phase fault on the Tuco 2 (560022) to Border (515458) 345 kV line circuit 1, near Tuco. a. Apply fault at the Tuco 345 kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
33	FLT33-PO	**Prior Outage of the Rio Blanco (560027) to OKU (511456) 345 kV Line;** 3 phase fault on the Tuco Int 345 kV (560022) to Yoakum (526936) 345 kV line circuit 1, near Tuco Int. a. Apply fault at the Tuco Int 345 kV bus. b. Clear fault after 5 cycles by tripping the faulted line.

Cont. No.	Cont. Name	Description
35	FLT35-3PH	3 phase fault on the G15039_T (560051) to Deaf Smith (524623) 230 kV line circuit 1, near G15039_T. a. Apply fault at the G15039_T 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
36	FLT36-3PH	3 phase fault on the G15039_T (560051) to Plant X (525481) 230 kV line circuit 1, near G15039_T. a. Apply fault at the GEN-2015-039 TAP 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
37	FLT37-3PH	3 phase fault on the Deaf Smith (524623) to Bushland (524267) 230 kV line circuit 1, near Deaf Smith. a. Apply fault at the Deaf Smith 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
38	FLT38-3PH	3 phase fault on the Deaf Smith 230 kV (524623) to Deaf Smith 115 kV (524622) to Deaf Smith 13.2 kV (524620) XFMR CKT 1, near Deaf Smith 230 kV. a. Apply fault at the Deaf Smith 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted transformer.
39	FLT39-3PH	3 phase fault on the Plant X (525481) to Tolk East (525524) 230 kV line circuit 2, near Plant X. a. Apply fault at the Plant X 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
40	FLT40-3PH	3 phase fault on the Plant X (525481) to Newhart (525461) 230 kV line circuit 1, near Plant X. a. Apply fault at the Plant X 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
41	FLT41-3PH	3 phase fault on the Plant X (525481) to Tolk West (525531) 230 kV line circuit 1, near Plant X. a. Apply fault at the Plant X 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

Cont. No.	Cont. Name	Description
42	FLT42-3PH	3 phase fault on the Plant X (525481) to Sundown (526435) 230 kV line circuit 1, near Plant X. a. Apply fault at the Plant X 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
43	FLT43-3PH	3 phase fault on the Plant X 230 kV (525481) to Plant X 115 kV (525480) to Plant X 13.2 kV (525479) XFMR CKT 1, near Plant X 230 kV. a. Apply fault at the Plant X 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted transformer.
44	FLT44-3PH	**Single phase fault with stuck breaker** on the Tolk West (525531) to Plant X (525481) 230 kV circuit #1 line, near Tolk West. a. Apply fault at the Tolk West 230 kV bus. b. Run 5 cycles, and then open Plant X end of the faulted line. c. Run 10 cycles, and then clear the fault and disconnect Tolk West 230 kV bus (525531).
45	FLT45-3PH	**Single phase fault with stuck breaker** on the Tolk East (525524) to Plant X (525481) 230 kV line circuit #2, near Tolk East. a. Apply fault at the Tolk East 230 kV bus. b. Run 5 cycles, and then open Plant X end of the faulted line. c. Run 10 cycles, and then clear the fault and disconnect Tolk East 230 kV bus (525524).
46	FLT46-SB	**Single phase fault with stuck breaker at Deaf Smith (524623) 230 kV** a. Apply fault at the Deaf Smith 230 kV bus. b. Clear fault after 16 cycles and trip the following elements c. Deaf Smith (524623) - Bushland (524267) 230 kV d. Deaf Smith (524623) – G15039_T (560051) 230 kV
47	FLT47-SB	**Single phase fault with stuck breaker at Plant X (525481) 230 kV** a. Apply fault at the Plant X 230 kV bus. b. Clear fault after 16 cycles and trip the following elements c. Plant X (525481) – G15039_T (560051) 230 kV d. Plant X (525481) – Newhart (525461) 230 kV
48	FLT48-SB	**Single phase fault with stuck breaker at Plant X (525481) 230 kV** a. Apply fault at the Plant X 230 kV bus. b. Clear fault after 16 cycles and trip the following elements c. Plant X (525481) – Tolk West (525531) 230 kV d. Plant X (525481) – Sundown (526435) 230 kV

Cont. No.	Cont. Name	Description
49	FLT49-SB	**Single phase fault with stuck breaker at Plant X (525481) 230 kV** a. Apply fault at the Plant X 230 kV bus. b. Clear fault after 16 cycles and trip the following elements c. Plant X (525481) 230 kV/ (525480) 115 kV/ (525479) 13.2 kV Xfmr d. Plant X (525481) – Newhart (525461) 230 kV
50	FLT50-PO	**Prior Outage of the Plant X 230 kV (525481) to Plant X 115 kV (525480) to Plant X 13.2 kV (525479) XFMR CKT 1;** 3 phase fault on the Plant X 230 kV (525481) to Sundown (526435) 230 kV line circuit 1, near Plant X. a. Apply fault at the Plant X 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
51	FLT51-PO	**Prior Outage of the Plant X (525481) to Sundown (526435) 230 kV Line;** 3 phase fault on the Plant X 230 kV (525481) to Tolk East (525524) 230 kV line circuit 2, near Plant X. a. Apply fault at the Plant X 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
52	FLT52-PO	**Prior Outage of the Deaf Smith (524623) to Bushland (524267) 230 kV Line;** 3 phase fault on the Deaf Smith 230 kV to G15039_T (560051) 230 kV line circuit 1, near Deaf Smith. a. Apply fault at the D 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
53	FLT53-3PH	3 phase fault on the Mustang (527149) to Amocowasson (526784) 230 kV line circuit 1, near Mustang. a. Apply fault at the Mustang 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
54	FLT54-3PH	3 phase fault on the Mustang 230 kV (527149) to Mustang 115 kV (527146) to Mustang 13.2 kV (527143) XFMR CKT 1, near Mustang 230 kV. a. Apply fault at the Mustang 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted transformer.
55	FLT55-3PH	3 phase fault on the Mustang (527149) to Yoakum (526935) 230 kV line circuit 1, near Mustang. a. Apply fault at the Mustang 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

Cont. No.	Cont. Name	Description
56	FLT56-3PH	3 phase fault on the Mustang (527149) to Seminole (527276) 230 kV line circuit 1, near Mustang. a. Apply fault at the Mustang 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
57	FLT57-3PH	3 phase fault on the Seminole 230 kV (527276) to Seminole 115 kV (527275) to Seminole 13.2 kV (527273) XFMR CKT 1, near Seminole 230 kV. a. Apply fault at the Seminole 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted transformer.
58	FLT58-3PH	3 phase fault on the Amocowasson (526784) to OxyBru Tap (527010) 230 kV line circuit 1, near Amocowasson. a. Apply fault at the Amocowasson 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
59	FLT59-3PH	3 phase fault on the Yoakum (526935) to G13-027-TAP (562480) 230 kV line, near Yoakum. a. Apply fault at the Yoakum 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
60	FLT60-3PH	3 phase fault on the Yoakum 230 kV (526935) to Yoakum 115 kV (526934) to Yoakum 13.2 kV (526931) XFMR CKT 1, near Yoakum 230 kV. a. Apply fault at the Yoakum 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted transformer.
61	FLT61-3PH	3 phase fault on the Mustang (527146) to Denver North (527130) 115 kV line circuit 1, near Mustang. a. Apply fault at the Mustang 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
62	FLT62-3PH	3 phase fault on the Mustang (527146) to Seagraves (527202) 115 kV line circuit 1, near Mustang. a. Apply fault at the Mustang 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

Cont. No.	Cont. Name	Description
63	FLT63-3PH	3 phase fault on the Mustang (527146) to Denver South (527136) 115 kV line circuit 1, near Mustang. a. Apply fault at the Mustang 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
64	FLT64-3PH (17SP,25SP)	3 phase fault on the Mustang (527146) to Shell Co (527062) 115 kV line circuit 1, near Mustang. a. Apply fault at the Mustang 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
65	FLT65-3PH	3 phase fault on the Yoakum (526935) to Amoco-SS (526460) 230 kV line, near Yoakum. a. Apply fault at the Yoakum 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
66	FLT66-3PH	3 phase fault on the Yoakum (526935) to OxyBru Tap (527010) 230 kV line, near Yoakum. a. Apply fault at the Yoakum 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
67	FLT67-3PH	3 phase fault on the Yoakum (526935) to G1579&G1580T (560059) 230 kV line, near Yoakum. a. Apply fault at the Yoakum 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
68	FLT68-SB	**Single phase fault with stuck breaker at Mustang (527149)** a. Apply fault at the Mustang 230 kV bus. b. Clear fault after 16 cycles and trip the following elements c. Mustang 230 kV (527149) /115 kV (527146)/13.2 kV (527143) transformer d. Mustang (527149) - Amocowasson (526784) 230 kV
69	FLT69-SB	**Single phase fault with stuck breaker** on the Yoakum (526935) to GEN-2013-027 (562480) 230 kV line, near Yoakum. a. Apply fault at the Yoakum 230 kV bus. b. Run 5 cycles, and then open GEN-2013-027 end of the faulted line. c. Run 10 cycles, and then clear the fault and open Yoakum end of the line in (b) and trip Yoakum (526935) to Yoakum 115 (526934)/13.2 kV (526931) transformer circuit #1.

Cont. No.	Cont. Name	Description
70	FLT70-SB	**Single phase fault with stuck breaker** on the Yoakum (526935) to Amoco-SS (526460) 230 kV line, near Yoakum. a. Apply fault at the Yoakum 230 kV bus. b. Run 5 cycles, and then open Amoco-SS end of the faulted line. c. Run 10 cycles, and then clear the fault and trip Yoakum 230 kV (526935) bus.
71	FLT71-PO	**Prior Outage of the Mustang (527149) to Seminole (527276) 230 kV line circuit 1;** 3 phase fault on the Mustang (527149) to Yoakum (526935) 230 kV line circuit 1, near Mustang. a. Apply fault at the Mustang 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
72	FLT72-PO	**Prior Outage of the Mustang (527149) to Yoakum (526935) 230 kV line circuit 1;** 3 phase fault on the Mustang (527149) to Seminole (527276) 230 kV line circuit 1, near Mustang. a. Apply fault at the Mustang 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
73	FLT73-3PH	3 phase fault on the Border (515458) to Chisholm (511553) 345 kV line, near Border. a. Apply fault at the Border 345 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
74	FLT74-3PH	3 phase fault on the Border (515458) to Tuco 2 (560022) 345 kV line, near Border. a. Apply fault at the Border 345 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
75	FLT75-3PH	3 phase fault on the Tuco Int (525830) to Antelope (525840) 230 kV line, near Tuco Int. a. Apply fault at the Tuco Int 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
76	FLT76-3PH	3 phase fault on the Tuco Int (525830) to Carlisle (526161) 230 kV line, near Tuco Int. a. Apply fault at the Tuco Int 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

Cont. No.	Cont. Name	Description
77	FLT77-SB	**Single phase fault with stuck breaker at Mustang (527146)** a. Apply fault at the Mustang 115 kV bus. b. Clear fault after 16 cycles and trip the following elements c. Mustang 230 kV (527149) /115 kV (527146)/13.2 kV (527143) transformer d. Mustang (527146) – Denver South (527136) 115 kV
78	FLT78-SB	**Single phase fault with stuck breaker at Mustang (527146)** a. Apply fault at the Mustang 115 kV bus. b. Clear fault after 16 cycles and trip the following elements c. Mustang (527146) – Seagraves (527202) 115 kV d. Mustang (527146) – Denver North (527130) 115 kV
79	FLT79-SB	**Single phase fault with stuck breaker at Mustang (527146)** a. Apply fault at the Mustang 115 kV bus. b. Clear fault after 16 cycles and trip the following elements c. Mustang (527146) – Denver South (527136) 115 kV d. Mustang (527146) – Denver North (527130) 115 kV
80	FLT80-SB (No 16WP)	**Single phase fault with stuck breaker at Mustang (527146)** a. Apply fault at the Mustang 115 kV bus. b. Clear fault after 16 cycles and trip the following elements c. Mustang (527146) – Shell County (527062) 115 kV d. Mustang (527146) – Seagraves (527202) 115 kV
81	FLT81-PO	**Prior Outage of the Mustang (527146) to Denver North (527130) 115 kV line circuit 1;** 3 phase fault on the Mustang (527146) to Denver South (527136) 115 kV line circuit 2, near Mustang. a. Apply fault at the Mustang 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
82	FLT82-PO	**Prior Outage of the Mustang (527149) 230 kV to Mustang (527146) 115 kV transformer, circuit 1;** 3 phase fault on the Mustang (527146) to Denver North (527130) 115 kV line circuit 1, near Mustang. a. Apply fault at the Mustang 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
83	FLT83-PO (No 16WP)	**Prior Outage of the Mustang (527146) to Shell County (527062) 115 kV line circuit 1;** 3 phase fault on the Mustang (527146) to Denver South (527136) 115 kV line circuit 2, near Mustang. a. Apply fault at the Mustang 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line.

Cont. No.	Cont. Name	Description
84	FLT84-3PH	3 phase fault on the Wolfforth (526524) to Yuma (526475) 115 kV line, near Wolfforth a. Apply fault at the Wolfforth 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
85	FLT85-3PH	3 phase fault on the Wolfforth (526524) to Terry County (526736) 115 kV line, near Wolfforth a. Apply fault at the Wolfforth 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
86	FLT86-3PH	3 phase fault on the Wolfforth 115 kV (526524) to Wolfforth 230 kV (526525) to Wolfforth 13.2 kV (526522) XFMR CKT 1, near Wolfforth 115 kV. a. Apply fault at the Wolfforth 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted transformer.
87	FLT87-3PH	3 phase fault on the Terry County (526736) to Denver North (527130) 115 kV line, near Terry County a. Apply fault at the Terry County 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
88	FLT88-3PH	3 phase fault on the Terry County (526736) to LG-Clauene (526491) 115 kV line, near Terry County a. Apply fault at the Terry County 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
89	FLT89-3PH	3 phase fault on the Terry County (526736) to Sulphur (527262) 115 kV line, near Terry County a. Apply fault at the Terry County 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
90	FLT90-3PH	3 phase fault on the Terry County (526736) to G15-077-Tap (560058) 115 kV line, near Terry County a. Apply fault at the Terry County 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

Cont. No.	Cont. Name	Description
91	FLT91-3PH	3 phase fault on the Terry County 115 kV (526736) to Terry County 69 kV (526735) to Terry County 13.2 kV (526733) XFMR CKT 1, near Terry County 115 kV. a. Apply fault at the Terry County 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted transformer.
92	FLT92-3PH	3 phase fault on the Yuma (526475) to SP-Wolfforth Tap (526481) 115 kV line, near Yuma a. Apply fault at the Yuma 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
93	FLT93-3PH	3 phase fault on the Wolfforth (526525) to Sundown (526435) 230 kV line, near Wolfforth a. Apply fault at the Wolfforth 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
94	FLT94-3PH	3 phase fault on the Wolfforth (526525) to Lubbock South (526269) 230 kV line, near Wolfforth a. Apply fault at the Wolfforth 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
95	FLT95-3PH (No 16WP)	3 phase fault on the Wolfforth (526525) to Carlisle (526161) 230 kV line, near Wolfforth a. Apply fault at the Wolfforth 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
96	FLT96-SB	**Single phase fault with stuck breaker at Wolfforth (526524)** a. Apply fault at the Wolfforth 115 kV bus. b. Clear fault after 16 cycles and trip the following elements c. Wolfforth (526524) – Yuma (526475) 115 kV d. Wolfforth (526524) – Terry County (526736) 115 kV
97	FLT97-SB	**Single phase fault with stuck breaker at Wolfforth (526524)** a. Apply fault at the Wolfforth 115 kV bus. b. Clear fault after 16 cycles and trip the following elements c. Wolfforth 115 kV (526524)/230 kV (526525)/13.2 kV (526522) xfmr d. Wolfforth (526524) – Terry County (526736) 115 kV

Cont. No.	Cont. Name	Description
98	FLT98-PO	**Prior Outage of the Wolfforth (526524) to Terry County (526736) 115 kV line circuit 1;** 3 phase fault on the Wolfforth 115 kV (526524)/230 kV (526525)/13.2 kV (526522) xfmr, near Wolfforth. a. Apply fault at the Wolfforth 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
99	FLT99-PO	**Prior Outage of the Wolfforth (526524) to Yuma (526475) 115 kV line circuit 1;** 3 phase fault on the Wolfforth (526524) to Terry County (526736) 115 kV line circuit 1, near Wolfforth. a. Apply fault at the Wolfforth 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
100	FLT100-3PH	3 phase fault on the SP-Wolfforth Tap (526481) to LP-Doud Tap (526162) 115 kV line, near SP-Wolfforth Tap a. Apply fault at the SP-Wolfforth Tap 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
101	FLT101-3PH	3 phase fault on the SP-Wolfforth Tap (526481) to SP-Wolfforth (526483) 115 kV line, near SP-Wolfforth Tap a. Apply fault at the SP-Wolfforth Tap 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
102	FLT102-3PH	**Single phase fault with stuck breaker at SP-Wolfforth Tap (526481)** a. Apply fault at the SP-Wolfforth Tap 115 kV bus. b. Clear fault after 16 cycles and trip the following elements c. SP-Wolfforth Tap (526481) – LP-Doud Tap (526162) 115 kV d. SP-Wolfforth Tap (526481) – SP-Wolfforth (526483) 115 kV
103	FLT103-3PH	**Prior Outage of the SP-Wolfforth Tap (526481) to SP-Wolfforth (526483) 115 kV line circuit 1;** 3 phase fault on the SP-Wolfforth Tap (526481) to Yuma (526475) 115 kV line circuit 1, near SP-Wolfforth Tap. a. Apply fault at the SP-Wolfforth Tap 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
104	FLT104-3PH	3 phase fault on the Happy (525154) to Tulia Tap (525179) 115 kV line, near Happy. a. Apply fault at the Happy 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

Cont. No.	Cont. Name	Description
105	FLT105-3PH	3 phase fault on the Happy (525154) to Palo Duro (524530) 115 kV line, near Happy. a. Apply fault at the Happy 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
106	FLT106-3PH	3 phase fault on the Happy 115 kV (525154) to Happy 69 kV (525153) to Happy 13.2 kV (525151) XFMR CKT 1, near Happy 115 kV. a. Apply fault at the Happy 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted transformer.
107	FLT107-3PH	3 phase fault on the Tulia Tap (525179) to Kress (525192) 115 kV line, near Tulia Tap. a. Apply fault at the Tulia Tap 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
108	FLT108-3PH	3 phase fault on the Tulia Tap (525179) to MU-Tulia (522800) 115 kV line, near Tulia Tap. a. Apply fault at the Tulia Tap 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
109	FLT109-3PH	3 phase fault on the Palo Duro (524530) to Randall (524364) 115 kV line, near Palo Duro. a. Apply fault at the Paulo Duro 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
110	FLT110-3PH	3 phase fault on the Palo Duro (524530) to Happy (525154) 115 kV line, near Palo Duro. a. Apply fault at the Paulo Duro 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
111	FLT111-3PH	3 phase fault on the Happy (525153) to Happy City Tap (525143) 69 kV line, near Happy City Tap. a. Apply fault at the Happy City Tap 69 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

Cont. No.	Cont. Name	Description
112	FLT112-SB	**Single phase fault with stuck breaker at Happy (525154) 115 kV** a. Apply fault at the Happy 115 kV bus. b. Clear fault after 16 cycles and trip the following elements c. Happy (525154) – Tulia Tap (525179) 115 kV d. Happy (525154) – Palo Duro (524530) 115 kV
113	FLT113-SB	**Single phase fault with stuck breaker at Happy (525154) 115 kV** a. Apply fault at the Happy 115 kV bus. b. Clear fault after 16 cycles and trip the following elements c. Happy (525154) – Tulia Tap (525179) 115 kV d. Happy 115 kV (525154)/69 kV (525153)/13.2 kV (525151) Xfmr
114	FLT114-PO	**Prior Outage of the Happy (525154) to Tulia Tap (525179) 115 kV line circuit 1;** 3 phase fault on the Happy (525154) to Palo Duro (524530) 115 kV line circuit 1, near Happy. a. Apply fault at the Happy 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
115	FLT115-PO	**Prior Outage of the Happy 115 kV (525154)/69 kV (525153)/13.2 kV (525152) Xfmr, circuit 2;** 3 phase fault on the Happy (525154) to Palo Duro (524530) 115 kV line circuit 1, near Happy. a. Apply fault at the Happy 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
116	FLT116-PO	**Prior Outage of the Happy 115 kV (525154)/69 kV (525153)/13.2 kV (525152) Xfmr, circuit 2;** 3 phase fault on the Happy (525154) to Tulia Tap (525179) 115 kV line circuit 1, near Happy. a. Apply fault at the Happy 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
117	FLT117-3PH	3 phase fault on the Randall (524364) to Manhattan (524224) 115 kV line, near Randall. a. Apply fault at the Randall 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
118	FLT118-3PH	3 phase fault on the Randall (524364) to Southeast (524338) 115 kV line, near Randall. a. Apply fault at the Randall 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

Cont. No.	Cont. Name	Description
119	FLT119-3PH	3 phase fault on the Randall (524364) to Georgia (524322) 115 kV line, near Randall. a. Apply fault at the Randall 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
120	FLT120-3PH	3 phase fault on the Randall (524364) to Canyon East (524522) 115 kV line, near Randall. a. Apply fault at the Randall 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
121	FLT121-3PH	3 phase fault on the Randall 230 kV (524365) to Randall 115 kV (524364) to Randall 13.2 kV (524361) XFMR CKT 1, near Randall 115 kV. a. Apply fault at the Randall 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted transformer.
122	FLT122-SB	**Single phase fault with stuck breaker at Randall (524364) 115 kV** a. Apply fault at the Randall 115 kV bus. b. Clear fault after 16 cycles and trip the following elements c. Randall (524364) – Georgia (524322) 115 kV d. Randall (524364) – Palo Duro (524530) 115 kV
123	FLT123-SB	**Single phase fault with stuck breaker at Randall (524364) 115 kV** a. Apply fault at the Randall 115 kV bus. b. Clear fault after 16 cycles and trip the following elements c. Randall (524364) – Georgia (524322) 115 kV d. Randall (524364) – Canyon E (524522) 115 kV
124	FLT124-PO	**Prior Outage of the Randall (524364) to Georgia (524322) 115 kV line circuit 1;** 3 phase fault on the Happy (525154) to Palo Duro (524530) 115 kV line circuit 1, near Palo Duro. a. Apply fault at the Palo Duro 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
125	FLT125-PO	**Prior Outage of the Happy (525154) to Palo Duro (524530) 115 kV line circuit 1;** 3 phase fault on the Randall (524364) to Manhattan (524224) 115 kV line circuit 1, near Randall. a. Apply fault at the Randall 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
126	FLT126-3PH	3 phase fault on Andrews (528604) to Hobbs (527894) 230 kV line circuit 1, near Andrews. a. Apply fault at the Andrews 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

Cont. No.	Cont. Name	Description
127	FLT127-3PH	3 phase fault on the Andrews 230 kV (528604) to Andrews 115 kV (528602) to Andrews 13.2 kV (528601) XFMR CKT 1, near Andrews 230 kV. a. Apply fault at the Andrews 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted transformer.
128	FLT128-3PH	3 phase fault on the GEN-2015-079 Tap (560059) to Hobbs (527894) 230 kV line circuit 1, near Hobbs. a. Apply fault at the Hobbs 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
129	FLT129-3PH	3 phase fault on the Hobbs (527894) to Cunningham (527865) 230 kV line circuit 1, near Hobbs. a. Apply fault at the Hobbs 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
130	FLT130-3PH	3 phase fault on the Hobbs 230 kV (527894) to Hobbs 115 kV (527891) to Hobbs 13.2 kV (527890) XFMR CKT 1, near Hobbs 230 kV. a. Apply fault at the Hobbs 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted transformer.
131	FLT131-3PH	3 phase fault on the Andrews (528602) to NA Enrich (528603) 115 kV line circuit 1, near Andrews. a. Apply fault at the Andrews 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
132	FLT132-3PH	3 phase fault on the G1579&G1580T (560059) to Yoakum (526935) 230 kV line circuit 1, near G1579&G1580T. a. Apply fault at the G1579&G1580T 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
133	FLT133-3PH	3 phase fault on the Cunningham (527865) to Potash Junction (527963) 230 kV line circuit 1, near Cunningham. a. Apply fault at the Cunningham 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

Cont. No.	Cont. Name	Description
134	FLT134-SB	**Single phase fault with stuck breaker at Hobbs (527894) 230 kV** a. Apply fault at the Hobbs 230 kV bus. b. Clear fault after 16 cycles and trip the following elements c. Hobbs (527894) – Andrews (528604) 230 kV
135	FLT135-SB	**Single phase fault with stuck breaker at Hobbs (527894) 230 kV** a. Apply fault at the Hobbs 230 kV bus. b. Clear fault after 16 cycles and trip the following elements d. Hobbs (527894) – Cunningham (527865) 230 kV
136	FLT136-SB	**Single phase fault with stuck breaker at Hobbs (527894) 230 kV** a. Apply fault at the Hobbs 230 kV bus. b. Clear fault after 16 cycles and trip the following elements c. Hobbs (527894) – G1579&G1580T (560059) 230 kV d. Hobbs (527894) – Cunningham (527865) 230 kV
137	FLT137-PO	**Prior Outage of the G1579&G1580T Tap (560059) to Hobbs (527894) 230 kV line circuit 1;** 3 phase fault on the Hobbs (527894) to Cunningham (527865) 230 kV line circuit 1, near Hobbs. a. Apply fault at the Hobbs 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
138	FLT138-PO	**Prior Outage of the Hobbs (527894) to Cunningham (527865) 230 kV line circuit 1;** 3 phase fault on the Hobbs 230 kV (527894)/115 kV (527891)/13.2 kV (527890) Xfmr, ckt 1, near Hobbs. a. Apply fault at the Hobbs 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
139	FLT139-PO	**Prior Outage of the Andrews (528602) to NA Enrich (528603) 115 kV line circuit 1;** 3 phase fault on the Andrews 230 kV (528604)/115 kV (528602)/13.2 kV (528601) Xfmr, ckt 1, near Andrews 230 kV. a. Apply fault at the Andrews 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
140	FLT140-3PH	3 phase fault on the Swisher (525212) to Kress (525192) 115 kV line circuit 1, near Swisher. a. Apply fault at the Swisher 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
141	FLT141-3PH	3 phase fault on the Swisher 230 kV (525213) to Swisher 115 kV (525212) to Swisher 13.2 kV (525211) XFMR CKT 1, near Swisher 115 kV. a. Apply fault at the Swisher 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted transformer.

Cont. No.	Cont. Name	Description
142	FLT142-3PH	3 phase fault on the Kress (525192) to Kress Rural (525225) 115 kV line circuit 1, near Kress. a. Apply fault at the Kress 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
143	FLT143-3PH	3 phase fault on the Kress (525192) to Newhart (525460) 115 kV line circuit 1, near Kress. a. Apply fault at the Kress 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
144	FLT144-3PH	3 phase fault on the Kress (525192) to Tulia Tap (525179) 115 kV line circuit 1, near Kress. a. Apply fault at the Kress 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
145	FLT145-3PH	3 phase fault on the Kress (525192) to Hale County (525454) 115 kV line circuit 1, near Kress. a. Apply fault at the Kress 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
146	FLT146-3PH	3 phase fault on the Kress 115 kV (525192) to Kress 69 kV (525191) to Kress 13.2 kV (525190) XFMR CKT 1, near Kress 115 kV. a. Apply fault at the Kress 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted transformer.
147	FLT147-3PH	3 phase fault on the Swisher (525213) to Tuco 2 (560021) 230 kV line circuit 1, near Swisher. a. Apply fault at the Swisher 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
148	FLT148-3PH	3 phase fault on the Swisher (525213) to Newhart (525461) 230 kV line circuit 1, near Swisher. a. Apply fault at the Swisher 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

Cont. No.	Cont. Name	Description
149	FLT149-SB	**Single phase fault with stuck breaker at Swisher (525213) 230 kV** a. Apply fault at the Swisher 230 kV bus. b. Clear fault after 16 cycles and trip the following elements c. Swisher (525213) – Newhart (525461) 230 kV d. Swisher 230 kV (525213)/115 kV (525212)/13.2 kV (525211) Xfmr
150	FLT150-SB	**Single phase fault with stuck breaker at Swisher (525213) 230 kV** a. Apply fault at the Swisher 230 kV bus. b. Clear fault after 16 cycles and trip the following elements c. Swisher (525213) – Tuco 2 (560021) 230 kV d. Swisher 230 kV (525213)/115 kV (525212)/13.2 kV (525211) Xfmr
151	FLT151-SB	**Single phase fault with stuck breaker at Kress (525192) 115 kV** a. Apply fault at the Kress 115 kV bus. b. Clear fault after 16 cycles and trip the following elements c. Kress (525192) – Swisher (525212) 115 kV
152	FLT152-SB	**Single phase fault with stuck breaker at Kress (525192) 115 kV** a. Apply fault at the Kress 115 kV bus. b. Clear fault after 16 cycles and trip the following elements c. Kress (525192) – Newhart (525460) 115 kV d. Kress (525192) – Hale County (525454) 115 kV
153	FLT153-PO	**Prior Outage of the Swisher (525213) to Tuco (525830) 230 kV line circuit 1;** 3 phase fault on the Swisher (525212) to Kress (525192) 115 kV line circuit 1, near Swisher. a. Apply fault at the Swisher 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line
154	FLT154-PO	**Prior Outage of the Swisher (525213) to Tuco (525830) 230 kV line circuit 1;** 3 phase fault on the Swisher 230 (525213)/115 kV (525212)/13.2 kV (525211) Xfmr, near Swisher 115 kV. a. Apply fault at the Swisher 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line
155	FLT155-PO	**Prior Outage of the Kress (525192) to Hale County (525454) 115 kV line circuit 1;** 3 phase fault on the Swisher (525212) to Kress (525192) 115 kV line circuit 1, near Swisher. a. Apply fault at the Swisher 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line
156	FLT156-PO	**Prior Outage of the Kress (525192) to Newhart (525454) 115 kV line circuit 1;** 3 phase fault on the Swisher 230 (525213)/115 kV (525212)/13.2 kV (525211) Xfmr, near Swisher 115 kV. a. Apply fault at the Swisher 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line

Cont. No.	Cont. Name	Description
157	FLT157-3PH	3 phase fault on the Carlisle 230 kV (526161) to Carlisle 115 kV (525160) to Carlisle 13.2 kV (526157) XFMR CKT 1, near Carlisle 230 kV. a. Apply fault at the Carlisle 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted transformer.
158	FLT158-3PH	3 phase fault on the Carlisle (526161) to Tuco (525830) 230 kV line circuit 1, near Carlisle. a. Apply fault at the Carlisle 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
159	FLT159-3PH	3 phase fault on the Carlisle (526161) to LP-Milwaukee (522823) 230 kV line circuit 1, near Carlisle. a. Apply fault at the Carlisle 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
160	FLT160-SB	**Single phase fault with stuck breaker at Carlisle (526161) 230 kV** a. Apply fault at the Carlisle 230 kV bus. b. Clear fault after 16 cycles and trip the following elements c. Carlisle (526161) – Tuco (525830) 230 kV d. Carlisle 230 kV (526161)/115 kV (526160)/13.2 kV (526157) Xfmr
161	FLT161-SB (No 16WP)	**Single phase fault with stuck breaker at Carlisle (526161) 230 kV** a. Apply fault at the Carlisle 230 kV bus. b. Clear fault after 16 cycles and trip the following elements c. Carlisle (526161) – Wolfforth (526525) 230 kV d. Carlisle 230 kV (526161)/115 kV (526160)/13.2 kV (526157) Xfmr
162	FLT162-SB (No 16WP)	**Single phase fault with stuck breaker at Carlisle (526161) 230 kV** a. Apply fault at the Carlisle 230 kV bus. b. Clear fault after 16 cycles and trip the following elements c. Carlisle (526161) – Wolfforth (526525) 230 kV d. Carlisle (526161) – Tuco (525830) 230 kV
163	FLT163-SB	**Single phase fault with stuck breaker at Carlisle (526161) 230 kV** a. Apply fault at the Carlisle 230 kV bus. b. Clear fault after 16 cycles and trip the following elements c. Carlisle (526161) – LP-Milwaukee (522823) 230 kV d. Carlisle (526161) – Tuco (525830) 230 kV

Cont. No.	Cont. Name	Description
164	FLT164-SB	**Single phase fault with stuck breaker at Tuco (525830) 230 kV** a. Apply fault at the Tuco 230 kV bus. b. Clear fault after 16 cycles and trip the following elements c. Tuco 230 kV (525830)/115 kV (525828)/13.2 kV (525819) Xfmr #2 d. Tuco 230 kV (525830)/115 kV (525828)/13.2 kV (525821) Xfmr #1
165	FLT165-PO (No 16WP)	**Prior Outage of the Carlisle (526161) to Tuco (525830) 230 kV line circuit 1;** 3 phase fault on the Carlisle (526161) to Wolfforth (526525) 230 kV line circuit 1, near Carlisle. a. Apply fault at the Carlisle 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line
166	FLT166-PO (No 16WP)	**Prior Outage of the Carlisle (526161) to Wolfforth (526525) 230 kV line circuit 1;** 3 phase fault on the Carlisle (526161) to Tuco (525830) 230 kV line circuit 1, near Carlisle. a. Apply fault at the Carlisle 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line
167	FLT167-PO (No 16WP)	**Prior Outage of the Carlisle (526161) to Wolfforth (526525) 230 kV line circuit 1;** 3 phase fault on the Carlisle 230 kV (526161)/115 kV (526160)/13.2 kV (526157) Xfmr circuit 1, near Carlisle. a. Apply fault at the Carlisle 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line
168	FLT168-3PH	3 phase fault on the Yoakum (526936) to Tuco (525832) 345 kV line circuit 1, near Yoakum. a. Apply fault at the Yoakum 345 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
169	FLT169-3PH	3 phase fault on the Yoakum (526936) to Hobbs (527896) 345 kV line circuit 1, near Yoakum. a. Apply fault at the Yoakum 345 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
170	FLT170-3PH	3 phase fault on the Yoakum 345/230/13.2kV transformer (526936/526935/526937), near Yoakum. a. Apply fault at the Yoakum 345 kV bus. b. Leave fault on for 5 cycles, then trip the line and remove fault.
171	FLT171-3PH	3 phase fault on the Yoakum (526935) to G1579&G1580T (560059) 230 kV line circuit 1, near Yoakum. a. Apply fault at the Yoakum 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

Cont. No.	Cont. Name	Description
172	FLT172-3PH	3 phase fault on the Yoakum (526935) to G13-027-Tap (562480) 230 kV line circuit 1, near Yoakum. a. Apply fault at the Yoakum 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
173	FLT173-3PH	3 phase fault on the Yoakum (526935) to OxyBru Tap (527010) 230 kV line circuit 1, near Yoakum. a. Apply fault at the Yoakum 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
174	FLT174-3PH	3 phase fault on the Yoakum (526935) to Amoco (526460) 230 kV line circuit 1, near Yoakum. a. Apply fault at the Yoakum 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
175	FLT175-3PH	3 phase fault on the Yoakum 230/115/13.2kV (526935/526934/526931) transformer, near Yoakum. a. Apply fault at the Yoakum 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted transformer.
176	FLT176-3PH (25SP)	3 phase fault on the Hobbs (527896) to Kiowa (527965) 345 kV line circuit 1, near Hobbs. a. Apply fault at the Hobbs 345 kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
177	FLT177-SB	**Single phase fault with stuck breaker at Yoakum (526936) 345 kV** a. Apply fault at the Yoakum 345 kV bus. b. Clear fault after 16 cycles and trip the following elements c. Yoakum (526936) – Tuco (525832) 345 kV d. Yoakum (526936) – Hobbs (527896) 345 kV
178	FLT178-SB	**Single phase fault with stuck breaker at Yoakum (526935) 230 kV** a. Apply fault at the Yoakum 230 kV bus. b. Clear fault after 16 cycles and trip the following elements c. Yoakum (526935) – G13-027-Tap (562480) 230 kV d. Yoakum (526935) – Mustang (527149) 230 kV

Cont. No.	Cont. Name	Description
179	FLT179-SB	**Single phase fault with stuck breaker at Yoakum (526935) 230 kV** a. Apply fault at the Yoakum 230 kV bus. b. Clear fault after 16 cycles and trip the following elements c. Yoakum 230/115/13.2kV (526935/526934/526931) transformer d. Yoakum 230/115/13.2kV (526935/526934/526932) transformer
180	FLT180-PO	**Prior Outage of the Yoakum (526935) to G13-027-Tap (562480) 230 kV line circuit 1;** 3 phase fault on the Yoakum (526935) to G1579&G1580T (560059) 230 kV line circuit 1, near Yoakum. a. Apply fault at the Yoakum 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line
181	FLT181-PO	**Prior Outage of the Yoakum (526935) to G13-027-Tap (562480) 230 kV line circuit 1;** 3 phase fault on the Yoakum (526935) to Mustang (527149) 230 kV line circuit 1, near Yoakum. a. Apply fault at the Yoakum 230 kV bus. b. Clear fault after 5 cycles by tripping the faulted line
182	FLT182-PO	**Prior Outage of the Yoakum (526936) to Tuco (525832) 345 kV line circuit 1;** 3 phase fault on the Yoakum (526936) to Hobbs (527896) 345 kV line circuit 1, near Yoakum. a. Apply fault at the Yoakum 345 kV bus. b. Clear fault after 5 cycles by tripping the faulted line
183	FLT183-PO	**Prior Outage of the Yoakum (526936) to Tuco (525832) 345 kV line circuit 1;** 3 phase fault on the Yoakum 345/230/13.2kV (526936/526935/526937) transformer, near Yoakum. a. Apply fault at the Yoakum 345 kV bus. b. Clear fault after 5 cycles by tripping the faulted line
184	FLT184-3PH	3 phase fault on Chaves County 115 kV (527482) to Urton 115 kV (527501) CKT 1, near Chaves County. a. Apply fault at the Chaves County 115 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
185	FLT185-3PH	3 phase fault on the Chaves County 115 kV (527482) to Chaves County 230 kV (527483) to Chaves County 13.2 kV (527478) XFMR CKT 1, near Chaves County 115 kV. a. Apply fault at the Chaves County 115 kV bus. b. Clear fault after 5 cycles and trip the faulted transformer.

Cont. No.	Cont. Name	Description
186	FLT186-3PH	3 phase fault on Chaves County 115 kV (527482) to Samson 115 kV (527546) CKT 1, near Chaves County. a. Apply fault at the Chaves County 115 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
187	FLT187-3PH (25SP)	3 phase fault on Chaves County 115 kV (527482) to Price 115 kV (527508) CKT 1, near Chaves County. a. Apply fault at the Chaves County 115 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
188	FLT188-3PH	3 phase fault on Chaves County 230 kV (527483) to San Juan Tap 230 kV (524885) CKT 1, near Chaves County. a. Apply fault at the Chaves County 230 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
189	FLT189-3PH	3 phase fault on Chaves County 230 kV (527483) to Eddy North 230 kV (527799) CKT 1, near Chaves County. a. Apply fault at the Chaves County 230 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
190	FLT190-3PH (25SP)	3 phase fault on Price 115 kV (527508) to CV-Pine 115 kV (527515) CKT 1, near Price. a. Apply fault at the Price 115 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
191	FLT191-SB	**Single phase fault with stuck breaker** at **Chaves County (527482)** a. Apply fault at the Chaves 115 kV bus. b. Clear fault after 16 cycles and trip the following elements c. Chaves County 115 kV (527482)/ 230 kV (527483)/13.2 kV (527478) transformer d. Chaves County (527482) - Samson (527546) 115 kV

Cont. No.	Cont. Name	Description
192	FLT192-SB	**Single phase fault with stuck breaker** at **Chaves County (527482)** a. Apply fault at the Chaves 115 kV bus. b. Clear fault after 16 cycles and trip the following elements c. Chaves County (527482) - Urton (527501) 115 kV d. Chaves County (527482) - Samson (527546) 115 kV
193	FLT193-PO	**Prior Outage of Chaves County 115 kV (527482) to Samson 115 kV (527546) CKT 1;** 3 phase fault on Chaves County 115 kV (527482) to Urton 115 kV (527501) CKT 1, near Chaves County. a. Apply fault at the Chaves 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
194	FLT194-PO	**Prior Outage of Chaves County 115 kV (527482) to Urton 115 kV (527501) CKT 1;** 3 phase fault on Chaves County 115 kV (527482) to Samson 115 kV (527546) CKT 1, near Chaves County. a. Apply fault at the Chaves 115 kV bus. b. Clear fault after 5 cycles by tripping the faulted line.

SECTION 3: STABILITY ANALYSIS

The objective of the Stability Analysis was to determine the impacts of the generator interconnections on the stability and voltage recovery on the SPP transmission system. If problems with stability or voltage recovery were identified, the need for reactive compensation or system upgrades was investigated.

3.1 Approach

SPP provided MEPPI with the following five power flow cases:

- MDWG15-16WP_DIS16011_G06
- MDWG15-17SP_DIS16011_G06
- MDWG15-20SP_DIS16011_G06
- MDWG15-20WP_DIS16011_G06
- MDWG15-25SP_DIS16011_G06

Each case was examined prior to the Stability Analysis to ensure the case contained the proposed study projects and any previously queued projects listed in Tables 2-1 and 2-2 respectively. There was no suspect power flow data in the study area. The dynamic datasets were also verified and stable initial system conditions (i.e., "flat lines") were achieved. Three-phase and single phase-to-ground faults listed in Table 2-3 were examined. Single-phase fault impedances were calculated for each season to result in a voltage of approximately 60% of the pre-fault voltage. Refer to Table 3-1 for a list of the calculated single-phase fault impedances utilized.

Table 3-1
Calculated Single-Phase Fault Impedances

Cont. No.*	Cont. Name	Single-Phase Fault Impedance (MVA)				
		2016 Winter	2017 Summer	2020 Summer	2020 Winter	2025 Summer
27	FLT27-SB	4234.4	4843.8	5656.3	4843.8	6062.5
28	FLT28-SB	4234.4	4834.8	5656.3	4834.8	6062.5
29	FLT29-SB	4031.3	4640.6	5656.3	4843.8	6062.5
46	FLT46-SB	1750.0	1750.0	1750.0	1750.0	1875.0
47	FLT47-SB	5656.3	5656.3	5656.3	5656.3	6062.5
49	FLT49-SB	5656.3	5656.3	5656.3	5656.3	6062.5
70	FLT70-SB	2812.5	3625.0	4437.5	4437.5	4437.5
96	FLT96-SB	1500.0	1500.0	1500.0	1500.0	1500.0
97	FLT97-SB	1500.0	1500.0	1500.0	1500.0	1500.0
102	FLT102-SB	1500.0	1437.5	1500.0	1500.0	1500.0
112	FLT112-SB	687.5	656.3	687.5	687.5	687.5
113	FLT113-SB	687.5	656.3	687.5	687.5	687.5
122	FLT122-SB	2609.4	2812.5	2812.5	2609.4	2812.5
123	FLT123-SB	2609.4	2812.5	2812.5	2609.4	2812.5
134	FLT134-SB	3015.6	4031.3	5250.0	5046.9	5250.0
135	FLT135-SB	3015.6	4031.3	5250.0	5046.9	5250.0
136	FLT136-SB	3015.6	4031.3	5250.0	5046.9	5250.0
160	FLT160-SB	1750.0	2812.5	3625.0	3218.8	3625.0
161	FLT161-SB	1750.0	2812.5	3625.0	3218.8	3625.0
162	FLT162-SB	1750.0	2812.5	3625.0	3218.8	3625.0
163	FLT163-SB	1750.0	2812.5	3625.0	3218.8	3625.0
164	FLT164-SB	4843.8	5656.3	6062.5	5656.3	6468.8
191	FLT191-SB	812.5	812.5	812.5	812.5	875.0
192	FLT192-SB	812.5	812.5	812.5	812.5	875.0

*Refer to Table 2-3 for a description of the contingency scenario

Bus voltages, machine rotor angles, and previously queued generation in the study area were monitored in addition to bus voltages and machine rotor angles in the following areas:

- 520 AEPW
- 524 OKGE
- 525 WFEC
- 526 SPS
- 531 MIDW
- 534 SUNC
- 536 WERE

Requested and previously queued generation outside the above study area was also monitored.

The results of the analysis determined if reactive compensation or system upgrades were required to obtain acceptable system performance. If additional reactive compensation was required, the size, type, and location were determined. The proposed reactive reinforcements would ensure the wind or solar farm meets FERC Order 661A low voltage requirements and return the wind or solar farm to its pre-disturbance operating voltage. If the results indicated the need for fast responding reactive support, dynamic support such as an SVC or STATCOM was investigated. If tripping of the prior queued projects was observed during the stability analysis (for under/over voltage or under/over frequency) the simulations were re-ran with the prior queued project's voltage and frequency tripping disabled.

3.2 Stability Analysis Results

The Stability Analysis determined that there were multiple contingencies across all seasons that resulted in system/voltage instability, generation tripping offline, and poor post-fault voltage recovery when all generation interconnection requests were at 100% output.

Refer to Table 3-2 for a summary of the Stability Analysis results for the contingencies listed in Table 2-3. Table 3-2 is a summary of the stability results for the 2016 Winter Peak, 2017 Summer Peak, 2020 Summer Peak, 2020 Winter Peak, and 2025 Summer Peak conditions and states whether the system remained stable or generation tripped offline, if acceptable voltage recovery was observed after the fault was cleared, and if the voltage recovered to above 0.9 p.u. and below 1.1 p.u. post fault steady-state conditions. Voltage recovery criteria includes ensuring that the transient voltage recovery is between 0.7 p.u. and 1.2 p.u. and ending in a steady-state voltage (for N-1 contingencies) at the pre-contingent level or at least above 0.9 p.u. and below 1.1. p.u.

Refer to Appendix B, Appendix C, Appendix D, Appendix E, and Appendix F for a complete set of plots for all contingencies for 2016 Winter Peak, 2017 Summer Peak, 2020 Summer Peak, 2020 Winter Peak, and 2025 Summer Peak conditions, respectively.

Table 3-2
Stability Analysis Summary of Results for 2016 Winter, 2017 Summer, 2020 Summer, 2020 Winter, and 2025 Summer Peak Conditions

Cont. No.	Cont. Name	2016 Winter Peak				2017 Summer Peak				2020 Winter Peak				2020 Summer Peak				2025 Summer Peak			
		Voltage Recovery		Post Fault Steady-State Voltage	System Stability	Voltage Recovery		Post Fault Steady-State Voltage	System Stability	Voltage Recovery		Post Fault Steady-State Voltage	System Stability	Voltage Recovery		Post Fault Steady-State Voltage	System Stability	Voltage Recovery		Post Fault Steady-State Voltage	System Stability
		Less than 0.70 p.u.	Greater than 1.20 p.u.			Less than .70 p.u.	Greater than 1.20 p.u.			Less than .70 p.u.	Greater than 1.20 p.u.			Less than .70 p.u.	Greater than 1.20 p.u.			Less than .70 p.u.	Greater than 1.20 p.u.		
20	FLT20-3PH	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	Voltage Instability				-	-	Compliant	Stable	-	-	Compliant	Stable
21	FLT21-3PH	System Instability				Voltage Collapse/Instability				Voltage Collapse				-	-	Compliant	Unstable[2]	-	-	Compliant	Stable
22	FLT22-3PH	Voltage Collapse				Voltage Collapse/Instability				Voltage Collapse				-	-	Compliant	Unstable[2]	-	-	Compliant	Stable
23	FLT23-3PH	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	Voltage Instability				-	-	Compliant	Stable	-	-	Compliant	Stable
24	FLT24-3PH	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	Voltage Instability				-	-	Compliant	Stable	-	-	Compliant	Stable
27	FLT27-SB	System Instability				System Instability				System Instability				Voltage Instability				-	-	Compliant	Stable
28	FLT28-SB	System Instability				System Instability				System Instability				Voltage Instability				-	-	Compliant	Stable
29	FLT29-SB	System Instability				System Instability				System Instability				System Instability				Voltage Instability			
31	FLT31-PO	System Instability				System Instability				System Instability				-	-	Compliant	Unstable[2]	-	-	Compliant	Stable
32	FLT32-PO	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	System Instability				-	-	Compliant	Stable	-	-	Compliant	Stable
33	FLT33-PO	Steady-State Divergence				Steady-State Divergence				Steady-State Divergence				Steady-State Divergence				-	-	Compliant	Stable
37	FLT37-3PH	Voltage Instability				-	-	Compliant	Stable	-	-	V < 0.9	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
39	FLT39-3PH	Voltage Collapse/Instability				-	-	Compliant	Stable	Voltage Collapse/Instability				-	-	Compliant	Stable	-	-	Compliant	Stable
40	FLT40-3PH	Voltage Collapse/Instability				-	-	Compliant	Unstable[2]	Voltage Collapse/Instability				-	-	V < 0.9	Stable	-	-	Compliant	Stable
41	FLT41-3PH	Voltage Collapse/Instability				-	-	Compliant	Stable	Voltage Collapse/Instability				-	-	Compliant	Stable	-	-	Compliant	Stable
42	FLT42-3PH	Voltage Collapse/Instability				-	-	Compliant	Unstable[2]	Voltage Collapse/Instability				-	-	Compliant	Stable	-	-	Compliant	Stable
43	FLT43-3PH	Voltage Collapse/Instability				-	-	Compliant	Unstable[2]	Voltage Collapse/Instability				-	-	Compliant	Stable	-	-	Compliant	Stable
46	FLT46-SB	System Instability				-	-	V < 0.9	Stable	System Instability				-	-	Compliant	Stable	-	-	Compliant	Stable
47	FLT47-SB	System Instability				-	-	V < 0.9	Stable	System Instability				-	-	Compliant	Stable	-	-	Compliant	Stable
49	FLT49-SB	System Instability				-	-	Compliant	Unstable[2]	System Instability				-	-	V < 0.9	Stable	-	-	Compliant	Stable
50	FLT50-PO	System Instability				-	-	Compliant	Unstable[2]	System Instability				-	-	Compliant	Stable	-	-	Compliant	Stable
51	FLT51-PO	System Instability				-	-	Compliant	Stable	System Instability				-	-	Compliant	Stable	-	-	Compliant	Stable
52	FLT52-PO	System Instability				-	-	Compliant	Stable	Steady-State Divergence				-	-	Compliant	Stable	-	-	Compliant	Stable
57	FLT57-3PH	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
60	FLT60-3PH	Voltage Collapse/Instability				-	-	Compliant	Unstable[2]	Voltage Collapse/Instability				-	-	Compliant	Stable	-	-	Compliant	Stable
65	FLT65-3PH	Voltage Collapse/Instability				-	-	Compliant	Unstable[2]	Voltage Collapse/Instability				-	-	Compliant	Stable	-	-	Compliant	Stable
70	FLT70-SB	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
71	FLT71-PO	Voltage Collapse/Instability				-	-	V < 0.9	Unstable[2]	Voltage Collapse/Instability				-	-	Compliant	Stable	-	-	Compliant	Stable
72	FLT72-PO	Voltage Collapse/Instability				-	-	V < 0.9	Unstable[2]	Voltage Collapse/Instability				-	-	V < 0.9	Stable	-	-	V < 0.9	Stable
73	FLT73-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
74	FLT74-3PH	System Instability				System Instability				System Instability				System Instability				-	-	Compliant	Stable
75	FLT75-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	Voltage Collapse/Instability				Voltage Collapse/Instability				-	-	Compliant	Stable
76	FLT76-3PH	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	Voltage Collapse/Instability				-	-	Compliant	Stable	-	-	Compliant	Stable
84	FLT84-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
85	FLT85-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
86	FLT86-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
87	FLT87-3PH	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
88	FLT88-3PH	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
89	FLT89-3PH	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable

Note 1: Gen Stab = Generator Instability

Note 2: Poor voltage damping

Table 3-2 (continued)
Stability Analysis Summary of Results for 2016 Winter, 2017 Summer, 2020 Summer, 2020 Winter, and 2025 Summer Peak Conditions

Cont. No.	Cont. Name	2016 Winter Peak				2017 Summer Peak				2020 Winter Peak				2020 Summer Peak				2025 Summer Peak			
		Voltage Recovery		Post Fault Steady-State Voltage	System Stability	Voltage Recovery		Post Fault Steady-State Voltage	System Stability	Voltage Recovery		Post Fault Steady-State Voltage	System Stability	Voltage Recovery		Post Fault Steady-State Voltage	System Stability	Voltage Recovery		Post Fault Steady-State Voltage	System Stability
		Less than 0.70 p.u.	Greater than 1.20 p.u.			Less than .70 p.u.	Greater than 1.20 p.u.			Less than .70 p.u.	Greater than 1.20 p.u.			Less than .70 p.u.	Greater than 1.20 p.u.			Less than .70 p.u.	Greater than 1.20 p.u.		
90	FLT90-3PH	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
91	FLT91-3PH	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
92	FLT92-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
93	FLT93-3PH	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
94	FLT94-3PH	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
95	FLT95-3PH (No 16WP)	N/A	N/A	N/A	N/A	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
96	FLT96-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
97	FLT97-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
98	FLT98-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
99	FLT99-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
100	FLT100-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
101	FLT101-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
102	FLT102-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
103	FLT103-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
104	FLT104-3PH	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
105	FLT105-3PH	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
106	FLT106-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
107	FLT107-3PH	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
108	FLT108-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
109	FLT109-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
110	FLT110-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
111	FLT111-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
112	FLT112-SB	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
113	FLT113-SB	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
114	FLT114-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
115	FLT115-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
116	FLT116-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
117	FLT117-3PH	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
118	FLT118-3PH	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
119	FLT119-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
120	FLT120-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
121	FLT121-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
122	FLT122-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
123	FLT123-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
124	FLT124-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
125	FLT125-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
126	FLT126-3PH	-	-	Compliant	Unstable[2]	-	-	Compliant	Gen Trip	-	-	Compliant	Unstable[2]	-	-	Compliant	Gen Trip	-	-	Compliant	Gen Trip

Note 1: Gen Stab = Generator Instability

Note 2: Poor voltage damping

Table 3-2 (continued)
Stability Analysis Summary of Results for 2016 Winter, 2017 Summer, 2020 Summer, 2020 Winter, and 2025 Summer Peak Conditions

Cont. No.	Cont. Name	2016 Winter Peak				2017 Summer Peak				2020 Winter Peak				2020 Summer Peak				2025 Summer Peak			
		Voltage Recovery		Post Fault Steady-State Voltage	System Stability	Voltage Recovery		Post Fault Steady-State Voltage	System Stability	Voltage Recovery		Post Fault Steady-State Voltage	System Stability	Voltage Recovery		Post Fault Steady-State Voltage	System Stability	Voltage Recovery		Post Fault Steady-State Voltage	System Stability
		Less than 0.70 p.u.	Greater than 1.20 p.u.			Less than .70 p.u.	Greater than 1.20 p.u.			Less than .70 p.u.	Greater than 1.20 p.u.			Less than .70 p.u.	Greater than 1.20 p.u.			Less than .70 p.u.	Greater than 1.20 p.u.		
127	FLT127-3PH	-	-	Compliant	Unstable[2]	-	-	Compliant	Gen Trip	-	-	Compliant	Unstable[2]	-	-	Compliant	Gen Trip	-	-	Compliant	Gen Trip
128	FLT128-3PH	Voltage Instability				-	-	Compliant	Unstable[2]	Voltage Instability				-	-	Compliant	Stable	-	-	Compliant	Stable
129	FLT129-3PH	-	-	Compliant	Unstable[2]	-	-	Compliant	Gen Trip	Voltage Instability				-	-	Compliant	Stable	-	-	Compliant	Gen Trip
130	FLT130-3PH	-	-	Compliant	Gen Trip	-	-	Compliant	Gen Trip	Voltage Instability				-	-	Compliant	Stable	-	-	Compliant	Gen Trip
131	FLT131-3PH	Voltage Instability				-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
132	FLT132-3PH	Voltage Instability				-	-	Compliant	Stable	Voltage Instability				-	-	Compliant	Stable	-	-	Compliant	Stable
133	FLT133-3PH	Voltage Collapse/Instability				-	-	Compliant	Stable	Voltage Instability				-	-	Compliant	Stable	-	-	Compliant	Stable
134	FLT134-SB	Voltage Collapse/Instability				-	-	Compliant	Stable	System Instability				System Instability				System Instability			
135	FLT135-SB	Voltage Collapse/Instability				-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	System Instability			
136	FLT136-SB	Voltage Collapse/Instability				-	-	Compliant	Unstable[2]	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
137	FLT137-PO	-	-	Compliant	Gen Trip	-	-	Compliant	Gen Trip	Voltage Instability				-	-	Compliant	Stable	-	-	Compliant	Stable
138	FLT138-PO	-	-	Compliant	Gen Trip	-	-	Compliant	Gen Trip	Voltage Instability				-	-	Compliant	Stable	-	-	Compliant	Stable
139	FLT139-PO	-	-	V < 0.7 p.u.	Gen Trip	-	-	Compliant	Gen Trip	-	-	Compliant	Unstable[2]	-	-	Compliant	Gen Trip	-	-	Compliant	Gen Trip
157	FLT157-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
158	FLT158-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
159	FLT159-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
160	FLT160-SB	-	-	Compliant	Gen Trip	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
161	FLT161-SB (No 16WP)	N/A	N/A	N/A	N/A	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
162	FLT162-SB (No 16WP)	N/A	N/A	N/A	N/A	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
163	FLT163-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
164	FLT164-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
165	FLT165-PO (No 16WP)	N/A	N/A	N/A	N/A	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
166	FLT166-PO (No 16WP)	N/A	N/A	N/A	N/A	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
167	FLT167-PO (No 16WP)	N/A	N/A	N/A	N/A	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
168	FLT168-3PH	N/A	N/A	N/A	N/A	-	-	Compliant	Stable	Voltage Instability				-	-	Compliant	Stable	-	-	Compliant	Stable
169	FLT169-3PH	N/A	N/A	N/A	N/A	-	-	Compliant	Stable	Voltage Instability				-	-	Compliant	Stable	-	-	Compliant	Stable
170	FLT170-3PH	N/A	N/A	N/A	N/A	-	-	Compliant	Stable	Voltage Instability				-	-	Compliant	Stable	-	-	Compliant	Stable
184	FLT184-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
185	FLT185-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
186	FLT186-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
187	FLT187-3PH (25SP)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	-	Compliant	Stable
188	FLT188-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
189	FLT189-3PH	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
190	FLT190-3PH (25SP)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	-	Compliant	Stable
191	FLT191-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
192	FLT192-SB	-	-	V < 0.9	Stable	-	-	V < 0.9	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
193	FLT193-PO	-	-	V < 0.9	Stable	-	-	V < 0.9	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable
194	FLT194-PO	-	-	V < 0.9	Stable	-	-	V < 0.9	Stable	-	-	Compliant	Unstable[2]	-	-	Compliant	Stable	-	-	Compliant	Stable

Note 1: Gen Stab = Generator Instability

Note 2: Poor voltage damping

Mitigation

To mitigate the system/voltage instability, voltage violations, generation tripping offline, and poor post-fault steady-state voltages, the following upgrades were provided by SPP and implemented (upgrades provided here are required for 16WP season and thus, implemented in remaining years):

- Build Crawfish Draw to Tolk 345 kV Circuit #1
- Build Tolk to Potter County 345 kV Circuit #1
- Build Potter County 345/230 kV Transformer #2
- Build Potter County to Grapevine to Chisholm 345 kV Circuit #1
- Add +300 Mvar SVC at Border 345 kV
    - 600 total capacitive Mvars at Border 345 kV (300 Mvar switchable capacitor banks modeled as 6 blocks of 50 Mvar
- Add +/- 100 Mvar SVC at Oklaunion 345 kV
- Add 250 Mvar to existing switchable capacitor bank at Oklaunion 345kV (this brings total to 440 Mvar)
- Build Woodward to Tatonga to Mathewson 345 kV Circuit #2
    - Required to be implemented in 16WP and 17SP
    - Line exists in 20WP, 20SP, and 25SP
- Build Chaves County to Price to CV Pine to Capitan 115 kV Circuit #1
    - Required to be implemented in 16WP and 17SP
    - Line exists in 20WP, 20SP, and 25SP
- Convert existing Andrews 230 kV substation and Hobbs to Andrews 230 kV circuit to 345 kV

Note due to the conversion of Andrews 230 kV substation and Hobbs to Andrews 230 kV circuit to 345 kV, FLT134 and FLT135 are no longer valid. Both of these faults are stuck breaker faults from the Hobbs 230 kV bus. However, if the Hobbs to Andrews 345 kV conversion does not take place, FLT134 and FLT135 will need to be mitigated because stability issues were identified.

Summary of Results

FLT20-3PH, a three-phase fault resulting in the loss of Crawfish Draw to Tuco 345 kV, was observed to have voltage instability for the 16WP and 20WP cases. Refer to Figure 3-1 for a representative comparison plot of Oklaunion and Tuco area voltages for the 2016 Winter Peak case with and without system upgrades. After the upgrades as stated earlier were implemented, there was no additional voltage violations or generation tripping off-line. The system recovered within SPP criteria.

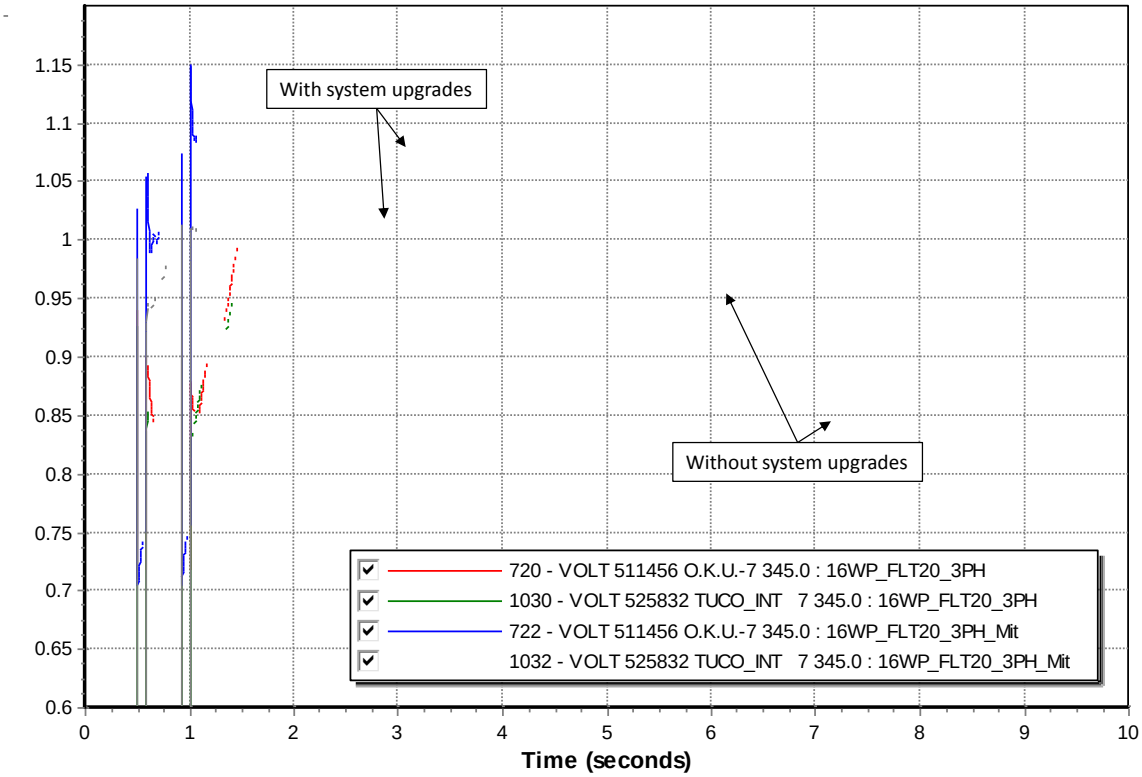

Figure 3-1: Representative plot of Oklaunion and Tuco area voltages for 2016 Winter Peak conditions with and without system upgrades for FLT20.

FLT21-3PH, a three-phase fault resulting in the loss of Tuco to Oklaunion 345 kV, was observed to have system instability and voltage collapse. The upgrades mentioned above were able to mitigate the voltage collapse and system instability for all seasons except 20WP. For the 20WP case, additional investigation was required. After discussion with SPP, it was determined that area generation scheduled for retirement would be required to be retired for 20WP conditions.

Refer to Figure 3-2 for a representative comparison plot of Oklaunion and Tuco area voltages for the 2020 Winter Peak case with and without system upgrades. After the upgrades as stated earlier were implemented, there was no additional voltage violations or generation tripping off-line. The system recovered within SPP criteria.

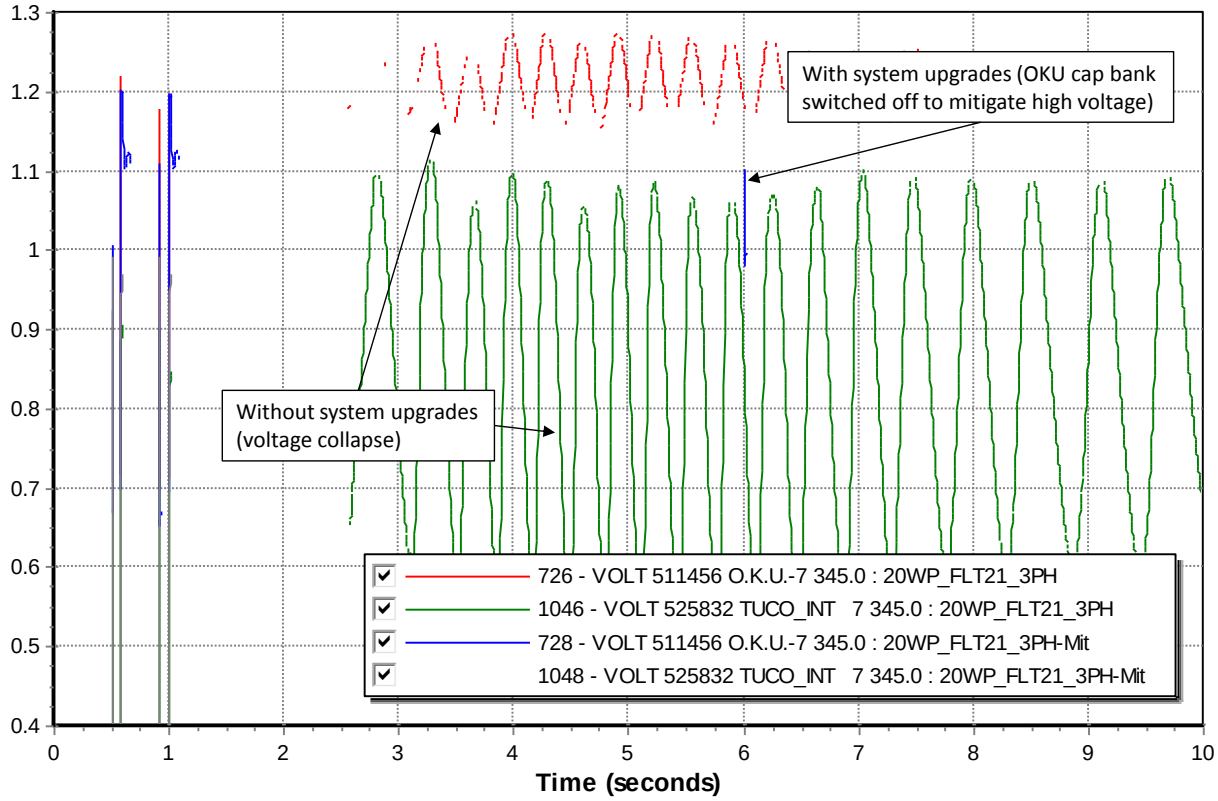

Figure 3-2: Representative plot of Oklaunion and Tuco area voltages for 2020 Winter Peak conditions with and without system upgrades for FLT21.

FLT40-3PH, a three-phase fault resulting in the loss of Plant X to Newhart 230 kV, was observed to have system instability and generation tripping offline. Refer to Figure 3-3 for a representative comparison plot of Plant X and Newhart area voltages for the 2016 Winter Peak case with and without system upgrades. After the upgrades as stated earlier were implemented, there was no additional voltage violations or generation tripping off-line. The system recovered within SPP criteria.

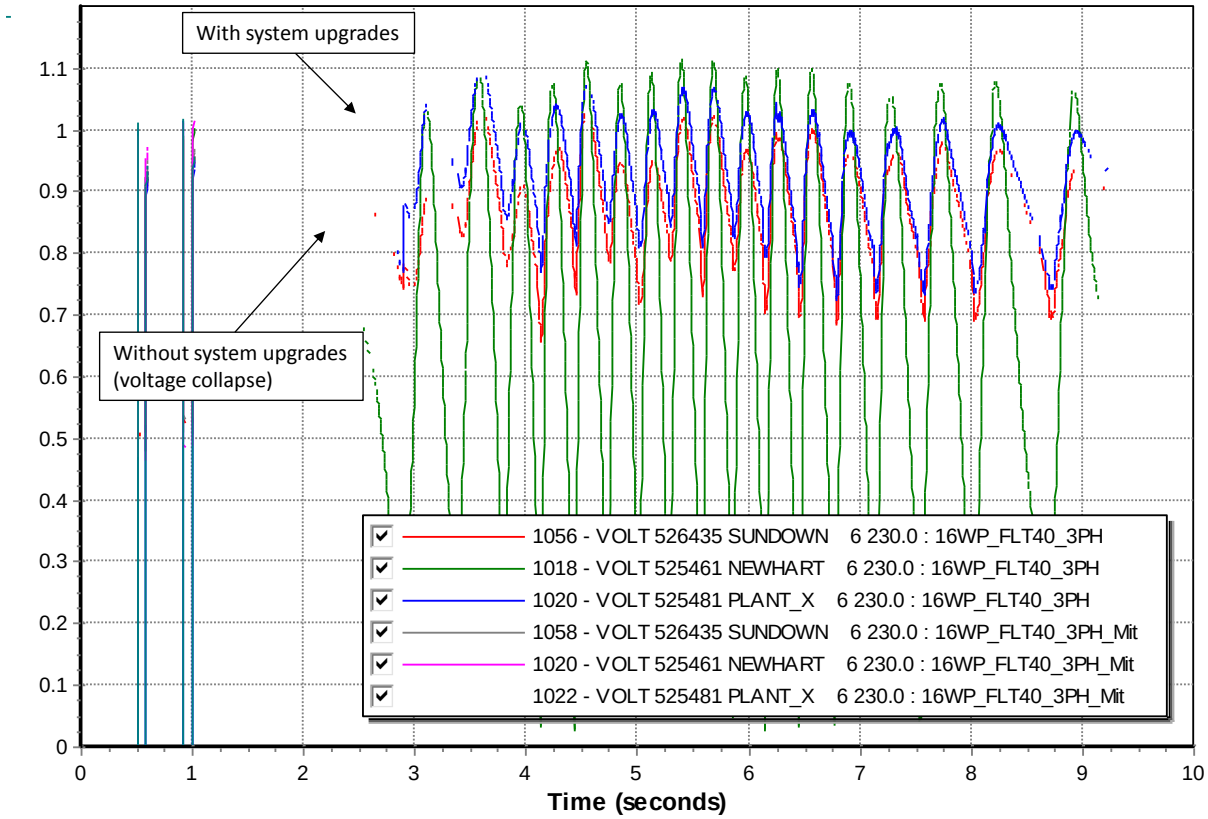

Figure 3-3: Representative plot of Plant X and Newhart area voltages for 2016 Winter Peak conditions with and without system upgrades for FLT40.

FLT192-1PH, a single-phase stuck breaker fault resulting in the loss of Chaves County to Samson 115 kV and Chaves County to Urton 115 kV, was observed to have voltage recovery below 0.9 p.u. Refer to Figure 3-4 for a representative comparison plot of Chaves County area voltages for the 2016 Winter Peak case with and without system upgrades. After the upgrades as stated earlier were implemented, there was no additional voltage violations or generation tripping off-line. The system recovered within SPP criteria.

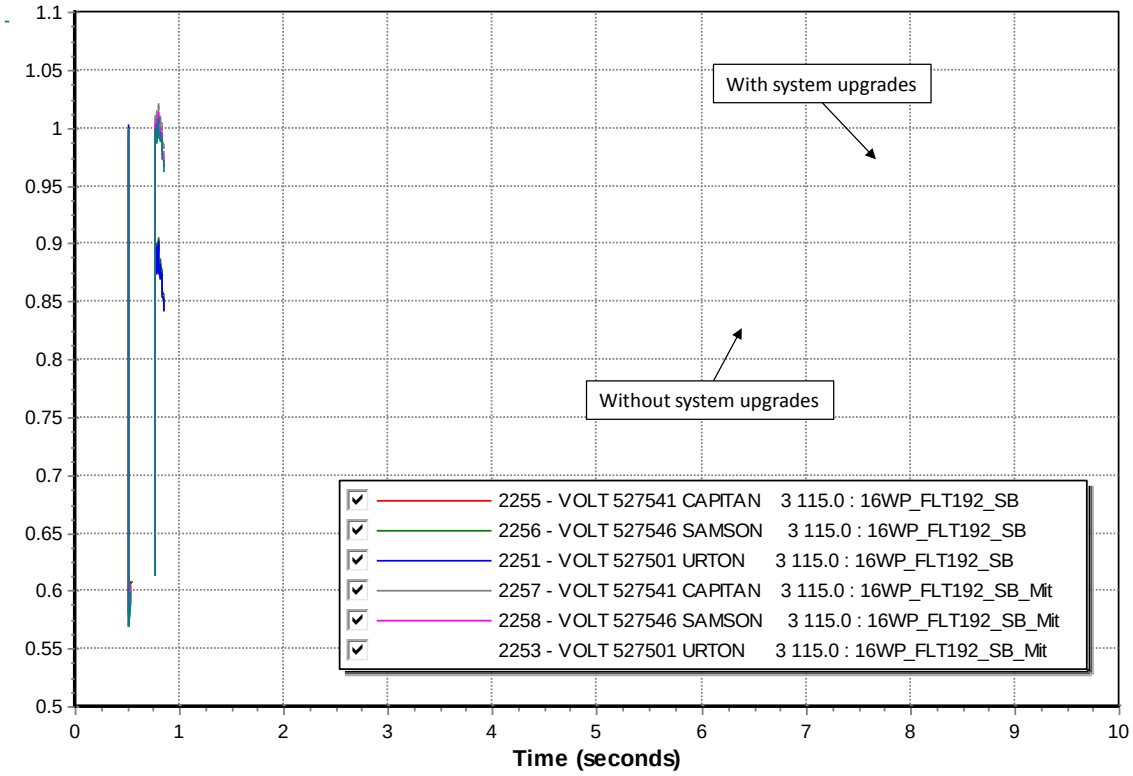

Figure 3-4: Representative plot of Chaves County area voltages for 2016 Winter Peak conditions with and without system upgrades for FLT192.

For faults FLT126, FLT127, and FLT139, which are three-phase faults at Andrews 230 kV, GEN-2016-015 trips offline due to over frequency protection. For this study, the over frequency protection of the photovoltaic inverter model (PVGU1 and PVEU1) were set to 65 Hz to avoid instantaneous tripping. Refer to Figure 3-5 for a frequency plot of the GEN-2016-015 bus for FLT126. The GEN-2016-015 customer will need to coordinate with the inverter manufacturer to verify that the generators will not trip for faults on the system with normal clearing time.

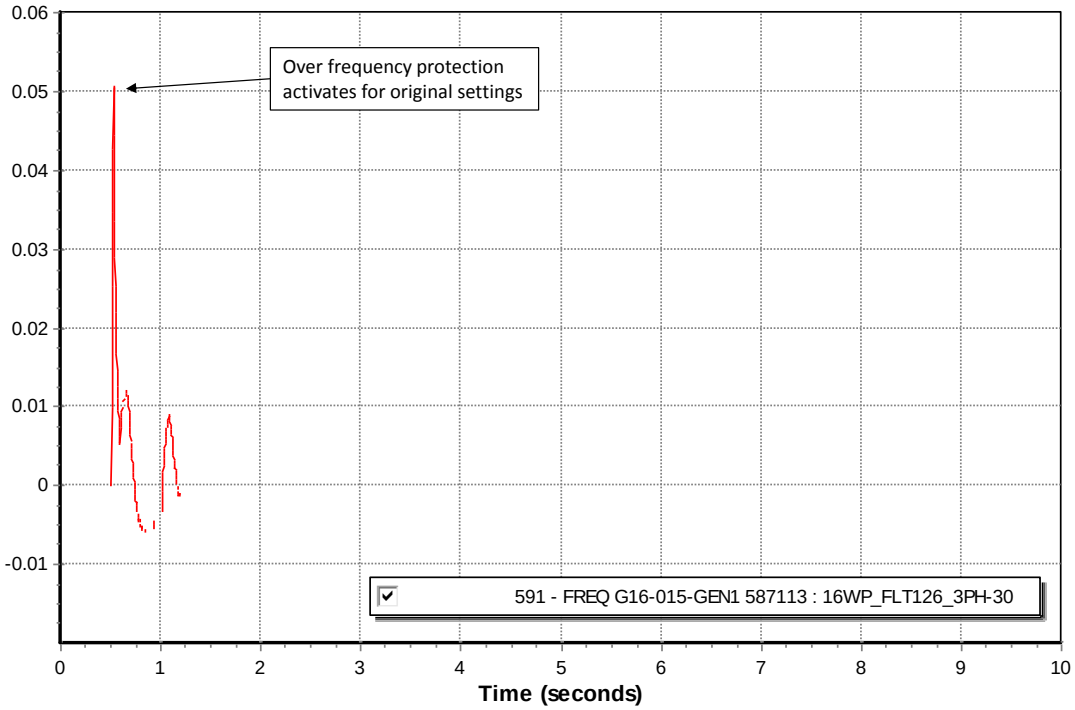

Figure 3-5: Frequency plot for GEN-2016-015 showing the unit trip due to over frequency protection.

After the upgrades were implemented, the Stability Analysis was re-simulated to determine system stability. With the required upgrades, the Stability Analysis determined that there was no wind turbine tripping or system instability as a result of interconnected all study projects at 100% output.

SECTION 4: SHORT CIRCUIT ANALYSIS

The objective of this task is to quantify the three-phase to ground fault currents for the 2017 Summer Peak and 2025 Summer Peak seasons for each interconnecting generator.

4.1 Approach

The short-circuit analysis will assess breaker adequacy and fault duties for the generator interconnection bus and five buses away from the point of interconnection. MEPPI will assume no outages to find maximum short-circuit currents that flow through the breaker. The Automatic Sequencing Fault Calculation (ASCC) function in PSS/E was utilized to perform this task. FLAT conditions were applied to pre-fault conditions and the following adjustments were utilized:

- All synchronous and asynchronous machine P and Q output was set to zero
- All transformer tap ratios were set to 1.0 p.u. and all phase shift angles were set to zero
- All generator reactance's were fixed to the subtransient reactance
- All line charging was set to zero
- All shunts were set to zero
- All loads were set to zero
- All pre-fault bus voltages were set to 1.0 p.u. and a phase shift angle of zero

Note upgrades found to be necessary for the Stability Analysis were included in the Short-Circuit Analysis.

4.2 Short Circuit Results: 2017 Summer Peak

The maximum fault current for each bus is provided for the 2017 Summer Peak conditions. The following tables show the short circuit results for the study generators for the 2017 Summer Peak condition:

- Table 4-1: Short Circuit Analysis for GEN-2015-041 (17SP)
- Table 4-2: Short Circuit Analysis for ASGI-2016-001 (17SP)
- Table 4-3: Short Circuit Analysis for ASGI-2016-002 (17SP)
- Table 4-3: Short Circuit Analysis for ASGI-2016-004 (17SP)
- Table 4-5: Short Circuit Analysis for GEN-2016-015 and GEN-2016-062 (17SP)
- Table 4-6: Short Circuit Analysis for GEN-2016-056 (17SP)
- Table 4-7: Short Circuit Analysis for GEN-2016-069 (17SP)

Table 4-1
Short Circuit Analysis for Study Project GEN-2015-041 (17SP)

Study Generator GEN-2015-041											
Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
511422	FLETCHR4	138	7.46	524909	ROSEVELT N 6	230	8.78	526525	WOLFFORTH 6	230	10.04
511423	FLE TAP4	138	8.12	524911	ROSEVELT S 6	230	8.78	526562	SLATON 2	69	2.47
511431	LWS S4	138	10.53	524915	SW_4K33 6	230	8.78	526602	SP-WOODROW 3	115	8.97
511436	COMANC-2	69	9.63	525019	EMU&VLY_TP 3	115	5.10	526656	LYNN_CNTY 3	115	5.45
511437	COMANC-4	138	17.28	525056	BC-EARTH 3	115	8.76	526676	GRASSLAND 3	115	5.90
511439	LWSTAP 4	138	10.96	525124	HART_INDUST3	115	7.58	526677	GRASSLAND 6	230	5.91
511456	O.K.U.-7	345	5.39	525179	TULIA_TP 3	115	6.31	526679	CIRRUS_WND 6	230	4.70
511466	L.E.S.-2	69	16.25	525191	KRESS_INT 2	69	4.43	526694	GRAHAM 3	115	2.64
511467	L.E.S.-4	138	22.98	525192	KRESS_INT 3	115	11.19	526784	AMOCOWASSON6	230	11.01
511468	L.E.S.-7	345	12.26	525212	SWISHER 3	115	10.33	526792	PRENTICE 3	115	5.83
511469	LGORE-N2	69	7.91	525213	SWISHER 6	230	10.57	526928	PLAINS_INT 3	115	9.43
511470	LGORE-S2	69	6.88	525225	KRESS_RURAL3	115	6.25	526934	YOAKUM 3	115	15.35
511474	SHERID4	138	11.75	525272	KISER 3	115	5.09	526935	YOAKUM 6	230	14.66
511477	S.W.S.-4	138	23.15	525291	PLAINVW TP 2	69	6.49	526936	YOAKUM 345	345	8.28
511486	ELGINJT4	138	9.48	525298	S_PLAINVEW 2	69	2.58	527010	OXYBRU_TP 6	230	11.61
511487	ELGINJT2	69	8.34	525325	COX 2	69	3.36	527041	ARCO_TP 3	115	10.92
511488	112GORE4	138	11.90	525326	COX 3	115	5.89	527146	MUSTANG 3	115	20.11
511490	ELKCITY6	230	7.77	525413	LAMTON 2	69	5.22	527149	MUSTANG 6	230	11.69
511494	COMMTAP4	138	20.28	525414	LAMTON 3	115	7.79	527151	GS-MUSTANG 6	230	11.69
511512	RPPAPER4	138	11.29	525432	SP-HALFWAY 2	69	5.87	527194	LG-PLSHILL 3	115	7.33
511537	ARTVLTP4	138	11.16	525440	LC-S_OLTON 3	115	7.42	527276	SEMINOLE 6	230	6.44
511541	SWEETWT6	230	7.77	525453	HALE_CNTY 2	69	6.92	527656	CROSSROADS 7	345	6.48
511553	CHISHOLM7	345	12.36	525454	HALE_CNTY 3	115	10.17	527799	EDDY_NORTH 6	230	7.13
511557	CHISHOLM6	230	11.56	525460	NEWHART 3	115	15.14	527802	EDDY_CNTY 7	345	4.18
511563	ELSWORTH 4	138	9.40	525461	NEWHART 6	230	10.90	527865	CUNNINHAM 6	230	12.30
514785	WOODWRD4	138	12.25	525480	PLANT_X 3	115	20.94	527891	HOBBS_INT 3	115	27.05
514796	IODINE-4	138	7.19	525481	PLANT_X 6	230	22.94	527894	HOBBS_INT 6	230	14.20
514801	MINCO 7	345	16.60	525524	TOLK_EAST 6	230	28.11	527896	HOBBS_INT 7	345	7.83
514809	JOHNCO 7	345	9.15	525531	TOLK_WEST 6	230	28.11	528602	ANDREWS 3	115	11.70
514901	CIMARON7	345	30.63	525543	TOLK_TAP 6	230	28.11	528604	ANDREWS 6	345	6.02
515135	SUNNYSD4	138	17.00	525549	TOLK 7	345	12.31	529304	OMDUNCN4	138	6.57
515136	SUNNYSD7	345	9.99	525636	LAMB_CNTY 3	115	8.53	539801	THISTLE7	345	15.99
515375	WWRDEHV7	345	19.84	525637	LAMB_CNTY 6	230	5.39	539804	THISTLE4	138	16.39
515376	WWRDEHV4	138	22.79	525724	COUNTYLINE 2	69	2.21	560010	G14-037-TAP	345	15.87
515394	KEENAN 4	138	8.00	525731	SP-ABERNTHY2	69	3.02	560013	G14-057T	345	9.47
515398	OUSPRT 4	138	8.78	525738	HALECENTER 2	69	2.46	560021	CRAWFISH_DR6	230	21.05
515407	TATONGA7	345	15.86	525745	LH-HALECTR 2	69	2.44	560022	CRAWFISH_DR7	345	16.75
515444	MCNOWND7	345	16.55	525769	BARWISE 2	69	3.76	560033	G1524&G1525T	345	19.30
515448	CRSRDSW7	345	11.07	525779	FLOYD_CNTY 2	69	5.31	560035	GRAPEVINE	345	6.59
515458	BORDER 7	345	11.95	525780	FLOYD_CNTY 3	115	6.03	560050	G15-031-TAP	230	9.07
515497	MATHWSN7	345	30.65	525790	FLOYDADA_TP2	69	2.49	560059	G1579&G1580T	230	8.28
515549	MNCWND37	345	11.48	525811	LH-HARMONY 2	69	4.25	560070	G16-001-TAP	345	13.69
515554	BVRCNTY7	345	14.99	525816	TUCO_INT2 2	69	4.68	560071	G16-003-TAP	345	15.14
515582	SLNGWND7	345	8.96	525826	TUCO_INT 2	69	7.94	560072	G16-005-TAP	345	13.37
515585	MAMTHPW7	345	13.20	525828	TUCO_INT 3	115	20.25	560078	G16-037-TAP	345	8.88
515599	G07621119-20	345	13.22	525830	TUCO_INT 6	230	24.75	560088	G16-063-TAP	345	6.56
515800	GRACMNT7	345	15.68	525832	TUCO_INT 7	345	16.68	562004	G11-025-TAP	115	4.59
515802	GRACMNT4	138	24.98	525840	ANTELOPE_1 6	230	24.53	562480	G13-027-TAP	230	9.20
515997	WWPAR4	138	16.76	525853	LH-WIL&ELLN2	69	2.58	576395	GEN-2010-014	345	11.70
520814	ANADARK4	138	27.57	525860	SP-BECTON 2	69	2.29	577103	GEN-2008-022	345	6.02
521089	WASHITA4	138	22.69	525885	SP-NEWDEAL 2	69	3.39	577104	G08-022-WEST	345	5.56
522819	LP-NORTHEST2	69	9.99	525892	WHITE&MONRO2	69	2.56	581137	GEN-2011-025	115	4.59
522822	LP-NORTHWST2	69	4.33	525925	CROSBY 2	69	4.76	581148	GEN-2011-022	345	14.66
522823	LP-MILWAKEE6	230	8.05	525926	CROSBY 3	115	4.47	583090	G1149&G1504	345	9.49
522828	LP-MILWAKEE2	69	7.45	526076	STANTON_W 3	115	9.42	583340	GEN-2012-020	230	9.42
522832	LP-VICKSBRG2	69	11.32	526109	SP-ERSKINE 3	115	11.44	583819	ASGI2014-001	115	11.44
522857	LP-SOUTHEST2	69	20.91	526130	SP-CARLISLE2	69	2.11	583840	GEN-2013-027	230	8.73
522861	LP-SOUTHEST6	230	11.76	526146	INDIANA 3	115	9.78	584070	GEN-2014-057	345	6.19
522866	LP-COOK 2	69	29.66	526159	CARLISLE 2	69	2.57	584260	GEN-2014-047	345	5.04
522870	LP-HOLLY 6	230	12.33	526160	CARLISLE 3	115	13.28	584640	GEN-2015-022	115	10.33
522879	LP-WADSWRTH2	69	19.17	526161	CARLISLE 6	230	8.45	584700	GEN-2015-029	345	9.58
522888	LP-WADSWRTH6	230	10.53	526162	LP-DOUD_TP 3	115	11.74	584750	GEN-2015-031	230	7.73
523095	HITCHLAND 6	230	15.13	526176	LP-DOUD 3	115	9.10	584940	GEN-2015-056	345	5.59
523097	HITCHLAND 7	345	16.16	526184	SW_6878 2	69	2.16	585060	GEN-2015-068	345	12.60
523101	NOBLE_WND 7	345	16.09	526192	MURPHY 3	115	10.64	585080	GEN-2015-071	345	10.31
523112	NOVUS1 7	345	15.85	526199	SP-FRANKFRD3	115	9.59	585120	GEN-2015-075	69	1.55
523309	MOORE_CNTY 6	230	6.77	526213	ALLEN 3	115	10.45	585160	G1579&G1580	230	7.90
523853	FINNEY 7	345	10.07	526267	LUBBCK_STH 2	69	4.30	585270	GEN-2015-093	345	9.36
523869	CHAN/TASCOS6	230	3.92	526268	LUBBCK_STH 3	115	17.45	585280	GEN-2015-092	345	6.01
523959	POTTER_CO 6	230	22.96	526269	LUBBCK_STH 6	230	14.26	585410	GREAT_WESTRN	345	9.95
523961	POTTER_CO 7	345	12.96	526284	PLANTERS 2	69	6.23	585430	PRSIMN_CRK1	345	11.63
523979	HARRNG_EST 6	230	26.23	526297	LUBBCK_EST 2	69	7.90	587020	GEN-2016-003	345	15.14
524010	ROLLHILLS 6	230	20.09	526298	LUBBCK_EST 3	115	14.44	587110	GEN-2016-015	345	5.77
524267	BUSHLAND 6	230	9.87	526299	LUBBCK_EST 6	230	11.14	587230	GEN-2016-037	345	7.56
524296	SPNSPUR_WND7	345	5.85	526310	CLUTTER 2	69	5.38	587370	GEN-2016-056	230	6.13
524415	AMA_SOUTH 6	230	13.34	526337	JONES 6	230	15.46	587420	GEN-2016-062	345	5.23
524622	DEAFSMITH 3	115	11.95	526434	SUNDOWN 3	115	11.21	590001	OKLEHV24	138	4.79
524623	DEAFSMITH 6	230	7.73	526435	SUNDOWN 6	230	10.17	590003	OKLEHV14	138	4.80
524770	PLSNT_HILL 6	230	6.06	526460	AMOCO_SS 6	230	9.04	599891	OKLAUN 7	345	4.04
524875	OASIS 6	230	7.29	526481	SP-WOLF_TP 3	115	11.24	599955	PNM-DC6	230	8.78
524908	ROOSEVELT 3	115	10.17	526524	WOLFFORTH 3	115	11.37				

Table 4-2
Short Circuit Analysis for Study Project ASGI-2016-001 (17SP)

Study Generator ASGI-2016-001											
Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
511456	O.K.U.-7	345	5.41	526213	ALLEN 3	115	10.90	527062	SHELL_CO2 3	115	15.84
522822	LP-NORTHWST2	69	4.36	526236	LP-WHEELOCK3	115	8.70	527068	SHELLC3_TP 3	115	10.52
522823	LP-MILWAKEE6	230	11.62	526243	SP-QUAKER 3	115	9.91	527080	EL_PASO 3	115	15.61
522828	LP-MILWAKEE2	69	7.53	526256	IVORY_TP 2	69	3.94	527096	OXY_DC_WST 2	69	4.49
522832	LP-VICKSBRG2	69	11.50	526267	LUBBCK_STH 2	69	4.37	527099	DC_EAST 2	69	6.09
522853	LP-SLATON 2	69	15.91	526268	LUBBCK_STH 3	115	19.32	527105	SAN_ANDS_TP3	115	16.45
522857	LP-SOUTHEST2	69	21.60	526269	LUBBCK_STH 6	230	18.08	527106	SAN_ANDRES 3	115	11.71
522861	LP-SOUTHEST6	230	14.14	526297	LUBBCK_EST 2	69	8.07	527111	WASSON 2	69	5.96
522866	LP-COOK 2	69	30.70	526298	LUBBCK_EST 3	115	15.46	527117	SW_7814 2	69	3.13
522870	LP-HOLLY 6	230	15.12	526299	LUBBCK_EST 6	230	13.17	527125	DENVER_CTY 2	69	8.62
522884	LP-OLIVER 2	69	11.86	526337	JONES 6	230	20.38	527130	DENVER_N 3	115	20.80
522888	LP-WADSWRTH6	230	12.29	526361	COCHRAN 3	115	7.00	527136	DENVER_S 3	115	20.80
523959	POTTER_CO 6	230	23.81	526416	SLAUGTER_TP2	69	3.17	527146	MUSTANG 3	115	22.38
524267	BUSHLAND 6	230	10.00	526424	PACIFIC 3	115	9.77	527149	MUSTANG 6	230	15.68
524622	DEAFSMITH 3	115	12.03	526434	SUNDOWN 3	115	11.57	527151	GS-MUSTANG 6	230	15.68
524623	DEAFSMITH 6	230	7.78	526435	SUNDOWN 6	230	11.17	527183	JAYBEE 2	69	4.36
524909	ROSEVELT_N 6	230	8.83	526445	AMOCO_TP 3	115	10.89	527189	LG-SEAGRAVE2	69	3.73
524911	ROSEVELT_S 6	230	8.83	526452	AMOCO_CRYO 3	115	6.63	527194	LG-PLSHILL 3	115	7.54
525019	EMU&VLY_TP 3	115	5.10	526460	AMOCO_SS 6	230	9.79	527201	SEAGRAVES 2	69	5.40
525056	BC-EARTH 3	115	8.77	526469	SP-YUMA 2	69	3.08	527202	SEAGRAVES 3	115	8.55
525213	SWISHER 6	230	10.66	526475	YUMA_INT 3	115	11.31	527211	DIAMONDBACK2	69	3.26
525446	SPGLAKE_TP3	115	10.57	526481	SP-WOLF_TP 3	115	11.51	527212	DIAMONDBACK3	115	3.11
525454	HALE_CNTY 3	115	10.21	526483	SP-WOLFORTH3	115	8.88	527217	MOSS 2	69	5.31
525460	NEWHART 3	115	15.21	526484	LG-LEVELAND3	115	9.93	527223	LG-MC&SEMNL2	69	2.58
525461	NEWHART 6	230	10.98	526491	LG-CLAUENE 3	115	9.18	527228	RILEY_TP 2	69	3.98
525480	PLANT_X 3	115	21.02	526499	LG-MEADOW 2	69	3.75	527229	OZRK_MAH02 2	69	1.52
525481	PLANT_X 6	230	23.25	526506	LG-DOCWEBR 2	69	5.01	527235	LG-ASHMORE 2	69	2.47
525524	TOLK_EAST 6	230	28.51	526524	WOLFFORTH 3	115	11.79	527247	CEDARLAKE 2	69	2.83
525531	TOLK_WEST 6	230	28.51	526525	WOLFFORTH 6	230	14.01	527253	ADAIR 2	69	2.62
525543	TOLK_TAP 6	230	28.51	526602	SP-WOODROW 3	115	9.46	527261	SULPHUR 2	69	3.37
525636	LAMB_CNTY 3	115	8.57	526656	LYNN_CNTY 3	115	5.65	527262	SULPHUR 3	115	5.70
525637	LAMB_CNTY 6	230	5.41	526676	GRASSLAND 3	115	6.15	527271	LG-FOSTER 2	69	2.71
525780	FLOYD_CNTY 3	115	6.06	526677	GRASSLAND 6	230	6.48	527275	SEMINOLE 3	115	11.44
525816	TUCO_INT2 2	69	4.70	526679	CIRRUS_WND 6	230	5.04	527276	SEMINOLE 6	230	7.27
525826	TUCO_INT 2	69	7.98	526711	LG-DIXON 2	69	2.52	527284	RUSSELL 3	115	9.08
525828	TUCO_INT 3	115	20.71	526735	TERRY_CNTY 2	69	7.10	527286	XTO_RUSSEL 3	115	10.03
525830	TUCO_INT 6	230	25.69	526736	TERRY_CNTY 3	115	10.93	527291	LE-KCM 2	69	2.63
525832	TUCO_INT 7	345	16.63	526747	LG-BROWNFLD2	69	3.60	527313	MIDAMERI_TP2	69	2.15
525840	ANTELOPE_1 6	230	25.46	526754	BROWNFIELD 2	69	3.08	527362	JOHNSON_DRW3	115	10.59
525926	CROSBY 3	115	4.51	526761	BROWNFLD_TP2	69	2.85	527363	HIGG 3	115	10.21
526020	HOCKLEY 3	115	5.52	526784	AMOCOWASSON6	230	13.91	528433	NEW_NHOBBS 3	115	8.04
526036	LC-OPDYKE 3	115	5.83	526792	PRENTICE 3	115	5.96	528626	LE-PLNSINT 2	69	4.37
526076	STANTON_W 3	115	9.61	526928	PLAINS_INT 3	115	9.89	560021	CRAWFISH_DR6	230	21.57
526109	SP-ERSKINE 3	115	11.77	526934	YOAKUM 3	115	16.82	560022	CRAWFISH_DR7	345	16.74
526130	SP-CARLISLE2	69	2.12	526935	YOAKUM 6	230	17.71	560058	G15-077-TAP	115	8.27
526146	INDIANA 3	115	9.99	526936	YOAKUM_345	345	9.11	560059	G1579&G1580T	230	9.20
526159	CARLISLE 2	69	2.58	526944	LG-PLAINS 3	115	7.95	562480	G13-027-TAP	230	9.32
526160	CARLISLE 3	115	13.75	526993	LG-WELLMAN 2	69	3.06	583340	GEN-2012-020	230	9.53
526161	CARLISLE 6	230	12.51	526999	UNION_TX 2	69	2.38	583810	ASGI2013-006	115	8.88
526162	LP-DOUD_TP 3	115	12.05	527010	OXYBRU_TP 6	230	14.01	583819	ASGI2014-001	115	11.77
526176	LP-DOUD 3	115	9.29	527018	BENNETT 3	115	13.13	584720	ASGI15021602	69	2.16
526184	SW_6878 2	69	2.17	527036	SHELL_C2 3	115	12.78	585060	GEN-2015-068	345	12.57
526192	MURPHY 3	115	10.95	527041	ARCO_TP 3	115	13.04	585120	GEN-2015-075	69	1.55
526199	SP-FRANKFRD3	115	9.87	527047	OXY_WILRD1 3	115	10.48	587370	GEN-2016-056	230	7.37
526205	IVORY 2	69	3.94	527051	ODC_TP 3	115	13.14				

Table 4-3
Short Circuit Analysis for Study Project ASGI-2016-002 (17SP)

Study Generator ASGI-2016-002											
Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
522823	LP-MILWAKEE6	230	11.62	526435	SUNDOWN 6	230	11.17	526934	YOAKUM 3	115	16.82
522861	LP-SOUTHEST6	230	14.14	526460	AMOCO_SS 6	230	9.79	527080	EL_PASO 3	115	15.61
525481	PLANT_X 6	230	23.25	526469	SP-YUMA 2	69	3.08	527125	DENVER_CTY 2	69	8.62
525830	TUCO_INT 6	230	25.69	526475	YUMA_INT 3	115	11.31	527130	DENVER_N 3	115	20.80
526109	SP-ERSKINE 3	115	11.77	526481	SP-WOLF_TP 3	115	11.51	527136	DENVER_S 3	115	20.80
526159	CARLISLE 2	69	2.58	526483	SP-WOLFORTH3	115	8.88	527146	MUSTANG 3	115	22.38
526160	CARLISLE 3	115	13.75	526484	LG-LEVELAND3	115	9.93	527202	SEAGRAVES 3	115	8.55
526161	CARLISLE 6	230	12.51	526491	LG-CLAUENE 3	115	9.18	527212	DIAMONDBACK3	115	3.11
526162	LP-DOUD_TP 3	115	12.05	526506	LG-DOCWEBR 2	69	5.01	527261	SULPHUR 2	69	3.37
526176	LP-DOUD 3	115	9.29	526524	WOLFFORTH 3	115	11.79	527262	SULPHUR 3	115	5.70
526192	MURPHY 3	115	10.95	526525	WOLFFORTH 6	230	14.01	527286	XTO_RUSSEL 3	115	10.03
526268	LUBBCK_STH 3	115	19.32	526735	TERRY_CNTY 2	69	7.10	560058	G15-077-TAP	115	8.27
526269	LUBBCK_STH 6	230	18.08	526736	TERRY_CNTY 3	115	10.93	583810	ASGI2013-006	115	8.88
526337	JONES 6	230	20.38	526747	LG-BROWNFLD2	69	3.60	584720	ASGI15021602	69	2.16
526434	SUNDOWN 3	115	11.57	526792	PRENTICE 3	115	5.96	587370	GEN-2016-056	230	7.37

Table 4-4
Short Circuit Analysis for Study Project ASGI-2016-004 (17SP)

Study Generator GEN-2016-004											
Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
522800	MU-TULIA 3	115	5.12	524300	HILLSIDE 3	115	12.70	525136	HAPPY_CTY 2	69	2.15
523267	PRINGLE 6	230	4.29	524305	COULTER 2	69	4.28	525143	HAPPY_CTYTP2	69	3.26
523551	HUTCHISON 6	230	7.28	524306	COULTER 3	115	15.44	525153	HAPPY_INT 2	69	3.54
523771	GRAPEVINE 6	230	5.73	524321	GEORGIA 2	69	6.68	525154	HAPPY_INT 3	115	5.40
523959	POTTER_CO 6	230	23.81	524322	GEORGIA 3	115	16.66	525164	SHAMRCK_PMP2	69	2.57
523977	HARRNG_WST 6	230	27.92	524331	PULLMAN 3	115	7.17	525179	TULIA_TP 3	115	6.33
523978	HARRNG_MID 6	230	27.92	524338	SOUTHEAST 3	115	11.13	525191	KRESS_INT 2	69	4.44
523979	HARRNG_EST 6	230	27.92	524345	OSAGE 3	115	13.94	525192	KRESS_INT 3	115	11.24
524007	ROLLHILLS 3	115	19.78	524364	RANDALL 3	115	21.38	525203	SW-KRESS 2	69	4.44
524010	ROLLHILLS 6	230	21.02	524365	RANDALL 6	230	14.70	525212	SWISHER 3	115	10.38
524043	NICHOLS 3	115	31.31	524377	FARMERS 3	115	15.33	525213	SWISHER 6	230	10.66
524044	NICHOLS 6	230	26.97	524388	CROUSE_HIND3	115	15.34	525224	KRESS_RURL 2	69	2.51
524058	WHITAKER 3	115	22.33	524397	ARROWHEAD 3	115	13.77	525225	KRESS_RURAL3	115	6.27
524136	HASTINGS 3	115	13.92	524404	OWENSCORN 3	115	15.03	525257	N_PLAINVEW 3	115	5.10
524149	VANBUREN#2 2	69	6.62	524414	AMA_SOUTH 3	115	16.89	525326	COX 3	115	5.91
524161	EAST_PLANT 2	69	8.90	524415	AMA_SOUTH 6	230	13.80	525414	LAMTON 3	115	7.81
524162	EAST_PLANT 3	115	23.44	524425	ESTACADO_TP3	115	13.39	525453	HALE_CNTY 2	69	6.93
524163	EAST_PLANT 6	230	14.15	524516	CANYON_WEST3	115	4.93	525454	HALE_CNTY 3	115	10.21
524177	VNBUREN_TP 2	69	8.45	524522	CANYON E_TP3	115	5.17	525460	NEWHART 3	115	15.21
524185	PIERCE_TP 3	115	19.37	524523	CANYON_EAST3	115	4.81	525461	NEWHART 6	230	10.98
524192	PIERCE 3	115	13.12	524530	PALO_DURO 3	115	6.76	525480	PLANT_X 3	115	21.02
524209	LAWRENPRK1 2	69	6.54	524544	SPRING_DRW 3	115	6.40	525828	TUCO_INT 3	115	20.71
524216	LAWRENPRK2 2	69	6.54	524590	DAWN 3	115	5.24	560050	G15-031-TAP	230	9.15
524224	MANHATTAN 3	115	18.76	524597	PANDAHFD 3	115	8.39	584640	GEN-2015-022	115	10.38
524256	PUCKETT 3	115	12.80	524746	CASTRO_CNTY3	115	11.65	584750	GEN-2015-031	230	7.78
524282	34TH_ST 3	115	15.19	525124	HART_INDUST3	115	7.60	587570	ASGI1604	115	6.76

Table 4-5
Short Circuit Analysis for Study Project GEN-2016-015 and GEN-2016-062 (17SP)

Study Generator GEN-2016-015 and GEN-2016-062											
Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
511456	O.K.U.-7	345	5.41	527276	SEMINOLE 6	230	7.27	528442	NE_HOBBS 3	115	11.98
511553	CHISHOLM7	345	12.43	527363	HIGG 3	115	10.21	528463	SANGER_SW 3	115	16.23
515375	WWRDEHV7	345	20.02	527656	CROSSROADS 7	345	6.55	528491	MONUMENT 3	115	15.82
515458	BORDER 7	345	12.00	527798	EDDY_NTH 3	115	10.44	528498	W_HOBBS 3	115	12.02
523961	POTTER_CO 7	345	13.19	527799	EDDY_NORTH 6	230	7.55	528512	EUNICE 3	115	6.31
525213	SWISHER 6	230	10.66	527800	EDDY_SOUTH 6	230	7.55	528526	TEAGUE 3	115	5.91
525531	TOLK_WEST 6	230	28.51	527864	CUNNINHAM 3	115	29.54	528533	DRINKARD_TP3	115	8.17
525543	TOLK_TAP 6	230	28.51	527865	CUNNINHAM 6	230	16.94	528568	MONUMNT_TP 3	115	10.06
525549	TOLK 7	345	12.43	527891	HOBBS_INT 3	115	32.84	528589	DRINKARD 3	115	8.40
525830	TUCO_INT 6	230	25.69	527894	HOBBS_INT 6	230	18.31	528596	NA_ENRICHTP3	115	7.17
525832	TUCO_INT 7	345	16.63	527896	HOBBS_INT 7	345	8.80	528602	ANDREWS 3	115	12.29
526435	SUNDOWN 6	230	11.17	527962	POTASH_JCT 3	115	8.88	528603	NA_ENRICH 3	115	11.45
526460	AMOCO_SS 6	230	9.79	527963	POTASH_JCT 6	230	6.49	528604	ANDREWS 6	345	6.46
526784	AMOCOWASSON6	230	13.91	528027	RDRUNNER 6	230	3.66	528605	TARGA 3	115	8.29
526792	PRENTICE 3	115	5.96	528095	7-RIVERS 6	230	5.65	560021	CRAWFISH_DR6	230	21.57
526928	PLAINS_INT 3	115	9.89	528179	PECOS 6	230	5.84	560022	CRAWFISH_DR7	345	16.74
526934	YOAKUM 3	115	16.82	528333	LE-WEST_SUB3	115	8.65	560059	G1579&G1580T	230	9.20
526935	YOAKUM 6	230	17.71	528334	LE-LOVINTON3	115	8.56	562480	G13-027-TAP	230	9.32
526936	YOAKUM_345	345	9.11	528348	BUCKEYE_TP 3	115	8.38	583090	G1149&G1504	345	9.52
527010	OXYBRU_TP 6	230	14.01	528355	MADDOX 3	115	27.78	583840	GEN-2013-027	230	8.84
527041	ARCO_TP 3	115	13.04	528392	PEARLE 3	115	6.28	585060	GEN-2015-068	345	12.57
527146	MUSTANG 3	115	22.38	528394	QUAHADA 3	115	7.41	585160	G1579&G1580	230	8.73
527149	MUSTANG 6	230	15.68	528433	NEW_NHOBBS 3	115	8.04	587110	GEN-2016-015	345	6.18
527151	GS-MUSTANG 6	230	15.68	528435	MILLEN 3	115	11.68	587420	GEN-2016-062	345	5.52
527194	LG-PLSHILL 3	115	7.54								

Table 4-6
Short Circuit Analysis for Study Project GEN-2016-56 (17SP)

Study Generator GEN-2016-056											
Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
511456	O.K.U.-7	345	5.41	525524	TOLK_EAST 6	230	28.51	526452	AMOCO_CRYO 3	115	6.63
511467	L.E.S.-4	138	23.42	525531	TOLK_WEST 6	230	28.51	526460	AMOCO_SS 6	230	9.79
511468	L.E.S.-7	345	12.47	525543	TOLK_TAP 6	230	28.51	526469	SP-YUMA 2	69	3.08
511553	CHISHOLM7	345	12.43	525549	TOLK 7	345	12.43	526475	YUMA_INT 3	115	11.31
515375	WWRDEHV7	345	20.02	525636	LAMB_CNTY 3	115	8.57	526481	SP-WOLF_TP 3	115	11.51
515458	BORDER 7	345	12.00	525637	LAMB_CNTY 6	230	5.41	526483	SP-WOLFORTH3	115	8.88
515800	GRACMNT7	345	16.03	525724	COUNTYLINE 2	69	2.21	526484	LG-LEVELAND3	115	9.93
522810	LP-ERSKINE 2	69	9.31	525731	SP-ABERNTHY2	69	3.03	526491	LG-CLAUENE 3	115	9.18
522819	LP-NORTHEST2	69	10.12	525738	HALECENTER 2	69	2.47	526506	LG-DOCWEBR 2	69	5.01
522822	LP-NORTHWST2	69	4.36	525745	LH-HALECTR 2	69	2.44	526524	WOLFFORTH 3	115	11.79
522823	LP-MILWAKEE6	230	11.62	525769	BARWISE 2	69	3.77	526525	WOLFFORTH 6	230	14.01
522828	LP-MILWAKEE2	69	7.53	525779	FLOYD_CNTY 2	69	5.32	526562	SLATON 2	69	2.48
522832	LP-VICKSBRG2	69	11.50	525780	FLOYD_CNTY 3	115	6.06	526602	SP-WOODROW 3	115	9.46
522836	LP-THOMPSON2	69	10.89	525790	FLOYDADA_TP2	69	2.50	526656	LYNN_CNTY 3	115	5.65
522840	LP-MCCULLGH2	69	10.75	525811	LH-HARMONY 2	69	4.26	526676	GRASSLAND 3	115	6.15
522844	LP-COOP 2	69	16.16	525816	TUCO_INT2 2	69	4.70	526677	GRASSLAND 6	230	6.48
522849	LP-CHALKER 2	69	12.10	525826	TUCO_INT 2	69	7.98	526679	CIRRUS_WND 6	230	5.04
522853	LP-SLATON 2	69	15.91	525828	TUCO_INT 3	115	20.71	526694	GRAHAM 3	115	2.69
522857	LP-SOUTHEST2	69	21.60	525830	TUCO_INT 6	230	25.69	526735	TERRY_CNTY 2	69	7.10
522861	LP-SOUTHEST6	230	14.14	525832	TUCO_INT 7	345	16.63	526736	TERRY_CNTY 3	115	10.93
522866	LP-COOK 2	69	30.70	525840	ANTELOPE_1 6	230	25.46	526747	LG-BROWNFLD2	69	3.60
522870	LP-HOLLY 6	230	15.12	525853	LH-WIL&ELLN2	69	2.59	526792	PRENTICE 3	115	5.96
522875	LP-BRANDON 2	69	8.68	525860	SP-BECTON 2	69	2.29	526934	YOAKUM 3	115	16.82
522879	LP-WADSWRTH2	69	19.78	525885	SP-NEWDEAL 2	69	3.40	526935	YOAKUM 6	230	17.71
522884	LP-OLIVER 2	69	11.86	525892	WHITE&MONRO2	69	2.56	526936	YOAKUM_345	345	9.11
522888	LP-WADSWRTH6	230	12.29	525925	CROSBY 2	69	4.79	527010	OXYBRU_TP 6	230	14.01
523959	POTTER_CO 6	230	23.81	525926	CROSBY 3	115	4.51	527080	EL_PASO 3	115	15.61
523961	POTTER_CO 7	345	13.19	526020	HOCKLEY 3	115	5.52	527125	DENVER_CTY 2	69	8.62
524267	BUSHLAND 6	230	10.00	526036	LC-OPDYKE 3	115	5.83	527130	DENVER_N 3	115	20.80
524415	AMA_SOUTH 6	230	13.80	526076	STANTON_W 3	115	9.61	527136	DENVER_S 3	115	20.80
524622	DEAFSMITH 3	115	12.03	526109	SP-ERSKINE 3	115	11.77	527146	MUSTANG 3	115	22.38
524623	DEAFSMITH 6	230	7.78	526130	SP-CARLISLE2	69	2.12	527149	MUSTANG 6	230	15.68
524770	PLSNT_HILL 6	230	6.08	526146	INDIANA 3	115	9.99	527202	SEAGRAVES 3	115	8.55
524875	OASIS 6	230	7.32	526159	CARLISLE 2	69	2.58	527212	DIAMONDBACK3	115	3.11
524908	ROOSEVELT 3	115	10.20	526160	CARLISLE 3	115	13.75	527261	SULPHUR 2	69	3.37
524909	ROSEVELT_N 6	230	8.83	526161	CARLISLE 6	230	12.51	527262	SULPHUR 3	115	5.70
524911	ROSEVELT_S 6	230	8.83	526162	LP-DOUD_TP 3	115	12.05	527286	XTO_RUSSEL 3	115	10.03
524915	SW_4K33 6	230	8.83	526176	LP-DOUD 3	115	9.29	527656	CROSSROADS 7	345	6.55
525019	EMU&VLY_TP 3	115	5.10	526184	SW_6878 2	69	2.17	527896	HOBBS_INT 7	345	8.80
525056	BC-EARTH 3	115	8.77	526192	MURPHY 3	115	10.95	560013	G14-057T	345	9.57
525124	HART_INDUST3	115	7.60	526199	SP-FRANKFRD3	115	9.87	560021	CRAWFISH_DR6	230	21.57
525179	TULIA_TP 3	115	6.33	526205	IVORY 2	69	3.94	560022	CRAWFISH_DR7	345	16.74
525191	KRESS_INT 2	69	4.44	526213	ALLEN 3	115	10.90	560050	G15-031-TAP	230	9.15
525192	KRESS_INT 3	115	11.24	526221	BATTON_N 2	69	1.78	560058	G15-077-TAP	115	8.27
525212	SWISHER 3	115	10.38	526228	BATTON_S 2	69	2.72	560059	G1579&G1580T	230	9.20
525213	SWISHER 6	230	10.66	526236	LP-WHEELOCK3	115	8.70	562004	G11-025-TAP	115	4.62
525225	KRESS_RURAL3	115	6.27	526243	SP-QUAKER 3	115	9.91	562480	G13-027-TAP	230	9.32
525272	KISER 3	115	5.10	526256	IVORY_TP 2	69	3.94	581137	GEN-2011-025	115	4.62
525291	PLAINVW_TP 2	69	6.50	526267	LUBBCK_STH 2	69	4.37	583090	G1149&G1504	345	9.52
525298	S_PLAINVEW 2	69	2.59	526268	LUBBCK_STH 3	115	19.32	583340	GEN-2012-020	230	9.53
525325	COX 2	69	3.37	526269	LUBBCK_STH 6	230	18.08	583810	ASGI2013-006	115	8.88
525326	COX 3	115	5.91	526284	PLANTERS 2	69	6.34	583819	ASGI2014-001	115	11.77
525413	LAMTON 2	69	5.22	526297	LUBBCK_EST 2	69	8.07	584640	GEN-2015-022	115	10.38
525414	LAMTON 3	115	7.81	526298	LUBBCK_EST 3	115	15.46	584720	ASGI15021602	69	2.16
525432	SP-HALFWAY 2	69	5.88	526299	LUBBCK_EST 6	230	13.17	584750	GEN-2015-031	230	7.78
525440	LC-S_OLTON 3	115	7.43	526310	CLUTTER 2	69	5.46	585060	GEN-2015-068	345	12.57
525446	SPGLAKE_TP3	115	10.57	526337	JONES 6	230	20.38	585120	GEN-2015-075	69	1.55
525453	HALE_CNTY 2	69	6.93	526361	COCHRAN 3	115	7.00	587370	GEN-2016-056	230	7.37
525454	HALE_CNTY 3	115	10.21	526424	PACIFIC 3	115	9.77	590001	OKLEHV24	138	4.79
525460	NEWHART 3	115	15.21	526434	SUNDOWN 3	115	11.57	590003	OKLEHV14	138	4.80
525461	NEWHART 6	230	10.98	526435	SUNDOWN 6	230	11.17	599891	OKLAUN 7	345	4.04
525480	PLANT_X 3	115	21.02	526445	AMOCO_TP 3	115	10.89	599955	PNM-DC6	230	8.83
525481	PLANT_X 6	230	23.25								

Table 4-7
Short Circuit Analysis for Study Project GEN-2016-069 (17SP)

Study Generator GEN-2016-069											
Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
524768	PLSNT_HILL 3	115	9.70	527536	BRASHER 3	115	4.79	527865	CUNNINHAM 6	230	16.94
524770	PLSNT_HILL 6	230	6.08	527540	CAPITAN 2	69	2.21	527894	HOBBS_INT 6	230	18.31
524797	PERIMETER 3	115	6.29	527541	CAPITAN 3	115	4.42	527963	POTASH_JCT 6	230	6.49
524863	FE-CHZPLT 3	115	7.60	527546	SAMSON 3	115	5.03	528070	CV-AZMESA 3	115	6.76
524874	OASIS 3	115	9.49	527552	RIAC 2	69	3.00	528094	7-RIVERS 3	115	7.62
524875	OASIS 6	230	7.32	527563	ROSWLL_INT 2	69	3.53	528095	7-RIVERS 6	230	5.65
524885	SN_JUAN_TAP6	230	4.67	527564	ROSWLL_INT 3	115	5.25	528132	OCOTILLO 3	115	5.41
524889	SN_JUAN_WND6	230	4.48	527575	SW_4702 2	69	3.21	528137	N_CANAL 3	115	7.25
524909	ROSEVELT_N 6	230	8.83	527589	CV-ORCHARD 2	69	2.00	528160	CARLSBAD 3	115	8.85
524911	ROSEVELT_S 6	230	8.83	527597	TWEEDY 3	115	4.89	528178	PECOS 3	115	9.33
524915	SW_4K33 6	230	8.83	527656	CROSSROADS 7	345	6.55	528179	PECOS 6	230	5.84
524924	PORTALES 3	115	7.19	527711	EAGLE_CREEK3	115	6.96	528226	HOPI_SUB 3	115	3.94
525549	TOLK 7	345	12.43	527786	ATOKA 3	115	6.69	577103	GEN-2008-022	345	6.08
527482	CHAVES_CNTY3	115	6.26	527793	EDDY_STH 3	115	10.44	583950	GEN-2014-033	115	6.20
527483	CHAVES_CNTY6	230	4.05	527798	EDDY_NTH 3	115	10.44	583960	G14034G14035	115	5.94
527501	URTON 3	115	5.30	527799	EDDY_NORTH 6	230	7.55	584260	GEN-2014-047	345	5.08
527508	PRICE 3	115	4.93	527800	EDDY_SOUTH 6	230	7.55	584620	GEN-2015-020	115	9.25
527515	CV-PINE 3	115	4.58	527802	EDDY_CNTY 7	345	4.32	584940	GEN-2015-056	345	5.64
527522	ROSWELL_CTY3	115	5.03	527809	CV-8_MILE 3	115	5.13	587470	GEN-2016-069	115	6.07
527528	RIAC_TP 2	69	3.38	527821	CV-DAYTON 3	115	6.61	599960	EPTNP-D6	230	7.55
527534	BRASHER_TP 3	115	5.22	527864	CUNNINHAM 3	115	29.54				

4.3 Short Circuit Results: 2025 Summer Peak

The maximum fault current for each bus is provided for the 2025 Summer Peak conditions. The following tables show the short circuit results for the study generators for the 2025 Summer Peak conditions:

- Table 4-8: Short Circuit Analysis for GEN-2015-041 (25SP)
- Table 4-9: Short Circuit Analysis for ASGI-2016-001 (25SP)
- Table 4-10: Short Circuit Analysis for ASGI-2016-002 (25SP)
- Table 4-11: Short Circuit Analysis for ASGI-2016-004 (25SP)
- Table 4-12: Short Circuit Analysis for GEN-2016-015 and GEN-2016-062 (25SP)
- Table 4-13: Short Circuit Analysis for GEN-2016-056 (25SP)
- Table 4-14: Short Circuit Analysis for GEN-2016-069 (25SP)

Table 4-8
Short Circuit Analysis for Study Project GEN-2015-041 (25SP)

Study Generator GEN-2015-041

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
511422	FLETCHR4	138	7.83	524909	ROSEVELT_N 6	230	8.94	526525	WOLFFORTH 6	230	14.41
511423	FLE TAP4	138	8.56	524911	ROSEVELT_S 6	230	8.94	526562	SLATON 2	69	2.49
511431	LWS S4	138	10.74	524915	SW_4K33 6	230	8.94	526602	SP-WOODROW 3	115	9.59
511436	COMANC-2	69	9.69	525019	EMU&VLY_TP 3	115	6.45	526656	LYNN_CNTY 3	115	5.70
511437	COMANC-4	138	17.77	525056	BC-EARTH 3	115	9.17	526676	GRASSLAND 3	115	6.21
511439	LWSTAP 4	138	11.18	525124	HART_INDUST3	115	7.65	526677	GRASSLAND 6	230	6.62
511456	O.K.U.-7	345	5.44	525179	TULIA_TP 3	115	6.35	526679	CIRRUS_WND 6	230	5.13
511466	L.E.S.-2	69	16.48	525191	KRESS_INT 2	69	4.44	526694	GRAHAM 3	115	2.70
511467	L.E.S.-4	138	23.97	525192	KRESS_INT 3	115	11.29	526784	AMOCOWASSON6	230	14.06
511468	L.E.S.-7	345	12.69	525212	SWISHER 3	115	10.41	526792	PRENTICE 3	115	5.97
511469	LGORE-N2	69	7.98	525213	SWISHER 6	230	10.71	526928	PLAINS_INT 3	115	9.93
511470	LGORE-S2	69	6.92	525225	KRESS_RURAL3	115	6.28	526934	YOAKUM 3	115	16.92
511474	SHERID4	138	12.01	525272	KISER 3	115	5.12	526935	YOAKUM 6	230	18.07
511477	S.W.S.-4	138	33.91	525291	PLAINVW_TP 2	69	6.53	526936	YOAKUM_345	345	9.57
511486	ELGINJT4	138	9.96	525298	S_PLAINVEW 2	69	2.59	527010	OXYBRU_TP 6	230	14.20
511487	ELGINJT2	69	8.49	525325	COX 2	69	3.37	527041	ARCO_TP 3	115	13.08
511488	112GORE4	138	12.17	525326	COX 3	115	5.93	527146	MUSTANG 3	115	22.49
511490	ELKCITY6	230	7.92	525413	LAMTON 2	69	5.27	527149	MUSTANG 6	230	15.85
511494	COMMTAP4	138	21.03	525414	LAMTON 3	115	7.97	527151	GS-MUSTANG 6	230	15.85
511512	RPPAPER4	138	11.53	525432	SP-HALFWAY 2	69	5.90	527194	LG-PLSHILL 3	115	7.56
511537	ARTVLTP4	138	11.39	525440	LC-S_OLTON 3	115	7.68	527276	SEMINOLE 6	230	7.30
511541	SWEETWT6	230	7.89	525453	HALE_CNTY 2	69	6.97	527656	CROSSROADS 7	345	6.61
511553	CHISHOLM7	345	13.08	525454	HALE_CNTY 3	115	10.34	527799	EDDY_NORTH 6	230	8.00
511557	CHISHOLM6	230	11.88	525460	NEWHART 3	115	15.29	527802	EDDY_CNTY 7	345	4.46
511563	ELSWORTH 4	138	9.89	525461	NEWHART 6	230	11.04	527865	CUNNINHAM 6	230	17.36
514785	WOODWRD4	138	12.29	525480	PLANT_X 3	115	26.92	527891	HOBBS_INT 3	115	33.43
514796	IODINE-4	138	7.20	525481	PLANT_X 6	230	24.40	527894	HOBBS_INT 6	230	18.93
514801	MINCO 7	345	17.19	525524	TOLK_EAST 6	230	29.18	527896	HOBBS_INT 7	345	10.46
514809	JOHNCO 7	345	9.32	525531	TOLK_WEST 6	230	29.18	528602	ANDREWS 3	115	13.61
514901	CIMARON7	345	32.97	525543	TOLK_TAP 6	230	29.18	528604	ANDREWS 6	345	7.62
515135	SUNNYSD4	138	17.21	525549	TOLK 7	345	12.57	529304	OMDUNCN4	138	6.66
515136	SUNNYSD7	345	10.16	525636	LAMB_CNTY 3	115	9.74	539801	THISTLE7	345	16.57
515375	WWRDEHV7	345	20.19	525637	LAMB_CNTY 6	230	5.62	539804	THISTLE4	138	16.88
515376	WWRDEHV4	138	22.95	525724	COUNTYLINE 2	69	2.21	560010	G14-037-TAP	345	17.02
515394	KEENAN 4	138	8.02	525731	SP-ABERNTHY2	69	3.03	560013	G14-057T	345	9.65
515398	OUSPRT 4	138	8.80	525738	HALECENTER 2	69	2.47	560021	CRAWFISH_DR6	230	21.84
515407	TATONGA7	345	16.11	525745	LH-HALECTR 2	69	2.44	560022	CRAWFISH_DR7	345	16.96
515444	MCNOWND7	345	17.14	525769	BARWISE 2	69	3.77	560033	G1524&G1525T	345	21.36
515448	CRSRDSW7	345	11.19	525779	FLOYD_CNTY 2	69	5.33	560035	GRAPEVINE	345	9.64
515458	BORDER 7	345	12.29	525780	FLOYD_CNTY 3	115	6.07	560050	G15-031-TAP	230	9.18
515497	MATHWSN7	345	32.70	525790	FLOYDADA_TP2	69	2.50	560059	G1579&G1580T	230	9.32
515549	MNCWND37	345	11.74	525811	LH-HARMONY 2	69	4.26	560070	G16-001-TAP	345	14.30
515554	BVRCNTY7	345	17.03	525816	TUCO_INT2 2	69	4.70	560071	G16-003-TAP	345	15.55
515582	SLNGWND7	345	9.04	525826	TUCO_INT 2	69	7.99	560072	G16-005-TAP	345	13.57
515585	MAMTHPW7	345	13.38	525828	TUCO_INT 3	115	20.84	560078	G16-037-TAP	345	9.12
515599	G07621119-20	345	13.35	525830	TUCO_INT 6	230	26.11	560088	G16-063-TAP	345	6.61
515800	GRACMNT7	345	16.43	525832	TUCO_INT 7	345	16.86	562004	G11-025-TAP	115	4.63
515802	GRACMNT4	138	28.41	525840	ANTELOPE_1 6	230	25.86	562480	G13-027-TAP	230	9.38
515997	WWPAR4	138	16.84	525853	LH-WIL&ELLN2	69	2.59	576395	GEN-2010-014	345	12.21
520814	ANADARK4	138	31.19	525860	SP-BECTON 2	69	2.29	577103	GEN-2008-022	345	6.13
521089	WASHITA4	138	27.80	525885	SP-NEWDEAL 2	69	3.40	577104	G08-022-WEST	345	5.64
522819	LP-NORTHEST2	69	13.14	525892	WHITE&MONRO2	69	2.56	581137	GEN-2011-025	115	4.63
522822	LP-NORTHWST2	69	4.61	525925	CROSBY 2	69	4.79	581148	GEN-2011-022	345	15.50
522823	LP-MILWAKEE6	230	14.69	525926	CROSBY 3	115	4.52	583090	G1149&G1504	345	9.70
522828	LP-MILWAKEE2	69	8.33	526076	STANTON_W 3	115	9.69	583340	GEN-2012-020	230	9.58
522832	LP-VICKSBRG2	69	14.14	526109	SP-ERSKINE 3	115	11.92	583819	ASGI2014-001	115	11.92
522857	LP-SOUTHEST2	69	24.71	526130	SP-CARLISLE2	69	2.12	583840	GEN-2013-027	230	8.89
522861	LP-SOUTHEST6	230	17.97	526146	INDIANA 3	115	10.08	584070	GEN-2014-057	345	6.26
522866	LP-COOK 2	69	35.18	526159	CARLISLE 2	69	2.58	584260	GEN-2014-047	345	5.12
522870	LP-HOLLY 6	230	17.56	526160	CARLISLE 3	115	13.98	584640	GEN-2015-022	115	10.41
522879	LP-WADSWRTH2	69	22.91	526161	CARLISLE 6	230	15.30	584700	GEN-2015-029	345	9.67
522888	LP-WADSWRTH6	230	12.91	526162	LP-DOUD_TP 3	115	12.21	584750	GEN-2015-031	230	7.80
523095	HITCHLAND 6	230	15.55	526176	LP-DOUD 3	115	9.39	584940	GEN-2015-056	345	5.68
523097	HITCHLAND 7	345	17.20	526184	SW_6878 2	69	2.17	585060	GEN-2015-068	345	12.70
523101	NOBLE_WND 7	345	17.12	526192	MURPHY 3	115	11.05	585080	GEN-2015-071	345	10.79
523112	NOVUS1 7	345	16.84	526199	SP-FRANKFRD3	115	9.94	585120	GEN-2015-075	69	1.55
523309	MOORE_CNTY 6	230	6.83	526213	ALLEN 3	115	10.99	585160	G1579&G1580	230	8.84
523853	FINNEY 7	345	10.85	526267	LUBBCK_STH 2	69	4.38	585270	GEN-2015-093	345	9.61
523869	CHAN/TASCOS6	230	3.95	526268	LUBBCK_STH 3	115	19.89	585280	GEN-2015-092	345	6.07
523959	POTTER_CO 6	230	24.20	526269	LUBBCK_STH 6	230	19.98	585410	GREAT_WESTRN	345	10.03
523961	POTTER_CO 7	345	13.74	526284	PLANTERS 2	69	6.36	585430	PRSIMN_CRK1	345	11.74
523979	HARRNG_EST 6	230	28.17	526297	LUBBCK_EST 2	69	8.12	587020	GEN-2016-003	345	15.55
524010	ROLLHILLS 6	230	21.22	526298	LUBBCK_EST 3	115	15.71	587110	GEN-2016-015	345	7.23
524267	BUSHLAND 6	230	10.05	526299	LUBBCK_EST 6	230	13.86	587230	GEN-2016-037	345	7.73
524296	SPNSPUR_WND7	345	5.99	526310	CLUTTER 2	69	5.48	587370	GEN-2016-056	230	7.99
524415	AMA_SOUTH 6	230	13.88	526337	JONES 6	230	21.99	587420	GEN-2016-062	345	6.22
524622	DEAFSMITH 3	115	12.26	526434	SUNDOWN 3	115	11.66	590001	OKLEHV24	138	4.79
524623	DEAFSMITH 6	230	7.87	526435	SUNDOWN 6	230	11.30	590003	OKLEHV14	138	4.80
524770	PLSNT_HILL 6	230	6.16	526460	AMOCO_SS 6	230	9.88	599891	OKLAUN 7	345	4.04
524875	OASIS 6	230	7.41	526481	SP-WOLF_TP 3	115	11.65	599955	PNM-DC6	230	8.94
524908	ROOSEVELT 3	115	10.35	526524	WOLFFORTH 3	115	11.92				

Table 4-9
Short Circuit Analysis for Study Project ASGI-2016-001 (25SP)

Study Generator ASGI-2016-001											
Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
511456	O.K.U.-7	345	5.44	526213	ALLEN 3	115	10.99	527062	SHELL_CO2 3	115	15.90
522822	LP-NORTHWST2	69	4.61	526236	LP-WHEELOCK3	115	8.76	527068	SHELLC3_TP 3	115	10.56
522823	LP-MILWAKEE6	230	14.69	526243	SP-QUAKER 3	115	9.97	527080	EL_PASO 3	115	15.66
522828	LP-MILWAKEE2	69	8.33	526256	IVORY_TP 2	69	3.95	527096	OXY_DC_WST 2	69	4.50
522832	LP-VICKSBRG2	69	14.14	526267	LUBBCK_STH 2	69	4.38	527099	DC_EAST 2	69	6.09
522853	LP-SLATON 2	69	18.51	526268	LUBBCK_STH 3	115	19.89	527105	SAN_ANDS_TP3	115	16.51
522857	LP-SOUTHEST2	69	24.71	526269	LUBBCK_STH 6	230	19.98	527106	SAN_ANDRES 3	115	11.74
522861	LP-SOUTHEST6	230	17.97	526297	LUBBCK_EST 2	69	8.12	527111	WASSON 2	69	5.96
522866	LP-COOK 2	69	35.18	526298	LUBBCK_EST 3	115	15.71	527117	SW_7814 2	69	3.13
522870	LP-HOLLY 6	230	17.56	526299	LUBBCK_EST 6	230	13.86	527125	DENVER_CTY 2	69	8.63
522884	LP-OLIVER 2	69	13.10	526337	JONES 6	230	21.99	527130	DENVER_N 3	115	20.91
522888	LP-WADSWRTH6	230	12.91	526361	COCHRAN 3	115	7.02	527136	DENVER_S 3	115	20.91
523959	POTTER_CO 6	230	24.20	526416	SLAUGTER_TP2	69	3.17	527146	MUSTANG 3	115	22.49
524267	BUSHLAND 6	230	10.05	526424	PACIFIC 3	115	9.83	527149	MUSTANG 6	230	15.85
524622	DEAFSMITH 3	115	12.26	526434	SUNDOWN 3	115	11.66	527151	GS-MUSTANG 6	230	15.85
524623	DEAFSMITH 6	230	7.87	526435	SUNDOWN 6	230	11.30	527183	JAYBEE 2	69	4.36
524909	ROSEVELT_N 6	230	8.94	526445	AMOCO_TP 3	115	10.97	527189	LG-SEAGRAVE2	69	3.73
524911	ROSEVELT_S 6	230	8.94	526452	AMOCO_CRYO 3	115	6.66	527194	LG-PLSHILL 3	115	7.56
525019	EMU&VLY_TP 3	115	6.45	526460	AMOCO_SS 6	230	9.88	527201	SEAGRAVES 2	69	5.41
525056	BC-EARTH 3	115	9.17	526469	SP-YUMA 2	69	3.09	527202	SEAGRAVES 3	115	8.57
525213	SWISHER 6	230	10.71	526475	YUMA_INT 3	115	11.45	527211	DIAMONDBACK2	69	3.26
525446	SPGLAKE_TP3	115	11.54	526481	SP-WOLF_TP 3	115	11.65	527212	DIAMONDBACK3	115	3.12
525454	HALE_CNTY 3	115	10.34	526483	SP-WOLFORTH3	115	8.97	527217	MOSS 2	69	5.31
525460	NEWHART 3	115	15.29	526484	LG-LEVELAND3	115	9.99	527223	LG-MC&SEMNL2	69	2.59
525461	NEWHART 6	230	11.04	526491	LG-CLAUENE 3	115	9.22	527228	RILEY_TP 2	69	3.99
525480	PLANT_X 3	115	26.92	526499	LG-MEADOW 2	69	3.75	527229	OZRK_MAH02 2	69	1.52
525481	PLANT_X 6	230	24.40	526506	LG-DOCWEBR 2	69	5.02	527235	LG-ASHMORE 2	69	2.47
525524	TOLK_EAST 6	230	29.18	526524	WOLFFORTH 3	115	11.92	527247	CEDARLAKE 2	69	2.83
525531	TOLK_WEST 6	230	29.18	526525	WOLFFORTH 6	230	14.41	527253	ADAIR 2	69	2.62
525543	TOLK_TAP 6	230	29.18	526602	SP-WOODROW 3	115	9.59	527261	SULPHUR 2	69	3.37
525614	W_LITLFLDTP3	115	8.28	526656	LYNN_CNTY 3	115	5.70	527262	SULPHUR 3	115	5.71
525637	LAMB_CNTY 6	230	5.62	526676	GRASSLAND 3	115	6.21	527271	LG-FOSTER 2	69	2.71
525780	FLOYD_CNTY 3	115	6.07	526677	GRASSLAND 6	230	6.62	527275	SEMINOLE 3	115	11.48
525816	TUCO_INT2 2	69	4.70	526679	CIRRUS_WND 6	230	5.13	527276	SEMINOLE 6	230	7.30
525826	TUCO_INT 2	69	7.99	526711	LG-DIXON 2	69	2.52	527284	RUSSELL 3	115	9.11
525828	TUCO_INT 3	115	20.84	526735	TERRY_CNTY 2	69	7.11	527286	XTO_RUSSEL 3	115	10.07
525830	TUCO_INT 6	230	26.11	526736	TERRY_CNTY 3	115	10.98	527291	LE-KCM 2	69	2.63
525832	TUCO_INT 7	345	16.86	526747	LG-BROWNFLD2	69	3.60	527313	MIDAMERI_TP2	69	2.16
525840	ANTELOPE_1 6	230	25.86	526754	BROWNFIELD 2	69	3.08	527362	JOHNSON_DRW3	115	10.63
525926	CROSBY 3	115	4.52	526761	BROWNFLD_TP2	69	2.85	527363	HIGG 3	115	10.24
526020	HOCKLEY 3	115	5.65	526784	AMOCOWASSON6	230	14.06	528433	NEW_NHOBBS 3	115	8.06
526036	LC-OPDYKE 3	115	5.94	526792	PRENTICE 3	115	5.97	528626	LE-PLNSINT 2	69	4.38
526076	STANTON_W 3	115	9.69	526928	PLAINS_INT 3	115	9.93	560021	CRAWFISH_DR6	230	21.84
526109	SP-ERSKINE 3	115	11.92	526934	YOAKUM 3	115	16.92	560022	CRAWFISH_DR7	345	16.96
526130	SP-CARLISLE2	69	2.12	526935	YOAKUM 6	230	18.07	560058	G15-077-TAP	115	8.30
526146	INDIANA 3	115	10.08	526936	YOAKUM_345	345	9.57	560059	G1579&G1580T	230	9.32
526159	CARLISLE 2	69	2.58	526944	LG-PLAINS 3	115	7.98	562480	G13-027-TAP	230	9.38
526160	CARLISLE 3	115	13.98	526993	LG-WELLMAN 2	69	3.07	583340	GEN-2012-020	230	9.58
526161	CARLISLE 6	230	15.30	526999	UNION_TX 2	69	2.38	583810	ASGI2013-006	115	8.97
526162	LP-DOUD_TP 3	115	12.21	527010	OXYBRU_TP 6	230	14.20	583819	ASGI2014-001	115	11.92
526176	LP-DOUD 3	115	9.39	527018	BENNETT 3	115	13.17	584720	ASGI15021602	69	2.16
526184	SW_6878 2	69	2.17	527036	SHELL_C2 3	115	12.83	585060	GEN-2015-068	345	12.70
526192	MURPHY 3	115	11.05	527041	ARCO_TP 3	115	13.08	585120	GEN-2015-075	69	1.55
526199	SP-FRANKFRD3	115	9.94	527047	OXY_WILRD1 3	115	10.51	587370	GEN-2016-056	230	7.99
526205	IVORY 2	69	3.96	527051	ODC_TP 3	115	13.19				

Table 4-10
Short Circuit Analysis for Study Project ASGI-2016-002 (25SP)

Study Generator ASGI-2016-002											
Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
522823	LP-MILWAKEE6	230	14.69	526435	SUNDOWN 6	230	11.30	526934	YOAKUM 3	115	16.92
522861	LP-SOUTHEST6	230	17.97	526460	AMOCO_SS 6	230	9.88	527080	EL_PASO 3	115	15.66
525481	PLANT_X 6	230	24.40	526469	SP-YUMA 2	69	3.09	527125	DENVER_CTY 2	69	8.63
525830	TUCO_INT 6	230	26.11	526475	YUMA_INT 3	115	11.45	527130	DENVER_N 3	115	20.91
526109	SP-ERSKINE 3	115	11.92	526481	SP-WOLF_TP 3	115	11.65	527136	DENVER_S 3	115	20.91
526159	CARLISLE 2	69	2.58	526483	SP-WOLFORTH3	115	8.97	527146	MUSTANG 3	115	22.49
526160	CARLISLE 3	115	13.98	526484	LG-LEVELAND3	115	9.99	527202	SEAGRAVES 3	115	8.57
526161	CARLISLE 6	230	15.30	526491	LG-CLAUENE 3	115	9.22	527212	DIAMONDBACK3	115	3.12
526162	LP-DOUD_TP 3	115	12.21	526506	LG-DOCWEBR 2	69	5.02	527261	SULPHUR 2	69	3.37
526176	LP-DOUD 3	115	9.39	526524	WOLFFORTH 3	115	11.92	527262	SULPHUR 3	115	5.71
526192	MURPHY 3	115	11.05	526525	WOLFFORTH 6	230	14.41	527286	XTO_RUSSEL 3	115	10.07
526268	LUBBCK_STH 3	115	19.89	526735	TERRY_CNTY 2	69	7.11	560058	G15-077-TAP	115	8.30
526269	LUBBCK_STH 6	230	19.98	526736	TERRY_CNTY 3	115	10.98	583810	ASGI2013-006	115	8.97
526337	JONES 6	230	21.99	526747	LG-BROWNFLD2	69	3.60	584720	ASGI15021602	69	2.16
526434	SUNDOWN 3	115	11.66	526792	PRENTICE 3	115	5.97	587370	GEN-2016-056	230	7.99

Table 4-11
Short Circuit Analysis for Study Project ASGI-2016-004 (25SP)

Study Generator ASGI-2016-004											
Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
522800	MU-TULIA 3	115	5.13	524300	HILLSIDE 3	115	12.73	525136	HAPPY_CTY 2	69	2.15
523267	PRINGLE 6	230	4.29	524305	COULTER 2	69	4.28	525143	HAPPY_CTYTP2	69	3.26
523551	HUTCHISON 6	230	7.30	524306	COULTER 3	115	15.50	525153	HAPPY_INT 2	69	3.54
523771	GRAPEVINE 6	230	5.75	524321	GEORGIA 2	69	6.68	525154	HAPPY_INT 3	115	5.41
523959	POTTER_CO 6	230	24.20	524322	GEORGIA 3	115	16.75	525164	SHAMRCK_PMP2	69	2.57
523977	HARRNG_WST 6	230	28.17	524331	PULLMAN 3	115	7.19	525179	TULIA_TP 3	115	6.35
523978	HARRNG_MID 6	230	28.17	524338	SOUTHEAST 3	115	11.19	525191	KRESS_INT 2	69	4.44
523979	HARRNG_EST 6	230	28.17	524345	OSAGE 3	115	13.99	525192	KRESS_INT 3	115	11.29
524007	ROLLHILLS 3	115	19.86	524364	RANDALL 3	115	21.61	525203	SW-KRESS 2	69	4.44
524010	ROLLHILLS 6	230	21.22	524365	RANDALL 6	230	14.79	525212	SWISHER 3	115	10.41
524043	NICHOLS 3	115	31.51	524377	FARMERS 3	115	15.40	525213	SWISHER 6	230	10.71
524044	NICHOLS 6	230	27.20	524388	CROUSE_HIND3	115	15.40	525224	KRESS_RURL 2	69	2.51
524058	WHITAKER 3	115	22.43	524397	ARROWHEAD 3	115	13.82	525225	KRESS_RURAL3	115	6.28
524136	HASTINGS 3	115	13.96	524404	OWENSCORN 3	115	15.09	525257	N_PLAINVEW 3	115	5.11
524149	VANBUREN#2 2	69	6.63	524414	AMA_SOUTH 3	115	16.96	525326	COX 3	115	5.93
524161	EAST_PLANT 2	69	8.91	524415	AMA_SOUTH 6	230	13.88	525414	LAMTON 3	115	7.97
524162	EAST_PLANT 3	115	23.57	524425	ESTACADO_TP3	115	13.44	525453	HALE_CNTY 2	69	6.97
524163	EAST_PLANT 6	230	14.21	524516	CANYON_WEST3	115	5.35	525454	HALE_CNTY 3	115	10.34
524177	VNBUREN_TP 2	69	8.46	524522	CANYON E_TP3	115	5.50	525460	NEWHART 3	115	15.29
524185	PIERCE_TP 3	115	19.47	524523	CANYON_EAST3	115	5.10	525461	NEWHART 6	230	11.04
524192	PIERCE 3	115	13.16	524530	PALO_DURO 3	115	6.77	525480	PLANT_X 3	115	26.92
524209	LAWRENPRK1 2	69	6.55	524544	SPRING_DRW 3	115	6.41	525828	TUCO_INT 3	115	20.84
524216	LAWRENPRK2 2	69	6.55	524590	DAWN 3	115	6.17	560050	G15-031-TAP	230	9.18
524224	MANHATTAN 3	115	18.87	524597	PANDAHFD 3	115	9.12	584640	GEN-2015-022	115	10.41
524256	PUCKETT 3	115	12.84	524746	CASTRO_CNTY3	115	11.78	584750	GEN-2015-031	230	7.80
524282	34TH_ST 3	115	15.26	525124	HART_INDUST3	115	7.65	587570	ASGI1604	115	6.77

Table 4-12
Short Circuit Analysis for Study Project GEN-2016-015 and GEN-2016-062 (25SP)

Study Generator GEN-2016-015 and GEN-2016-062											
Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
515458	BORDER 7	345	12.29	527961	POTASH_JCT 2	69	8.51	528526	TEAGUE 3	115	6.54
525549	TOLK 7	345	12.57	527962	POTASH_JCT 3	115	14.75	528533	DRINKARD_TP3	115	8.48
525832	TUCO_INT 7	345	16.86	527963	POTASH_JCT 6	230	7.03	528589	DRINKARD 3	115	8.79
526460	AMOCO_SS 6	230	9.88	527965	KIOWA 7	345	6.03	528596	CARDINAL 3	115	8.62
526934	YOAKUM 3	115	16.92	527999	INTREPDW_TP3	115	12.76	528602	ANDREWS 3	115	13.61
526935	YOAKUM 6	230	18.07	528025	RDRUNNER 3	115	9.12	528603	NA_ENRICH 3	115	12.72
526936	YOAKUM_345	345	9.57	528027	RDRUNNER 7	345	3.96	528604	ANDREWS 6	345	7.62
527010	OXYBRU_TP 6	230	14.20	528160	CARLSBAD 3	115	11.30	528605	TARGA 3	115	9.55
527149	MUSTANG 6	230	15.85	528182	NORTH_LOVNG3	115	8.65	528610	GAINES_GEN 6	345	6.79
527800	EDDY_SOUTH 6	230	8.00	528185	N_LOVING 7	345	4.69	528611	GAINESGENTP6	345	8.25
527864	CUNNINHAM 3	115	30.12	528223	CHINA_DRAW 7	345	3.79	560021	CRAWFISH_DR6	230	21.84
527865	CUNNINHAM 6	230	17.36	528333	LE-WEST_SUB3	115	8.82	560022	CRAWFISH_DR7	345	16.96
527891	HOBBS_INT 3	115	33.43	528355	MADDOX 3	115	28.26	560059	G1579&G1580T	230	9.32
527894	HOBBS_INT 6	230	18.93	528433	NEW_NHOBBS 3	115	8.06	562480	G13-027-TAP	230	9.38
527896	HOBBS_INT 7	345	10.46	528435	MILLEN 3	115	11.76	585160	G1579&G1580	230	8.84
527930	PCA 3	115	11.32	528498	W_HOBBS 3	115	12.19	587110	GEN-2016-015	345	7.23
527955	SAGE_BRUSH 3	115	5.41	528512	EUNICE 3	115	6.49	587420	GEN-2016-062	345	6.22

Table 4-13
Short Circuit Analysis for Study Project GEN-2016-56 (25SP)

Study Generator GEN-2016-056											
Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
511456	O.K.U.-7	345	5.44	525524	TOLK_EAST 6	230	29.18	526452	AMOCO_CRYO 3	115	6.66
511467	L.E.S.-4	138	23.97	525531	TOLK_WEST 6	230	29.18	526460	AMOCO_SS 6	230	9.88
511468	L.E.S.-7	345	12.69	525543	TOLK_TAP 6	230	29.18	526469	SP-YUMA 2	69	3.09
511553	CHISHOLM7	345	13.08	525549	TOLK 7	345	12.57	526475	YUMA_INT 3	115	11.45
515375	WWRDEHV7	345	20.19	525614	W_LITLFLDTP3	115	8.28	526481	SP-WOLF_TP 3	115	11.65
515458	BORDER 7	345	12.29	525637	LAMB_CNTY 6	230	5.62	526483	SP-WOLFORTH3	115	8.97
515800	GRACMNT7	345	16.43	525724	COUNTYLINE 2	69	2.21	526484	LG-LEVELAND3	115	9.99
522810	LP-ERSKINE 2	69	13.75	525731	SP-ABERNTHY2	69	3.03	526491	LG-CLAUENE 3	115	9.22
522819	LP-NORTHEST2	69	13.14	525738	HALECENTER 2	69	2.47	526506	LG-DOCWEBR 2	69	5.02
522822	LP-NORTHWST2	69	4.61	525745	LH-HALECTR 2	69	2.44	526524	WOLFFORTH 3	115	11.92
522823	LP-MILWAKEE6	230	14.69	525769	BARWISE 2	69	3.77	526525	WOLFFORTH 6	230	14.41
522828	LP-MILWAKEE2	69	8.33	525779	FLOYD_CNTY 2	69	5.33	526562	SLATON 2	69	2.49
522832	LP-VICKSBRG2	69	14.14	525780	FLOYD_CNTY 3	115	6.07	526602	SP-WOODROW 3	115	9.59
522836	LP-THOMPSON2	69	12.78	525790	FLOYDADA_TP2	69	2.50	526656	LYNN_CNTY 3	115	5.70
522840	LP-MCCULLGH2	69	12.91	525811	LH-HARMONY 2	69	4.26	526676	GRASSLAND 3	115	6.21
522844	LP-COOP 2	69	21.31	525816	TUCO_INT2 2	69	4.70	526677	GRASSLAND 6	230	6.62
522849	LP-CHALKER 2	69	13.86	525826	TUCO_INT 2	69	7.99	526679	CIRRUS_WND 6	230	5.13
522853	LP-SLATON 2	69	18.51	525828	TUCO_INT 3	115	20.84	526694	GRAHAM 3	115	2.70
522857	LP-SOUTHEST2	69	24.71	525830	TUCO_INT 6	230	26.11	526735	TERRY_CNTY 2	69	7.11
522861	LP-SOUTHEST6	230	17.97	525832	TUCO_INT 7	345	16.86	526736	TERRY_CNTY 3	115	10.98
522866	LP-COOK 2	69	35.18	525840	ANTELOPE_1 6	230	25.86	526747	LG-BROWNFLD2	69	3.60
522870	LP-HOLLY 6	230	17.56	525853	LH-WIL&ELLN2	69	2.59	526792	PRENTICE 3	115	5.97
522875	LP-BRANDON 2	69	12.54	525860	SP-BECTON 2	69	2.29	526934	YOAKUM 3	115	16.92
522879	LP-WADSWRTH2	69	22.91	525885	SP-NEWDEAL 2	69	3.40	526935	YOAKUM 6	230	18.07
522884	LP-OLIVER 2	69	13.10	525892	WHITE&MONRO2	69	2.56	526936	YOAKUM_345	345	9.57
522888	LP-WADSWRTH6	230	12.91	525925	CROSBY 2	69	4.79	527010	OXYBRU_TP 6	230	14.20
523959	POTTER_CO 6	230	24.20	525926	CROSBY 3	115	4.52	527080	EL_PASO 3	115	15.66
523961	POTTER_CO 7	345	13.74	526020	HOCKLEY 3	115	5.65	527125	DENVER_CTY 2	69	8.63
524267	BUSHLAND 6	230	10.05	526036	LC-OPDYKE 3	115	5.94	527130	DENVER_N 3	115	20.91
524415	AMA_SOUTH 6	230	13.88	526076	STANTON_W 3	115	9.69	527136	DENVER_S 3	115	20.91
524622	DEAFSMITH 3	115	12.26	526109	SP-ERSKINE 3	115	11.92	527146	MUSTANG 3	115	22.49
524623	DEAFSMITH 6	230	7.87	526130	SP-CARLISLE2	69	2.12	527149	MUSTANG 6	230	15.85
524770	PLSNT_HILL 6	230	6.16	526146	INDIANA 3	115	10.08	527202	SEAGRAVES 3	115	8.57
524875	OASIS 6	230	7.41	526159	CARLISLE 2	69	2.58	527212	DIAMONDBACK3	115	3.12
524908	ROOSEVELT 3	115	10.35	526160	CARLISLE 3	115	13.98	527261	SULPHUR 2	69	3.37
524909	ROSEVELT_N 6	230	8.94	526161	CARLISLE 6	230	15.30	527262	SULPHUR 3	115	5.71
524911	ROSEVELT_S 6	230	8.94	526162	LP-DOUD_TP 3	115	12.21	527286	XTO_RUSSEL 3	115	10.07
524915	SW_4K33 6	230	8.94	526176	LP-DOUD 3	115	9.39	527656	CROSSROADS 7	345	6.61
525019	EMU&VLY_TP 3	115	6.45	526184	SW_6878 2	69	2.17	527896	HOBBS_INT 7	345	10.46
525056	BC-EARTH 3	115	9.17	526192	MURPHY 3	115	11.05	560013	G14-057T	345	9.65
525124	HART_INDUST3	115	7.65	526199	SP-FRANKFRD3	115	9.94	560021	CRAWFISH_DR6	230	21.84
525179	TULIA_TP 3	115	6.35	526205	IVORY 2	69	3.96	560022	CRAWFISH_DR7	345	16.96
525191	KRESS_INT 2	69	4.44	526213	ALLEN 3	115	10.99	560050	G15-031-TAP	230	9.18
525192	KRESS_INT 3	115	11.29	526221	BATTON_N 2	69	1.78	560058	G15-077-TAP	115	8.30
525212	SWISHER 3	115	10.41	526228	BATTON_S 2	69	2.73	560059	G1579&G1580T	230	9.32
525213	SWISHER 6	230	10.71	526236	LP-WHEELOCK3	115	8.76	562004	G11-025-TAP	115	4.63
525225	KRESS_RURAL3	115	6.28	526243	SP-QUAKER 3	115	9.97	562480	G13-027-TAP	230	9.38
525272	KISER 3	115	5.12	526256	IVORY_TP 2	69	3.95	581137	GEN-2011-025	115	4.63
525291	PLAINVW_TP 2	69	6.53	526267	LUBBCK_STH 2	69	4.38	583090	G1149&G1504	345	9.70
525298	S_PLAINVEW 2	69	2.59	526268	LUBBCK_STH 3	115	19.89	583340	GEN-2012-020	230	9.58
525325	COX 2	69	3.37	526269	LUBBCK_STH 6	230	19.98	583810	ASGI2013-006	115	8.97
525326	COX 3	115	5.93	526284	PLANTERS 2	69	6.36	583819	ASGI2014-001	115	11.92
525413	LAMTON 2	69	5.27	526297	LUBBCK_EST 2	69	8.12	584640	GEN-2015-022	115	10.41
525414	LAMTON 3	115	7.97	526298	LUBBCK_EST 3	115	15.71	584720	ASGI15021602	69	2.16
525432	SP-HALFWAY 2	69	5.90	526299	LUBBCK_EST 6	230	13.86	584750	GEN-2015-031	230	7.80
525440	LC-S_OLTON 3	115	7.68	526310	CLUTTER 2	69	5.48	585060	GEN-2015-068	345	12.70
525446	SPGLAKE_TP3	115	11.54	526337	JONES 6	230	21.99	585120	GEN-2015-075	69	1.55
525453	HALE_CNTY 2	69	6.97	526361	COCHRAN 3	115	7.02	587370	GEN-2016-056	230	7.99
525454	HALE_CNTY 3	115	10.34	526424	PACIFIC 3	115	9.83	590001	OKLEHV24	138	4.79
525460	NEWHART 3	115	15.29	526434	SUNDOWN 3	115	11.66	590003	OKLEHV14	138	4.80
525461	NEWHART 6	230	11.04	526435	SUNDOWN 6	230	11.30	599891	OKLAUN 7	345	4.04
525480	PLANT_X 3	115	26.92	526445	AMOCO_TP 3	115	10.97	599955	PNM-DC6	230	8.94
525481	PLANT_X 6	230	24.40								

Table 4-14
Short Circuit Analysis for Study Project GEN-2016-069 (25SP)

Study Generator GEN-2016-069											
Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
524768	PLSNT_HILL 3	115	9.92	527541	CAPITAN 3	115	4.47	527865	CUNNINHAM 6	230	17.36
524770	PLSNT_HILL 6	230	6.16	527546	SAMSON 3	115	5.10	527894	HOBBS_INT 6	230	18.93
524797	PERIMETER 3	115	6.35	527552	RIAC 2	115	4.56	527963	POTASH_JCT 6	230	7.03
524863	FE-CHZPLT 3	115	7.70	527563	ROSWLL_INT 2	69	3.55	528070	CV-AZMESA 3	115	7.43
524874	OASIS 3	115	9.61	527564	ROSWLL_INT 3	115	5.33	528094	7-RIVERS 3	115	8.27
524875	OASIS 6	230	7.41	527575	SW_4702 2	69	3.23	528095	7-RIVERS 6	230	6.11
524885	SN_JUAN_TAP6	230	4.71	527589	CV-ORCHARD 2	69	2.01	528132	OCOTILLO 3	115	6.19
524889	SN_JUAN_WND6	230	4.51	527596	RIACTWTY_TP3	115	5.10	528137	N_CANAL 3	115	8.72
524909	ROSEVELT_N 6	230	8.94	527597	TWEEDY 3	115	4.96	528160	CARLSBAD 3	115	11.30
524911	ROSEVELT_S 6	230	8.94	527656	CROSSROADS 7	345	6.61	528178	PECOS 3	115	11.92
524915	SW_4K33 6	230	8.94	527711	EAGLE_CREEK3	115	7.32	528179	PECOS 6	230	6.47
524924	PORTALES 3	115	7.26	527786	ATOKA 3	115	7.05	528226	HOPI_SUB 3	115	6.74
525549	TOLK 7	345	12.57	527793	EDDY_STH 3	115	11.17	577103	GEN-2008-022	345	6.13
527482	CHAVES_CNTY3	115	6.36	527798	EDDY_NTH 3	115	11.17	583950	GEN-2014-033	115	6.30
527483	CHAVES_CNTY6	230	4.12	527799	EDDY_NORTH 6	230	8.00	583960	G14034G14035	115	6.02
527501	URTON 3	115	5.37	527800	EDDY_SOUTH 6	230	8.00	584260	GEN-2014-047	345	5.12
527508	PRICE 3	115	4.99	527802	EDDY_CNTY 7	345	4.46	584620	GEN-2015-020	115	9.37
527515	CV-PINE 3	115	4.63	527809	CV-8_MILE 3	115	5.30	584940	GEN-2015-056	345	5.68
527522	ROSWELL_CTY3	115	5.11	527821	CV-DAYTON 3	115	6.96	587470	GEN-2016-069	115	6.16
527529	RIACBRSH_TP3	115	4.96	527864	CUNNINHAM 3	115	30.12	599960	EPTNP-D6	230	8.00
527536	BRASHER 3	115	4.81								

SECTION 5: POWER FACTOR ANALYSIS

The objective of this task is to quantify the power factor at the point of interconnection for the wind farms during base case and system contingencies. SPP transmission planning practice requires interconnecting generation projects to maintain the power factor (pf) at the POI within +/- 0.95 pf for system intact conditions and for post-contingency conditions. This is analyzed by having the wind farm maintain a prescribed voltage schedule at the POI of 1.0 p.u. voltage.

The 2016 Winter Peak, 2017 Summer Peak, 2020 Summer Peak, 2020 Winter Peak, and 2025 Summer Peak power flows provided by SPP were examined prior to the Power Factor Analysis to ensure they contained the proposed study project modeled at 100% of the nameplate rating and any previously queued projects listed in Table 2-2. There was no suspect power flow data in the study area. The proposed study project and any previously queued projects at the same point of interconnection were turned off during the power factor analysis. The wind farm(s) were then replaced by a generator modeled at the high side bus with the same real power (MW) capability as the wind farm(s) and open limits for the reactive power set points (Mvar). The generator was set to hold the POI scheduled bus voltage. All N-1, three-phase fault contingencies from Table 2-3 were then applied and the reactive power required to maintain the bus voltage was recorded.

5.1 Approach

The upgrades that were identified in the Stability Analysis were implemented to each power case for the power factor analysis. Refer to Section 3 for the necessary upgrades and Table 5-1 for the scheduled voltage each study generator was set to hold at the point of interconnection for each season.

ASGI-2016-001 and ASGI-2013-006 were disabled and two generators were placed at the study project's high side bus. The ASGI-2016-001 generator was modeled with PGEN = 2.5 MW, QMin = -9999 Mvar, and QMax = 9999 Mvar. The ASGI-2013-006 generator was modeled with PGEN = 2.0 MW, QMin = -9999 Mvar, and QMax = 9999 Mvar. All buses and transformers connected from the study project's high side bus to the generator was disabled.

ASGI-2016-002 was disabled and a generator was placed at the study project's high side bus. The generator was modeled with PGEN = 2.53 MW, QMin = -9999 Mvar, and QMax = 9999 Mvar. All buses and transformers connected from the study project's high side bus to the generator was disabled.

ASGI-2016-004 was disabled and a generator was placed at the study project's high side bus. The generator was modeled with PGEN = 10 MW, QMin = -9999 Mvar, and QMax = 9999 Mvar. All buses and transformers connected from the study project's high side bus to the generator was disabled.
GEN-2016-015 and GEN-2016-062 were disabled in the power flow case. A generator was placed at the high side bus of GEN-2016-015 and modeled with PGEN = 100 MW, Qmin = -9999 Mvar, and Qmax = 9999 Mvar. A second generator was placed at the high side bus of GEN-2016-062 and modeled with PGEN = 250.7 MW, Qmin = -9999 Mvar, and Qmax = 9999 Mvar All buses and transformers connected from the study project's high side bus to the generator was disabled. Separate power factor analysis was performed for both study generators.

GEN-2016-056 was disabled and a generator was placed at the study project's high side bus. The generator was modeled with PGEN = 200 MW, QMin = -9999 Mvar, and QMax = 9999 Mvar. All buses and transformers connected from the study project's high side bus to the generator was disabled.

GEN-2016-069, GEN-2014-033, GEN-2014-035, and GEN-2014-034 were all disabled in the power flow case. A generator was placed at the high side bus of GEN-2016-069 and was modeled with PGEN = 31.35 MW, QMin = -9999 Mvar, and QMax = 9999 Mvar. A second generator was placed at the high side bus of GEN-2014-033 and modeled with PGEN = 70 MW, Qmin = -9999 Mvar, Qmax = 9999 Mvar. A third generator was placed at the high side bus of GEN-2014-035 and modeled with PGEN = 30 MW, Qmin = -9999 Mvar, Qmax = 9999 Mvar. A fourth generator was placed at the high side bus of GEN-2014-034 and modeled with PGEN = 70 MW, Qmin = -

9999 Mvar, Qmax = 9999 Mvar. All buses and transformers connected from the study project's high side bus to the generator was disabled.

Table 5-1
Voltage Schedule of All Study Generators for All Seasons

Point of Interconnection Voltage (p.u.)					
Request	**16WP**	**17SP**	**20SP**	**20WP**	**25SP**
ASGI-2016-001	1.0365	1.0168	1.0051	1.0174	1.0102
ASGI-2016-002	1.0355	1.0345	1.0293	1.0282	1.0245
ASGI-2016-004	1.0104	1.0000	1.0000	1.0090	1.0102
GEN-2016-015	1.0014	1.0000	1.0001	1.0053	1.0138
GEN-2016-056	1.0000	1.0000	1.0009	1.0011	1.0000
GEN-2016-062	1.0014	1.0000	1.0001	1.0053	1.0138
GEN-2016-069	1.0140	1.0108	1.0140	1.0201	1.0119

5.2 Power Factor Analysis Results

The power factor was calculated for the 2016 Winter Peak, 2017 Summer Peak, 2020 Summer Peak, 2020 Winter Peak, and 2025 Summer Peak condition. The following tables show the power factor results for the study generators:

- Table 5-2: Power Factor Analysis for ASGI-2016-001
- Table 5-3: Power Factor Analysis for ASGI-2015-002
- Table 5-4: Power Factor Analysis for ASGI-2016-004
- Table 5-5: Power Factor Analysis for GEN-2016-015
- Table 5-6: Power Factor Analysis for GEN-2016-056
- Table 5-7: Power Factor Analysis for GEN-2016-062
- Table 5-8: Power Factor Analysis for GEN-2016-069

Note that a positive Q (Mvar) output illustrates that the generator is absorbing reactive power from the system, implying a leading power factor; a negative Q (Mvar) illustrates that the generator is supplying reactive power to the system, implying a lagging power factor.

Table 5-2
Power Factor Analysis: ASGI-2016-001

Cont. No.	Case	2016 Winter Peak			2017 Summer Peak			2020 Summer Peak			2020 Winter Peak			2025 Summer Peak		
		Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)
0	Base	0.968	Leading	0.65	0.982	Leading	0.48	0.990	Leading	0.35	0.987	Leading	0.41	0.988	Leading	0.40
20	FLT20-3PH	0.969	Leading	0.63	0.982	Leading	0.48	0.990	Leading	0.35	0.987	Leading	0.40	0.988	Leading	0.40
21	FLT21-3PH	0.537	Lagging	-3.93	0.763	Lagging	-2.12	0.936	Lagging	-0.94	0.882	Lagging	-1.33	0.985	Leading	0.44
22	FLT22-3PH	0.981	Lagging	-0.49	0.968	Lagging	-0.64	0.994	Lagging	-0.27	0.990	Lagging	-0.35	0.983	Leading	0.46
23	FLT23-3PH	0.884	Leading	1.32	0.895	Leading	1.24	0.938	Leading	0.92	0.914	Leading	1.11	0.985	Leading	0.44
24	FLT24-3PH	1.000	Leading	0.05	0.679	Lagging	-2.70	0.606	Lagging	-3.28	0.840	Lagging	-1.61	0.996	Lagging	-0.23
37	FLT37-3PH	0.964	Lagging	-0.69	0.531	Lagging	-3.99	0.987	Lagging	-0.41	0.959	Lagging	-0.74	0.994	Leading	0.27
39	FLT39-3PH	0.969	Leading	0.64	0.979	Lagging	-0.52	0.998	Leading	0.14	0.995	Leading	0.26	0.990	Leading	0.35
40	FLT40-3PH	0.999	Leading	0.10	0.999	Leading	0.12	0.986	Lagging	-0.42	0.998	Lagging	-0.14	0.992	Leading	0.33
41	FLT41-3PH	0.969	Leading	0.64	0.989	Lagging	-0.37	0.999	Leading	0.13	0.995	Leading	0.25	0.991	Leading	0.34
42	FLT42-3PH	0.654	Lagging	-2.89	0.999	Leading	0.10	0.658	Lagging	-2.86	0.699	Lagging	-2.56	0.611	Lagging	-3.24
43	FLT43-3PH	0.975	Leading	0.56	0.654	Lagging	-2.90	0.984	Leading	0.46	0.972	Leading	0.60	0.984	Leading	0.46
57	FLT57-3PH	0.971	Leading	0.61	0.967	Leading	0.66	0.994	Leading	0.28	0.991	Leading	0.35	0.994	Leading	0.27
60	FLT60-3PH	0.995	Leading	0.26	0.991	Leading	0.33	1.000	Lagging	-0.07	1.000	Lagging	-0.06	0.963	Lagging	-0.70
65	FLT65-3PH	0.912	Lagging	-1.12	0.974	Lagging	-0.58	0.550	Lagging	-3.80	0.798	Lagging	-1.89	0.623	Lagging	-3.14
73	FLT73-3PH	0.960	Leading	0.73	0.603	Lagging	-3.31	0.988	Leading	0.39	0.987	Leading	0.41	0.987	Leading	0.40
74	FLT74-3PH	0.981	Lagging	-0.49	0.976	Leading	0.56	0.994	Lagging	-0.27	0.990	Lagging	-0.35	0.983	Leading	0.46
75	FLT75-3PH	0.955	Leading	0.77	0.968	Lagging	-0.64	0.989	Leading	0.37	0.979	Leading	0.52	0.993	Leading	0.29
76	FLT76-3PH	0.997	Leading	0.19	0.983	Leading	0.47	0.943	Lagging	-0.88	0.999	Lagging	-0.11	0.616	Lagging	-3.19
84	FLT84-3PH	0.593	Lagging	-3.39	0.912	Lagging	-1.12	0.259	Lagging	-9.34	0.466	Lagging	-4.75	0.174	Lagging	-14.17
85	FLT85-3PH	0.439	Leading	5.12	0.262	Lagging	-9.20	0.423	Leading	5.36	0.598	Leading	3.35	0.347	Leading	6.77
86	FLT86-3PH	0.257	Lagging	-9.41	0.397	Leading	5.78	0.158	Lagging	-15.59	0.277	Lagging	-8.68	0.111	Lagging	-22.36
87	FLT87-3PH	0.830	Leading	1.68	0.160	Lagging	-15.44	0.928	Leading	1.01	0.869	Leading	1.43	0.970	Leading	0.63
88	FLT88-3PH	0.982	Leading	0.48	0.919	Leading	1.08	0.999	Leading	0.12	0.994	Leading	0.26	0.993	Leading	0.29
89	FLT89-3PH	0.919	Leading	1.07	0.993	Leading	0.30	0.905	Leading	1.18	0.960	Leading	0.73	0.889	Leading	1.29
90	FLT90-3PH	0.980	Leading	0.50	0.922	Leading	1.05	0.998	Leading	0.14	0.993	Leading	0.29	0.992	Leading	0.31
91	FLT91-3PH	0.973	Leading	0.60	0.992	Leading	0.32	0.999	Leading	0.12	0.989	Leading	0.38	0.999	Leading	0.08
92	FLT92-3PH	0.369	Leading	6.30	0.998	Leading	0.18	0.370	Leading	6.28	0.386	Leading	5.98	0.449	Leading	4.98
93	FLT93-3PH	0.914	Leading	1.11	0.439	Leading	5.11	0.655	Leading	2.88	0.924	Leading	1.03	0.687	Leading	2.64
94	FLT94-3PH	0.401	Lagging	-5.71	0.679	Leading	2.70	0.435	Lagging	-5.17	0.925	Lagging	-1.03	0.426	Lagging	-5.31
95	FLT95-3PH	0.968	Leading	0.65	0.408	Lagging	-5.60	0.998	Lagging	-0.16	0.999	Lagging	-0.09	0.984	Lagging	-0.45
100	FLT100-3PH	0.329	Lagging	-7.18	0.920	Leading	1.06	0.249	Lagging	-9.74	0.299	Lagging	-7.98	0.273	Lagging	-8.80
101	FLT101-3PH	0.968	Leading	0.65	0.297	Lagging	-8.05	0.990	Leading	0.35	0.987	Leading	0.41	0.988	Leading	0.40
104	FLT104-3PH	0.994	Leading	0.28	0.982	Leading	0.48	0.991	Leading	0.34	0.999	Leading	0.11	0.988	Leading	0.39
105	FLT105-3PH	0.992	Leading	0.32	0.982	Leading	0.48	0.996	Leading	0.21	0.998	Leading	0.17	0.994	Leading	0.27
106	FLT106-3PH	0.968	Leading	0.64	0.992	Leading	0.32	0.991	Leading	0.34	0.987	Leading	0.40	0.988	Leading	0.39
107	FLT107-3PH	0.995	Leading	0.26	0.983	Leading	0.46	0.991	Leading	0.33	0.999	Leading	0.10	0.987	Leading	0.41
108	FLT108-3PH	0.970	Leading	0.63	0.980	Leading	0.50	0.991	Leading	0.35	0.987	Leading	0.40	0.987	Leading	0.41
109	FLT109-3PH	0.994	Leading	0.28	0.982	Leading	0.48	0.996	Leading	0.22	0.998	Leading	0.14	0.994	Leading	0.28
110	FLT110-3PH	0.992	Leading	0.32	0.992	Leading	0.32	0.996	Leading	0.21	0.998	Leading	0.17	0.994	Leading	0.27
111	FLT111-3PH	0.969	Leading	0.64	0.992	Leading	0.32	0.991	Leading	0.35	0.988	Leading	0.40	0.987	Leading	0.40
117	FLT117-3PH	0.978	Leading	0.54	0.983	Leading	0.47	0.994	Leading	0.28	0.993	Leading	0.30	0.987	Leading	0.40
118	FLT118-3PH	0.973	Leading	0.60	0.987	Leading	0.40	0.993	Leading	0.30	0.990	Leading	0.36	0.988	Leading	0.39
119	FLT119-3PH	0.969	Leading	0.64	0.986	Leading	0.42	0.991	Leading	0.35	0.988	Leading	0.40	0.987	Leading	0.41
120	FLT120-3PH	0.980	Leading	0.51	0.983	Leading	0.47	0.993	Leading	0.31	0.995	Leading	0.26	0.988	Leading	0.40
121	FLT121-3PH	0.967	Leading	0.66	0.985	Leading	0.43	0.990	Leading	0.36	0.985	Leading	0.43	0.988	Leading	0.38
126	FLT126-3PH	0.968	Leading	0.65	0.982	Leading	0.48	0.990	Leading	0.35	0.987	Leading	0.41	0.988	Leading	0.40
127	FLT127-3PH	0.970	Leading	0.63	0.982	Leading	0.48	0.985	Leading	0.43	0.988	Leading	0.39	0.988	Leading	0.40
128	FLT128-3PH	0.993	Leading	0.31	0.983	Leading	0.47	1.000	Leading	0.07	0.998	Leading	0.15	1.000	Lagging	-0.07
129	FLT129-3PH	0.970	Leading	0.63	1.000	Leading	0.07	0.993	Leading	0.30	0.993	Leading	0.31	0.987	Leading	0.40
130	FLT130-3PH	0.967	Leading	0.66	0.993	Leading	0.30	0.988	Leading	0.39	0.986	Leading	0.43	0.986	Leading	0.42
131	FLT131-3PH	0.967	Leading	0.66	0.981	Leading	0.50	0.985	Leading	0.43	0.979	Leading	0.52	0.984	Leading	0.45
132	FLT132-3PH	1.000	Lagging	-0.01	0.961	Leading	0.72	1.000	Leading	0.07	1.000	Leading	0.00	0.997	Lagging	-0.20
133	FLT133-3PH	0.967	Leading	0.66	0.995	Lagging	-0.26	0.998	Leading	0.15	0.991	Leading	0.33	0.992	Leading	0.32
157	FLT157-3PH	0.148	Lagging	-16.75	0.995	Leading	0.24	0.281	Lagging	-8.53	0.364	Lagging	-6.39	0.131	Lagging	-18.95
158	FLT158-3PH	0.997	Leading	0.19	0.230	Lagging	-10.58	0.943	Lagging	-0.88	0.999	Lagging	-0.11	0.616	Lagging	-3.19
159	FLT159-3PH	0.749	Leading	2.21	0.912	Lagging	-1.12	0.721	Leading	2.40	0.643	Leading	2.98	0.772	Leading	2.06
168	FLT168-3PH	0.968	Leading	0.65	0.636	Leading	3.04	0.990	Leading	0.35	0.987	Leading	0.41	0.988	Leading	0.40
169	FLT169-3PH	0.964	Lagging	-0.69	0.982	Leading	0.48	0.941	Lagging	-0.90	0.942	Lagging	-0.89	0.992	Lagging	-0.32
170	FLT170-3PH	0.999	Leading	0.09	0.926	Lagging	-1.02	0.960	Lagging	-0.73	0.996	Lagging	-0.22	0.928	Lagging	-1.00
184	FLT184-3PH	0.968	Leading	0.65	1.000	Leading	0.03	0.990	Leading	0.36	0.987	Leading	0.41	0.988	Leading	0.40
185	FLT185-3PH	0.968	Leading	0.65	0.982	Leading	0.48	0.991	Leading	0.34	0.987	Leading	0.40	0.988	Leading	0.40
186	FLT186-3PH	0.968	Leading	0.65	0.982	Leading	0.48	0.990	Leading	0.36	0.987	Leading	0.41	0.988	Leading	0.40
187	FLT187-3PH	0.968	Leading	0.64	0.982	Leading	0.48	0.990	Leading	0.35	0.987	Leading	0.41	0.988	Leading	0.40
188	FLT188-3PH	0.966	Leading	0.67	0.982	Leading	0.48	0.982	Leading	0.48	0.978	Leading	0.53	0.984	Leading	0.45
189	FLT189-3PH	0.964	Leading	0.69	0.967	Leading	0.66	0.984	Leading	0.46	0.978	Leading	0.54	0.986	Leading	0.42
190	FLT190-3PH	0.968	Leading	0.65	0.969	Leading	0.64	0.990	Leading	0.35	0.987	Leading	0.41	0.988	Leading	0.40

Study Generator ASGI-2016-001

The Power Factor Analysis shows that ASGI-2016-001 has a power factor range of the following:

- 2016 Winter Peak: 0.369 leading to 0.148 lagging
- 2017 Summer Peak: 0.397 leading to 0.160 lagging
- 2020 Summer Peak: 0.370 leading to 0.158 lagging
- 2020 Winter Peak: 0.386 leading to 0.277 lagging
- 2025 Summer Peak: 0.347 leading to 0.111 lagging

Table 5-3
Power Factor Analysis: ASGI-2016-002

Cont. No.	Case	2016 Winter Peak			2017 Summer Peak			2020 Summer Peak			2020 Winter Peak			2025 Summer Peak		
		Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)
0	Base	0.962	Leading	0.72	0.964	Leading	0.70	0.967	Leading	0.66	0.969	Leading	0.64	0.971	Leading	0.62
20	FLT20-3PH	0.962	Leading	0.72	0.964	Leading	0.70	0.967	Leading	0.66	0.969	Leading	0.64	0.971	Leading	0.62
21	FLT21-3PH	1.000	Lagging	-0.02	0.994	Leading	0.29	0.984	Leading	0.46	0.990	Leading	0.37	0.970	Leading	0.63
22	FLT22-3PH	0.978	Leading	0.54	0.979	Leading	0.52	0.976	Leading	0.57	0.979	Leading	0.52	0.970	Leading	0.63
23	FLT23-3PH	0.951	Leading	0.83	0.951	Leading	0.82	0.958	Leading	0.75	0.959	Leading	0.75	0.970	Leading	0.63
24	FLT24-3PH	0.971	Leading	0.63	0.998	Leading	0.16	1.000	Leading	0.06	0.993	Leading	0.30	0.980	Leading	0.52
37	FLT37-3PH	0.981	Leading	0.51	0.978	Leading	0.54	0.978	Leading	0.55	0.984	Leading	0.46	0.973	Leading	0.60
39	FLT39-3PH	0.962	Leading	0.72	0.969	Leading	0.64	0.970	Leading	0.63	0.972	Leading	0.62	0.972	Leading	0.62
40	FLT40-3PH	0.970	Leading	0.63	0.976	Leading	0.56	0.978	Leading	0.54	0.977	Leading	0.55	0.972	Leading	0.61
41	FLT41-3PH	0.962	Leading	0.72	0.970	Leading	0.64	0.971	Leading	0.63	0.972	Leading	0.61	0.972	Leading	0.61
42	FLT42-3PH	0.999	Leading	0.09	0.999	Leading	0.13	0.999	Leading	0.13	0.998	Leading	0.14	1.000	Leading	0.02
43	FLT43-3PH	0.963	Leading	0.71	0.960	Leading	0.73	0.966	Leading	0.68	0.967	Leading	0.67	0.970	Leading	0.63
57	FLT57-3PH	0.962	Leading	0.71	0.966	Leading	0.68	0.968	Leading	0.65	0.970	Leading	0.63	0.973	Leading	0.60
60	FLT60-3PH	0.968	Leading	0.65	0.980	Leading	0.52	0.974	Leading	0.59	0.976	Leading	0.56	0.985	Leading	0.44
65	FLT65-3PH	0.987	Leading	0.41	1.000	Leading	0.05	1.000	Lagging	-0.03	0.995	Leading	0.25	1.000	Leading	0.04
73	FLT73-3PH	0.960	Leading	0.73	0.962	Leading	0.72	0.967	Leading	0.67	0.969	Leading	0.64	0.971	Leading	0.63
74	FLT74-3PH	0.978	Leading	0.54	0.979	Leading	0.52	0.976	Leading	0.57	0.979	Leading	0.52	0.970	Leading	0.63
75	FLT75-3PH	0.960	Leading	0.74	0.964	Leading	0.70	0.967	Leading	0.66	0.968	Leading	0.66	0.972	Leading	0.61
76	FLT76-3PH	0.970	Leading	0.63	0.985	Leading	0.44	0.983	Leading	0.47	0.977	Leading	0.56	1.000	Leading	0.05
84	FLT84-3PH	0.996	Lagging	-0.24	0.858	Lagging	-1.52	0.858	Lagging	-1.51	0.978	Lagging	-0.54	0.692	Lagging	-2.64
85	FLT85-3PH	0.902	Leading	1.21	0.832	Leading	1.69	0.850	Leading	1.57	0.907	Leading	1.18	0.819	Leading	1.78
86	FLT86-3PH	0.886	Lagging	-1.32	0.716	Lagging	-2.46	0.719	Lagging	-2.44	0.910	Lagging	-1.15	0.552	Lagging	-3.82
87	FLT87-3PH	0.941	Leading	0.91	0.953	Leading	0.81	0.956	Leading	0.78	0.952	Leading	0.81	0.967	Leading	0.66
88	FLT88-3PH	0.965	Leading	0.69	0.967	Leading	0.67	0.971	Leading	0.62	0.972	Leading	0.62	0.973	Leading	0.61
89	FLT89-3PH	0.954	Leading	0.80	0.953	Leading	0.80	0.953	Leading	0.80	0.964	Leading	0.69	0.956	Leading	0.77
90	FLT90-3PH	0.964	Leading	0.69	0.966	Leading	0.67	0.971	Leading	0.63	0.971	Leading	0.62	0.972	Leading	0.61
91	FLT91-3PH	0.963	Leading	0.71	0.969	Leading	0.65	0.971	Leading	0.62	0.970	Leading	0.63	0.975	Leading	0.57
92	FLT92-3PH	0.949	Lagging	-0.84	0.959	Lagging	-0.75	0.913	Lagging	-1.13	0.928	Lagging	-1.02	0.963	Lagging	-0.71
93	FLT93-3PH	0.953	Leading	0.80	0.921	Leading	1.07	0.921	Leading	1.07	0.960	Leading	0.74	0.932	Leading	0.99
94	FLT94-3PH	0.984	Lagging	-0.46	0.990	Lagging	-0.36	0.994	Lagging	-0.27	0.988	Leading	0.40	0.991	Lagging	-0.34
95	FLT95-3PH	0.962	Leading	0.72	0.959	Leading	0.74	0.978	Leading	0.54	0.979	Leading	0.53	0.985	Leading	0.44
100	FLT100-3PH	0.863	Lagging	-1.48	0.840	Lagging	-1.63	0.777	Lagging	-2.05	0.840	Lagging	-1.63	0.804	Lagging	-1.87
101	FLT101-3PH	0.924	Leading	1.04	0.907	Leading	1.17	0.912	Leading	1.14	0.935	Leading	0.96	0.901	Leading	1.22
104	FLT104-3PH	0.967	Leading	0.66	0.964	Leading	0.70	0.967	Leading	0.66	0.973	Leading	0.59	0.971	Leading	0.62
105	FLT105-3PH	0.967	Leading	0.67	0.966	Leading	0.68	0.969	Leading	0.64	0.973	Leading	0.60	0.973	Leading	0.60
106	FLT106-3PH	0.962	Leading	0.72	0.964	Leading	0.70	0.968	Leading	0.66	0.970	Leading	0.64	0.971	Leading	0.62
107	FLT107-3PH	0.968	Leading	0.66	0.964	Leading	0.70	0.968	Leading	0.66	0.974	Leading	0.59	0.971	Leading	0.63
108	FLT108-3PH	0.962	Leading	0.72	0.964	Leading	0.70	0.967	Leading	0.66	0.970	Leading	0.64	0.971	Leading	0.63
109	FLT109-3PH	0.968	Leading	0.66	0.966	Leading	0.68	0.969	Leading	0.64	0.973	Leading	0.60	0.973	Leading	0.61
110	FLT110-3PH	0.967	Leading	0.67	0.966	Leading	0.68	0.969	Leading	0.64	0.973	Leading	0.60	0.973	Leading	0.60
111	FLT111-3PH	0.962	Leading	0.72	0.964	Leading	0.70	0.967	Leading	0.66	0.970	Leading	0.64	0.971	Leading	0.62
117	FLT117-3PH	0.964	Leading	0.70	0.965	Leading	0.69	0.968	Leading	0.65	0.971	Leading	0.62	0.971	Leading	0.62
118	FLT118-3PH	0.963	Leading	0.71	0.965	Leading	0.69	0.968	Leading	0.65	0.970	Leading	0.63	0.971	Leading	0.62
119	FLT119-3PH	0.962	Leading	0.72	0.964	Leading	0.70	0.967	Leading	0.66	0.970	Leading	0.64	0.971	Leading	0.63
120	FLT120-3PH	0.964	Leading	0.70	0.964	Leading	0.69	0.968	Leading	0.66	0.972	Leading	0.62	0.971	Leading	0.62
121	FLT121-3PH	0.962	Leading	0.72	0.963	Leading	0.71	0.967	Leading	0.66	0.969	Leading	0.64	0.971	Leading	0.62
126	FLT126-3PH	0.962	Leading	0.72	0.964	Leading	0.70	0.967	Leading	0.66	0.969	Leading	0.64	0.971	Leading	0.62
127	FLT127-3PH	0.962	Leading	0.72	0.963	Leading	0.70	0.966	Leading	0.68	0.970	Leading	0.64	0.971	Leading	0.62
128	FLT128-3PH	0.968	Leading	0.66	0.970	Leading	0.63	0.972	Leading	0.62	0.973	Leading	0.60	0.978	Leading	0.55
129	FLT129-3PH	0.962	Leading	0.72	0.966	Leading	0.67	0.968	Leading	0.65	0.971	Leading	0.62	0.971	Leading	0.62
130	FLT130-3PH	0.962	Leading	0.72	0.963	Leading	0.71	0.967	Leading	0.67	0.969	Leading	0.64	0.971	Leading	0.63
131	FLT131-3PH	0.962	Leading	0.72	0.959	Leading	0.75	0.966	Leading	0.68	0.968	Leading	0.66	0.970	Leading	0.63
132	FLT132-3PH	0.973	Leading	0.60	0.975	Leading	0.57	0.972	Leading	0.62	0.975	Leading	0.57	0.979	Leading	0.52
133	FLT133-3PH	0.962	Leading	0.72	0.968	Leading	0.66	0.970	Leading	0.63	0.971	Leading	0.63	0.972	Leading	0.61
157	FLT157-3PH	0.733	Lagging	-2.35	0.905	Lagging	-1.19	0.950	Lagging	-0.83	0.980	Lagging	-0.51	0.682	Lagging	-2.71
158	FLT158-3PH	0.970	Leading	0.63	0.985	Leading	0.44	0.983	Leading	0.47	0.977	Leading	0.56	1.000	Leading	0.05
159	FLT159-3PH	0.935	Leading	0.96	0.915	Leading	1.11	0.932	Leading	0.98	0.924	Leading	1.04	0.944	Leading	0.88
168	FLT168-3PH	0.962	Leading	0.72	0.964	Leading	0.70	0.967	Leading	0.66	0.969	Leading	0.64	0.971	Leading	0.62
169	FLT169-3PH	0.982	Leading	0.49	0.985	Leading	0.44	0.984	Leading	0.46	0.986	Leading	0.42	0.981	Leading	0.50
170	FLT170-3PH	0.971	Leading	0.62	0.971	Leading	0.62	0.983	Leading	0.48	0.979	Leading	0.53	0.988	Leading	0.39
184	FLT184-3PH	0.962	Leading	0.72	0.963	Leading	0.71	0.967	Leading	0.66	0.969	Leading	0.64	0.971	Leading	0.62
185	FLT185-3PH	0.962	Leading	0.72	0.964	Leading	0.70	0.967	Leading	0.66	0.970	Leading	0.64	0.971	Leading	0.62
186	FLT186-3PH	0.962	Leading	0.72	0.963	Leading	0.71	0.967	Leading	0.66	0.969	Leading	0.64	0.971	Leading	0.62
187	FLT187-3PH	0.962	Leading	0.72	0.963	Leading	0.71	0.967	Leading	0.66	0.969	Leading	0.64	0.971	Leading	0.62
188	FLT188-3PH	0.961	Leading	0.72	0.960	Leading	0.74	0.965	Leading	0.69	0.967	Leading	0.66	0.970	Leading	0.63
189	FLT189-3PH	0.961	Leading	0.73	0.961	Leading	0.73	0.966	Leading	0.68	0.967	Leading	0.66	0.971	Leading	0.63
190	FLT190-3PH	0.962	Leading	0.72	0.963	Leading	0.71	0.967	Leading	0.66	0.969	Leading	0.64	0.971	Leading	0.62

Study Generator ASGI-2016-002

The Power Factor Analysis shows that ASGI-2016-002 has a power factor range of the following:

- 2016 Winter Peak: 0.902 leading to 0.733 lagging
- 2017 Summer Peak: 0.832 leading to 0.716 lagging
- 2020 Summer Peak: 0.850 leading to 0.719 lagging
- 2020 Winter Peak: 0.907 leading to 0.840 lagging
- 2025 Summer Peak: 0.819 leading to 0.552 lagging

Table 5-4
Power Factor Analysis: ASGI-2016-004

Cont. No.	Case	2016 Winter Peak			2017 Summer Peak			2020 Summer Peak			2020 Winter Peak			2025 Summer Peak		
		Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)
0	Base	1.000	Lagging	-0.25	0.908	Lagging	-4.61	0.924	Lagging	-4.13	0.984	Lagging	-1.83	1.000	Lagging	-0.22
20	FLT20-3PH	1.000	Lagging	-0.30	0.907	Lagging	-4.65	0.923	Lagging	-4.17	0.983	Lagging	-1.88	1.000	Lagging	-0.25
21	FLT21-3PH	0.315	Lagging	-30.14	0.492	Lagging	-17.69	0.570	Lagging	-14.41	0.497	Lagging	-17.45	0.866	Lagging	-5.77
22	FLT22-3PH	0.693	Lagging	-10.42	0.632	Lagging	-12.27	0.680	Lagging	-10.79	0.662	Lagging	-11.32	0.932	Lagging	-3.87
23	FLT23-3PH	0.995	Lagging	-1.01	0.895	Lagging	-4.99	0.914	Lagging	-4.43	0.973	Lagging	-2.39	0.999	Lagging	-0.45
24	FLT24-3PH	0.994	Lagging	-1.05	0.876	Lagging	-5.52	0.885	Lagging	-5.26	0.965	Lagging	-2.73	0.998	Lagging	-0.56
37	FLT37-3PH	0.732	Lagging	-9.30	0.700	Lagging	-10.21	0.759	Lagging	-8.59	0.714	Lagging	-9.81	0.963	Lagging	-2.78
39	FLT39-3PH	1.000	Leading	0.07	0.903	Lagging	-4.74	0.927	Lagging	-4.05	0.984	Lagging	-1.80	1.000	Lagging	-0.06
40	FLT40-3PH	0.957	Lagging	-3.05	0.782	Lagging	-7.97	0.798	Lagging	-7.55	0.906	Lagging	-4.66	0.959	Lagging	-2.96
41	FLT41-3PH	1.000	Leading	0.09	0.903	Lagging	-4.75	0.927	Lagging	-4.05	0.984	Lagging	-1.80	1.000	Lagging	-0.05
42	FLT42-3PH	0.998	Lagging	-0.58	0.898	Lagging	-4.89	0.916	Lagging	-4.39	0.979	Lagging	-2.08	0.999	Lagging	-0.48
43	FLT43-3PH	0.999	Lagging	-0.54	0.935	Lagging	-3.79	0.947	Lagging	-3.40	0.993	Lagging	-1.21	1.000	Leading	0.00
57	FLT57-3PH	1.000	Lagging	-0.28	0.906	Lagging	-4.68	0.923	Lagging	-4.16	0.983	Lagging	-1.88	1.000	Lagging	-0.25
60	FLT60-3PH	1.000	Lagging	-0.25	0.906	Lagging	-4.67	0.923	Lagging	-4.16	0.983	Lagging	-1.85	1.000	Lagging	-0.27
65	FLT65-3PH	1.000	Lagging	-0.11	0.914	Lagging	-4.43	0.930	Lagging	-3.94	0.986	Lagging	-1.66	1.000	Lagging	-0.11
73	FLT73-3PH	0.996	Lagging	-0.84	0.893	Lagging	-5.03	0.910	Lagging	-4.54	0.971	Lagging	-2.45	0.999	Lagging	-0.53
74	FLT74-3PH	0.693	Lagging	-10.42	0.632	Lagging	-12.27	0.680	Lagging	-10.79	0.662	Lagging	-11.32	0.932	Lagging	-3.87
75	FLT75-3PH	0.967	Leading	2.64	0.983	Lagging	-1.89	0.990	Lagging	-1.43	0.994	Leading	1.07	0.989	Leading	1.48
76	FLT76-3PH	0.998	Lagging	-0.70	0.908	Lagging	-4.62	0.926	Lagging	-4.06	0.983	Lagging	-1.86	1.000	Lagging	-0.22
84	FLT84-3PH	0.999	Lagging	-0.33	0.905	Lagging	-4.70	0.923	Lagging	-4.18	0.984	Lagging	-1.83	1.000	Lagging	-0.31
85	FLT85-3PH	1.000	Lagging	-0.30	0.910	Lagging	-4.56	0.926	Lagging	-4.08	0.984	Lagging	-1.79	1.000	Lagging	-0.22
86	FLT86-3PH	0.999	Lagging	-0.44	0.901	Lagging	-4.81	0.918	Lagging	-4.32	0.982	Lagging	-1.94	0.999	Lagging	-0.41
87	FLT87-3PH	1.000	Lagging	-0.25	0.910	Lagging	-4.56	0.926	Lagging	-4.07	0.985	Lagging	-1.77	1.000	Lagging	-0.20
88	FLT88-3PH	1.000	Lagging	-0.26	0.908	Lagging	-4.62	0.924	Lagging	-4.13	0.984	Lagging	-1.83	1.000	Lagging	-0.23
89	FLT89-3PH	1.000	Lagging	-0.27	0.908	Lagging	-4.62	0.924	Lagging	-4.13	0.984	Lagging	-1.84	1.000	Lagging	-0.23
90	FLT90-3PH	1.000	Lagging	-0.26	0.908	Lagging	-4.62	0.924	Lagging	-4.13	0.984	Lagging	-1.83	1.000	Lagging	-0.23
91	FLT91-3PH	1.000	Lagging	-0.25	0.908	Lagging	-4.62	0.924	Lagging	-4.13	0.984	Lagging	-1.83	1.000	Lagging	-0.23
92	FLT92-3PH	1.000	Lagging	-0.23	0.911	Lagging	-4.53	0.927	Lagging	-4.04	0.985	Lagging	-1.76	1.000	Lagging	-0.20
93	FLT93-3PH	1.000	Lagging	-0.28	0.906	Lagging	-4.67	0.922	Lagging	-4.21	0.982	Lagging	-1.90	1.000	Lagging	-0.25
94	FLT94-3PH	0.999	Lagging	-0.46	0.897	Lagging	-4.93	0.916	Lagging	-4.37	0.983	Lagging	-1.88	1.000	Lagging	-0.31
95	FLT95-3PH	1.000	Lagging	-0.25	0.915	Lagging	-4.42	0.928	Lagging	-4.02	0.985	Lagging	-1.76	1.000	Lagging	-0.21
100	FLT100-3PH	1.000	Lagging	-0.22	0.911	Lagging	-4.52	0.928	Lagging	-4.02	0.985	Lagging	-1.77	1.000	Lagging	-0.20
101	FLT101-3PH	0.999	Lagging	-0.40	0.901	Lagging	-4.82	0.917	Lagging	-4.36	0.980	Lagging	-2.02	0.999	Lagging	-0.39
104	FLT104-3PH	0.881	Lagging	-5.37	0.545	Lagging	-15.40	0.558	Lagging	-14.86	0.769	Lagging	-8.32	0.836	Lagging	-6.56
105	FLT105-3PH	0.976	Leading	2.24	0.956	Leading	3.08	0.926	Leading	4.07	1.000	Leading	0.23	0.577	Leading	14.16
106	FLT106-3PH	0.999	Lagging	-0.44	0.880	Lagging	-5.39	0.900	Lagging	-4.85	0.980	Lagging	-2.05	0.995	Lagging	-1.03
107	FLT107-3PH	0.839	Lagging	-6.48	0.440	Lagging	-20.41	0.525	Lagging	-16.19	0.749	Lagging	-8.85	0.664	Lagging	-11.28
108	FLT108-3PH	1.000	Leading	0.11	0.958	Lagging	-3.00	0.939	Lagging	-3.66	0.988	Lagging	-1.56	0.990	Leading	1.44
109	FLT109-3PH	0.845	Leading	6.33	0.885	Lagging	-5.26	0.845	Lagging	-6.32	0.838	Leading	6.52	0.533	Lagging	-15.87
110	FLT110-3PH	0.976	Leading	2.24	0.956	Leading	3.08	0.926	Leading	4.07	1.000	Leading	0.23	0.577	Leading	14.16
111	FLT111-3PH	1.000	Leading	0.02	0.931	Lagging	-3.93	0.948	Lagging	-3.37	0.989	Lagging	-1.47	0.997	Leading	0.77
117	FLT117-3PH	0.650	Lagging	-11.70	0.586	Lagging	-13.84	0.611	Lagging	-12.97	0.582	Lagging	-13.99	0.984	Leading	1.79
118	FLT118-3PH	0.999	Leading	0.46	0.941	Lagging	-3.61	0.956	Lagging	-3.08	0.994	Lagging	-1.07	0.995	Leading	0.99
119	FLT119-3PH	0.951	Leading	3.27	0.974	Lagging	-2.32	0.988	Lagging	-1.55	0.997	Lagging	-0.76	0.793	Leading	7.68
120	FLT120-3PH	0.983	Leading	1.88	0.982	Lagging	-1.95	0.959	Lagging	-2.96	0.961	Lagging	-2.88	0.990	Leading	1.45
121	FLT121-3PH	0.991	Leading	1.33	0.925	Lagging	-4.11	0.946	Lagging	-3.41	0.961	Leading	2.86	0.771	Lagging	-8.25
126	FLT126-3PH	1.000	Lagging	-0.25	0.908	Lagging	-4.61	0.924	Lagging	-4.13	0.984	Lagging	-1.83	1.000	Lagging	-0.22
127	FLT127-3PH	1.000	Lagging	-0.26	0.907	Lagging	-4.64	0.927	Lagging	-4.04	0.983	Lagging	-1.86	1.000	Lagging	-0.24
128	FLT128-3PH	0.999	Lagging	-0.32	0.906	Lagging	-4.67	0.923	Lagging	-4.17	0.983	Lagging	-1.88	1.000	Lagging	-0.28
129	FLT129-3PH	1.000	Lagging	-0.26	0.907	Lagging	-4.63	0.924	Lagging	-4.14	0.983	Lagging	-1.86	1.000	Lagging	-0.22
130	FLT130-3PH	1.000	Lagging	-0.25	0.908	Lagging	-4.62	0.924	Lagging	-4.13	0.984	Lagging	-1.83	1.000	Lagging	-0.23
131	FLT131-3PH	1.000	Lagging	-0.26	0.910	Lagging	-4.57	0.927	Lagging	-4.04	0.984	Lagging	-1.78	1.000	Lagging	-0.21
132	FLT132-3PH	1.000	Lagging	-0.21	0.909	Lagging	-4.59	0.928	Lagging	-4.01	0.985	Lagging	-1.76	1.000	Lagging	-0.17
133	FLT133-3PH	1.000	Lagging	-0.18	0.914	Lagging	-4.43	0.926	Lagging	-4.08	0.985	Lagging	-1.77	1.000	Lagging	-0.21
157	FLT157-3PH	1.000	Lagging	-0.08	0.908	Lagging	-4.62	0.924	Lagging	-4.15	0.983	Lagging	-1.84	0.999	Lagging	-0.41
158	FLT158-3PH	0.998	Lagging	-0.70	0.908	Lagging	-4.62	0.926	Lagging	-4.06	0.983	Lagging	-1.86	1.000	Lagging	-0.22
159	FLT159-3PH	1.000	Lagging	-0.09	0.913	Lagging	-4.48	0.929	Lagging	-3.98	0.988	Lagging	-1.59	1.000	Lagging	-0.18
168	FLT168-3PH	1.000	Lagging	-0.25	0.908	Lagging	-4.61	0.924	Lagging	-4.13	0.984	Lagging	-1.83	1.000	Lagging	-0.22
169	FLT169-3PH	0.999	Lagging	-0.34	0.907	Lagging	-4.65	0.918	Lagging	-4.32	0.981	Lagging	-1.98	1.000	Lagging	-0.30
170	FLT170-3PH	1.000	Lagging	-0.04	0.910	Lagging	-4.56	0.924	Lagging	-4.12	0.983	Lagging	-1.84	1.000	Lagging	-0.29
184	FLT184-3PH	1.000	Lagging	-0.26	0.907	Lagging	-4.63	0.924	Lagging	-4.14	0.984	Lagging	-1.84	1.000	Lagging	-0.23
185	FLT185-3PH	1.000	Lagging	-0.25	0.908	Lagging	-4.61	0.924	Lagging	-4.14	0.984	Lagging	-1.83	1.000	Lagging	-0.23
186	FLT186-3PH	1.000	Lagging	-0.26	0.908	Lagging	-4.62	0.924	Lagging	-4.13	0.984	Lagging	-1.83	1.000	Lagging	-0.23
187	FLT187-3PH	1.000	Lagging	-0.27	0.907	Lagging	-4.63	0.924	Lagging	-4.14	0.983	Lagging	-1.84	1.000	Lagging	-0.24
188	FLT188-3PH	0.998	Lagging	-0.57	0.901	Lagging	-4.80	0.924	Lagging	-4.15	0.979	Lagging	-2.06	0.999	Lagging	-0.37
189	FLT189-3PH	0.999	Lagging	-0.44	0.904	Lagging	-4.72	0.922	Lagging	-4.21	0.981	Lagging	-1.99	0.999	Lagging	-0.32
190	FLT190-3PH	1.000	Lagging	-0.26	0.908	Lagging	-4.62	0.924	Lagging	-4.13	0.984	Lagging	-1.83	1.000	Lagging	-0.23

Study Generator ASGI-2016-004

The Power Factor Analysis shows that ASGI-2016-004 has a power factor range of the following:

- 2016 Winter Peak: 0.845 leading to 0.315 lagging
- 2017 Summer Peak: 0.956 leading to 0.153 lagging
- 2020 Summer Peak: 0.926 leading to 0.525 lagging
- 2020 Winter Peak: 0.838 leading to 0.497 lagging
- 2025 Summer Peak: 0.577 leading to 0.533 lagging

Table 5-5
Power Factor Analysis: GEN-2016-015

Cont. No.	Case	2016 Winter Peak			2017 Summer Peak			2020 Summer Peak			2020 Winter Peak			2025 Summer Peak		
		Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)
0	Base	0.998	Leading	7.03	0.982	Lagging	-19.40	0.998	Leading	6.08	0.995	Leading	10.01	0.986	Leading	16.88
20	FLT20-3PH	0.998	Leading	6.94	0.982	Lagging	-19.48	0.998	Leading	6.08	0.995	Leading	9.96	0.986	Leading	16.83
21	FLT21-3PH	0.999	Leading	3.65	0.979	Lagging	-21.05	0.998	Leading	6.07	0.996	Leading	9.11	0.988	Leading	15.88
22	FLT22-3PH	0.998	Leading	6.19	0.981	Lagging	-19.99	0.998	Leading	6.07	0.995	Leading	9.65	0.987	Leading	16.44
23	FLT23-3PH	0.998	Leading	6.46	0.981	Lagging	-19.86	0.998	Leading	6.08	0.995	Leading	9.75	0.986	Leading	16.89
24	FLT24-3PH	0.997	Leading	7.99	0.980	Lagging	-20.33	0.998	Leading	6.01	0.995	Leading	9.55	0.995	Leading	10.35
37	FLT37-3PH	0.998	Leading	6.17	0.981	Lagging	-20.02	0.998	Leading	6.07	0.995	Leading	9.55	0.986	Leading	16.71
39	FLT39-3PH	0.998	Leading	6.95	0.981	Lagging	-19.66	0.998	Leading	6.08	0.995	Leading	9.93	0.986	Leading	16.80
40	FLT40-3PH	0.998	Leading	6.54	0.981	Lagging	-20.00	0.998	Leading	6.07	0.995	Leading	9.73	0.986	Leading	16.71
41	FLT41-3PH	0.998	Leading	6.94	0.981	Lagging	-19.68	0.998	Leading	6.08	0.995	Leading	9.92	0.986	Leading	16.80
42	FLT42-3PH	0.999	Leading	4.85	0.978	Lagging	-21.15	0.998	Leading	6.06	0.996	Leading	8.99	0.988	Leading	15.67
43	FLT43-3PH	0.998	Leading	7.03	0.982	Lagging	-19.43	0.998	Leading	6.08	0.995	Leading	10.01	0.986	Leading	16.87
57	FLT57-3PH	0.997	Leading	7.20	0.982	Lagging	-19.32	0.998	Leading	5.96	0.995	Leading	10.01	0.987	Leading	16.55
60	FLT60-3PH	0.997	Leading	7.35	0.984	Lagging	-18.03	0.998	Leading	6.05	0.995	Leading	10.37	0.985	Leading	17.51
65	FLT65-3PH	0.997	Leading	8.20	0.982	Lagging	-19.41	0.998	Leading	5.98	0.995	Leading	9.76	0.984	Leading	18.04
73	FLT73-3PH	0.997	Leading	7.09	0.982	Lagging	-19.33	0.998	Leading	6.08	0.995	Leading	10.01	0.986	Leading	16.87
74	FLT74-3PH	0.998	Leading	6.19	0.981	Lagging	-19.99	0.998	Leading	6.07	0.995	Leading	9.65	0.987	Leading	16.44
75	FLT75-3PH	0.997	Leading	7.79	0.982	Lagging	-18.97	0.998	Leading	6.09	0.994	Leading	10.56	0.986	Leading	17.13
76	FLT76-3PH	0.998	Leading	6.96	0.982	Lagging	-19.46	0.998	Leading	6.08	0.995	Leading	9.98	0.986	Leading	16.73
84	FLT84-3PH	0.997	Leading	7.11	0.982	Lagging	-19.25	0.998	Leading	6.09	0.995	Leading	10.05	0.986	Leading	17.14
85	FLT85-3PH	0.998	Leading	6.49	0.981	Lagging	-19.84	0.998	Leading	6.07	0.995	Leading	9.82	0.987	Leading	16.47
86	FLT86-3PH	0.998	Leading	6.88	0.981	Lagging	-19.65	0.998	Leading	6.07	0.995	Leading	9.91	0.986	Leading	16.62
87	FLT87-3PH	0.998	Leading	6.92	0.981	Lagging	-19.82	0.998	Leading	6.08	0.995	Leading	9.87	0.986	Leading	16.74
88	FLT88-3PH	0.998	Leading	6.99	0.982	Lagging	-19.42	0.998	Leading	6.08	0.995	Leading	9.99	0.986	Leading	16.87
89	FLT89-3PH	0.998	Leading	6.85	0.982	Lagging	-19.50	0.998	Leading	6.08	0.995	Leading	9.95	0.986	Leading	16.78
90	FLT90-3PH	0.998	Leading	7.00	0.982	Lagging	-19.41	0.998	Leading	6.08	0.995	Leading	10.00	0.986	Leading	16.87
91	FLT91-3PH	0.998	Leading	7.01	0.982	Lagging	-19.47	0.998	Leading	6.08	0.995	Leading	10.00	0.986	Leading	16.83
92	FLT92-3PH	0.998	Leading	6.84	0.981	Lagging	-19.53	0.998	Leading	6.08	0.995	Leading	9.91	0.986	Leading	16.79
93	FLT93-3PH	0.998	Leading	6.35	0.979	Lagging	-20.86	0.998	Leading	6.05	0.996	Leading	9.41	0.988	Leading	15.88
94	FLT94-3PH	0.998	Leading	5.76	0.980	Lagging	-20.25	0.998	Leading	6.07	0.995	Leading	9.85	0.987	Leading	16.42
95	FLT95-3PH	0.998	Leading	7.03	0.981	Lagging	-19.61	0.998	Leading	6.08	0.995	Leading	9.86	0.986	Leading	16.61
100	FLT100-3PH	0.998	Leading	6.76	0.981	Lagging	-19.59	0.998	Leading	6.08	0.995	Leading	9.88	0.986	Leading	16.71
101	FLT101-3PH	0.998	Leading	7.04	0.982	Lagging	-19.39	0.998	Leading	6.08	0.995	Leading	10.00	0.986	Leading	16.88
104	FLT104-3PH	0.998	Leading	6.89	0.982	Lagging	-19.47	0.998	Leading	6.08	0.995	Leading	9.94	0.986	Leading	16.84
105	FLT105-3PH	0.998	Leading	6.91	0.982	Lagging	-19.46	0.998	Leading	6.08	0.995	Leading	9.94	0.986	Leading	16.85
106	FLT106-3PH	0.998	Leading	7.03	0.982	Lagging	-19.40	0.998	Leading	6.08	0.995	Leading	10.01	0.986	Leading	16.88
107	FLT107-3PH	0.998	Leading	6.89	0.982	Lagging	-19.47	0.998	Leading	6.08	0.995	Leading	9.93	0.986	Leading	16.83
108	FLT108-3PH	0.998	Leading	7.01	0.982	Lagging	-19.42	0.998	Leading	6.08	0.995	Leading	10.00	0.986	Leading	16.87
109	FLT109-3PH	0.998	Leading	6.90	0.982	Lagging	-19.47	0.998	Leading	6.08	0.995	Leading	9.94	0.986	Leading	16.85
110	FLT110-3PH	0.998	Leading	6.91	0.982	Lagging	-19.46	0.998	Leading	6.08	0.995	Leading	9.94	0.986	Leading	16.85
111	FLT111-3PH	0.998	Leading	7.02	0.982	Lagging	-19.41	0.998	Leading	6.08	0.995	Leading	10.00	0.986	Leading	16.87
117	FLT117-3PH	0.998	Leading	6.99	0.982	Lagging	-19.43	0.998	Leading	6.08	0.995	Leading	9.98	0.986	Leading	16.88
118	FLT118-3PH	0.998	Leading	6.99	0.982	Lagging	-19.44	0.998	Leading	6.08	0.995	Leading	9.98	0.986	Leading	16.85
119	FLT119-3PH	0.998	Leading	7.02	0.982	Lagging	-19.41	0.998	Leading	6.08	0.995	Leading	10.00	0.986	Leading	16.87
120	FLT120-3PH	0.998	Leading	6.93	0.982	Lagging	-19.43	0.998	Leading	6.08	0.995	Leading	9.95	0.986	Leading	16.88
121	FLT121-3PH	0.998	Leading	7.03	0.982	Lagging	-19.40	0.998	Leading	6.08	0.995	Leading	10.01	0.986	Leading	16.88
126	FLT126-3PH	0.998	Leading	7.03	0.982	Lagging	-19.40	0.998	Leading	6.08	0.995	Leading	10.01	0.986	Leading	16.88
127	FLT127-3PH	0.999	Leading	5.30	0.984	Lagging	-17.87	0.931	Leading	39.15	0.992	Leading	12.45	0.982	Leading	19.02
128	FLT128-3PH	0.999	Leading	5.11	0.978	Lagging	-21.14	0.998	Leading	6.09	0.996	Leading	9.16	0.989	Leading	15.26
129	FLT129-3PH	0.998	Leading	6.83	0.981	Lagging	-19.91	0.998	Leading	5.80	0.995	Leading	9.53	0.986	Leading	16.95
130	FLT130-3PH	0.997	Leading	7.16	0.982	Lagging	-19.30	0.998	Leading	5.94	0.995	Leading	10.07	0.986	Leading	16.97
131	FLT131-3PH	0.994	Leading	10.68	0.999	Leading	3.86	0.931	Leading	39.15	0.932	Leading	38.85	0.908	Leading	46.09
132	FLT132-3PH	0.999	Leading	4.00	0.972	Lagging	-24.26	0.999	Leading	4.92	0.996	Leading	8.41	0.990	Leading	14.35
133	FLT133-3PH	0.998	Leading	6.64	0.978	Lagging	-21.54	0.999	Leading	4.78	0.995	Leading	9.73	0.989	Leading	15.19
157	FLT157-3PH	0.998	Leading	6.70	0.982	Lagging	-19.48	0.998	Leading	6.08	0.995	Leading	9.97	0.986	Leading	16.72
158	FLT158-3PH	0.998	Leading	6.96	0.982	Lagging	-19.46	0.998	Leading	6.08	0.995	Leading	9.98	0.986	Leading	16.73
159	FLT159-3PH	0.997	Leading	7.10	0.982	Lagging	-19.21	0.998	Leading	6.08	0.995	Leading	10.11	0.986	Leading	16.93
168	FLT168-3PH	0.998	Leading	7.03	0.982	Lagging	-19.40	0.998	Leading	6.08	0.995	Leading	10.01	0.986	Leading	16.88
169	FLT169-3PH	0.986	Leading	16.94	1.000	Lagging	-0.24	0.998	Leading	6.24	0.987	Leading	16.41	0.982	Leading	19.07
170	FLT170-3PH	0.993	Leading	11.46	0.995	Lagging	-10.02	0.998	Leading	6.03	0.990	Leading	14.46	0.949	Leading	33.35
184	FLT184-3PH	0.998	Leading	7.03	0.982	Lagging	-19.38	0.998	Leading	6.08	0.995	Leading	10.00	0.986	Leading	16.86
185	FLT185-3PH	0.998	Leading	7.03	0.982	Lagging	-19.40	0.998	Leading	6.08	0.995	Leading	9.99	0.986	Leading	16.88
186	FLT186-3PH	0.998	Leading	7.03	0.982	Lagging	-19.39	0.998	Leading	6.08	0.995	Leading	10.01	0.986	Leading	16.87
187	FLT187-3PH	0.998	Leading	7.03	0.982	Lagging	-19.39	0.998	Leading	6.08	0.995	Leading	10.00	0.986	Leading	16.86
188	FLT188-3PH	0.997	Leading	7.16	0.982	Lagging	-19.04	0.998	Leading	6.07	0.995	Leading	10.07	0.986	Leading	16.80
189	FLT189-3PH	0.997	Leading	7.15	0.982	Lagging	-19.10	0.998	Leading	6.07	0.995	Leading	10.02	0.986	Leading	16.80
190	FLT190-3PH	0.998	Leading	7.03	0.982	Lagging	-19.39	0.998	Leading	6.08	0.995	Leading	10.00	0.986	Leading	16.87

Study Generator GEN-2016-015

The Power Factor Analysis shows that GEN-2016-015 has a power factor range of the following:

- 2016 Winter Peak: 0.986 leading to unity
- 2017 Summer Peak: 0.999 leading to 0.972 lagging
- 2020 Summer Peak: 0.931 lagging to 0.999 leading
- 2020 Winter Peak: 0.932 to 0.996 leading
- 2025 Summer Peak: 0.908 to 0.995 leading

Table 5-6
Power Factor Analysis: GEN-2016-056

Cont. No.	Case	2016 Winter Peak			2017 Summer Peak			2020 Summer Peak			2020 Winter Peak			2025 Summer Peak		
		Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)
0	Base	1.000	Lagging	-2.61	0.942	Lagging	-71.03	1.000	Leading	1.76	1.000	Leading	2.25	0.876	Lagging	-110.18
20	FLT20-3PH	1.000	Lagging	-2.73	0.942	Lagging	-71.06	1.000	Leading	1.67	1.000	Leading	2.14	0.876	Lagging	-110.21
21	FLT21-3PH	0.986	Lagging	-34.40	0.908	Lagging	-92.12	0.998	Lagging	-11.72	0.997	Lagging	-14.98	0.875	Lagging	-110.92
22	FLT22-3PH	0.998	Lagging	-12.34	0.928	Lagging	-80.55	1.000	Lagging	-5.28	1.000	Lagging	-5.96	0.875	Lagging	-110.59
23	FLT23-3PH	1.000	Leading	1.46	0.950	Lagging	-65.73	1.000	Leading	5.76	0.999	Leading	7.32	0.876	Lagging	-110.37
24	FLT24-3PH	1.000	Lagging	-4.94	0.930	Lagging	-79.10	0.998	Lagging	-12.12	1.000	Lagging	-3.73	0.874	Lagging	-111.01
37	FLT37-3PH	0.999	Lagging	-9.63	0.932	Lagging	-77.50	1.000	Lagging	-3.86	1.000	Lagging	-5.90	0.875	Lagging	-110.42
39	FLT39-3PH	1.000	Lagging	-2.97	0.940	Lagging	-72.87	1.000	Leading	0.45	1.000	Leading	1.35	0.875	Lagging	-110.42
40	FLT40-3PH	1.000	Lagging	-5.79	0.933	Lagging	-76.92	1.000	Lagging	-4.23	1.000	Lagging	-2.26	0.876	Lagging	-110.34
41	FLT41-3PH	1.000	Lagging	-3.00	0.939	Lagging	-73.00	1.000	Leading	0.35	1.000	Leading	1.29	0.875	Lagging	-110.46
42	FLT42-3PH	0.999	Lagging	-6.59	0.917	Lagging	-87.20	0.997	Lagging	-16.49	0.997	Lagging	-14.36	0.838	Lagging	-130.35
43	FLT43-3PH	1.000	Lagging	-2.74	0.942	Lagging	-70.92	1.000	Leading	1.39	1.000	Leading	2.65	0.876	Lagging	-110.13
57	FLT57-3PH	1.000	Lagging	-2.68	0.942	Lagging	-71.49	1.000	Leading	1.31	1.000	Leading	2.06	0.875	Lagging	-110.62
60	FLT60-3PH	1.000	Lagging	-2.96	0.939	Lagging	-73.33	1.000	Leading	0.35	1.000	Leading	1.18	0.871	Lagging	-112.82
65	FLT65-3PH	1.000	Lagging	-4.06	0.925	Lagging	-82.01	0.998	Lagging	-12.08	1.000	Lagging	-5.11	0.842	Lagging	-128.11
73	FLT73-3PH	1.000	Lagging	-2.22	0.943	Lagging	-70.52	1.000	Leading	1.92	1.000	Leading	2.14	0.876	Lagging	-110.20
74	FLT74-3PH	0.998	Lagging	-12.34	0.928	Lagging	-80.55	1.000	Lagging	-5.28	1.000	Lagging	-5.96	0.875	Lagging	-110.59
75	FLT75-3PH	1.000	Leading	5.99	0.945	Lagging	-69.18	1.000	Leading	3.59	0.998	Leading	13.54	0.876	Lagging	-109.89
76	FLT76-3PH	0.998	Lagging	-11.32	0.949	Lagging	-66.73	0.996	Lagging	-16.78	0.999	Lagging	-6.64	0.848	Lagging	-124.75
84	FLT84-3PH	0.999	Lagging	-6.52	0.933	Lagging	-77.23	1.000	Lagging	-4.79	1.000	Lagging	-0.88	0.864	Lagging	-116.45
85	FLT85-3PH	1.000	Leading	4.29	0.952	Lagging	-63.97	0.999	Leading	7.03	1.000	Leading	5.05	0.895	Lagging	-99.60
86	FLT86-3PH	0.998	Lagging	-11.32	0.945	Lagging	-68.94	1.000	Leading	3.81	1.000	Leading	4.02	0.886	Lagging	-104.48
87	FLT87-3PH	1.000	Lagging	-1.89	0.942	Lagging	-71.14	1.000	Leading	1.33	1.000	Leading	3.48	0.875	Lagging	-110.62
88	FLT88-3PH	1.000	Lagging	-2.77	0.942	Lagging	-71.20	1.000	Leading	1.59	1.000	Leading	2.08	0.876	Lagging	-110.33
89	FLT89-3PH	1.000	Lagging	-2.28	0.944	Lagging	-70.08	1.000	Leading	3.09	1.000	Leading	2.75	0.879	Lagging	-108.25
90	FLT90-3PH	1.000	Lagging	-2.75	0.942	Lagging	-71.14	1.000	Leading	1.65	1.000	Leading	2.14	0.876	Lagging	-110.28
91	FLT91-3PH	1.000	Lagging	-2.65	0.941	Lagging	-71.61	1.000	Leading	1.29	1.000	Leading	2.17	0.875	Lagging	-110.78
92	FLT92-3PH	0.999	Leading	7.84	0.944	Lagging	-69.60	1.000	Leading	3.29	1.000	Leading	4.12	0.879	Lagging	-108.38
93	FLT93-3PH	1.000	Lagging	-2.47	0.975	Lagging	-45.88	0.987	Leading	31.93	0.997	Leading	14.19	0.925	Lagging	-82.10
94	FLT94-3PH	0.999	Lagging	-7.59	0.904	Lagging	-94.52	0.983	Lagging	-37.04	0.999	Lagging	-10.47	0.822	Lagging	-138.72
95	FLT95-3PH	1.000	Lagging	-2.61	0.998	Lagging	-13.55	0.983	Leading	37.01	0.992	Leading	25.38	0.977	Lagging	-43.99
100	FLT100-3PH	0.997	Leading	14.39	0.947	Lagging	-67.63	1.000	Leading	4.21	1.000	Leading	5.30	0.883	Lagging	-106.37
101	FLT101-3PH	1.000	Lagging	-1.34	0.947	Lagging	-67.78	1.000	Leading	5.16	1.000	Leading	4.32	0.886	Lagging	-104.61
104	FLT104-3PH	1.000	Lagging	-3.86	0.942	Lagging	-71.26	1.000	Leading	1.61	1.000	Leading	1.04	0.876	Lagging	-110.02
105	FLT105-3PH	1.000	Lagging	-3.81	0.941	Lagging	-71.80	1.000	Leading	0.99	1.000	Leading	1.11	0.876	Lagging	-110.37
106	FLT106-3PH	1.000	Lagging	-2.63	0.942	Lagging	-71.12	1.000	Leading	1.67	1.000	Leading	2.22	0.876	Lagging	-110.19
107	FLT107-3PH	1.000	Lagging	-3.95	0.942	Lagging	-71.10	1.000	Leading	1.57	1.000	Leading	0.97	0.876	Lagging	-109.96
108	FLT108-3PH	1.000	Lagging	-2.73	0.942	Lagging	-71.08	1.000	Leading	1.67	1.000	Leading	2.18	0.876	Lagging	-110.13
109	FLT109-3PH	1.000	Lagging	-3.97	0.941	Lagging	-71.79	1.000	Leading	1.00	1.000	Leading	0.94	0.876	Lagging	-110.34
110	FLT110-3PH	1.000	Lagging	-3.81	0.941	Lagging	-71.80	1.000	Leading	0.99	1.000	Leading	1.11	0.876	Lagging	-110.37
111	FLT111-3PH	1.000	Lagging	-2.69	0.942	Lagging	-71.10	1.000	Leading	1.67	1.000	Leading	2.14	0.876	Lagging	-110.16
117	FLT117-3PH	1.000	Lagging	-3.13	0.942	Lagging	-71.46	1.000	Leading	1.32	1.000	Leading	1.64	0.876	Lagging	-110.17
118	FLT118-3PH	1.000	Lagging	-2.92	0.942	Lagging	-71.42	1.000	Leading	1.27	1.000	Leading	1.81	0.876	Lagging	-110.18
119	FLT119-3PH	1.000	Lagging	-2.68	0.942	Lagging	-71.08	1.000	Leading	1.70	1.000	Leading	2.17	0.876	Lagging	-110.15
120	FLT120-3PH	1.000	Lagging	-3.37	0.942	Lagging	-71.34	1.000	Leading	1.42	1.000	Leading	1.21	0.876	Lagging	-110.18
121	FLT121-3PH	1.000	Lagging	-2.56	0.942	Lagging	-70.99	1.000	Leading	1.80	1.000	Leading	2.37	0.876	Lagging	-110.21
126	FLT126-3PH	1.000	Lagging	-2.61	0.942	Lagging	-71.03	1.000	Leading	1.76	1.000	Leading	2.25	0.876	Lagging	-110.18
127	FLT127-3PH	1.000	Lagging	-2.69	0.942	Lagging	-71.13	1.000	Leading	1.91	1.000	Leading	2.09	0.876	Lagging	-110.20
128	FLT128-3PH	1.000	Lagging	-3.17	0.940	Lagging	-72.76	1.000	Leading	0.52	1.000	Leading	0.98	0.872	Lagging	-112.05
129	FLT129-3PH	1.000	Lagging	-2.46	0.941	Lagging	-71.66	1.000	Leading	1.55	1.000	Leading	1.87	0.876	Lagging	-110.18
130	FLT130-3PH	1.000	Lagging	-2.62	0.942	Lagging	-71.03	1.000	Leading	1.76	1.000	Leading	2.26	0.876	Lagging	-110.20
131	FLT131-3PH	1.000	Lagging	-2.74	0.943	Lagging	-70.44	1.000	Leading	1.91	1.000	Leading	2.34	0.876	Lagging	-110.29
132	FLT132-3PH	1.000	Lagging	-3.62	0.939	Lagging	-73.49	1.000	Leading	0.76	1.000	Leading	0.93	0.871	Lagging	-112.60
133	FLT133-3PH	1.000	Lagging	-2.30	0.942	Lagging	-71.36	1.000	Leading	1.35	1.000	Leading	2.19	0.876	Lagging	-110.26
157	FLT157-3PH	0.979	Leading	41.24	0.979	Lagging	-41.22	0.997	Leading	15.92	0.997	Leading	15.72	0.962	Lagging	-56.76
158	FLT158-3PH	0.998	Lagging	-11.32	0.949	Lagging	-66.73	0.996	Lagging	-16.78	0.999	Lagging	-6.64	0.848	Lagging	-124.75
159	FLT159-3PH	0.998	Leading	12.24	0.983	Lagging	-37.59	0.993	Leading	24.32	0.989	Leading	30.19	0.962	Lagging	-56.62
168	FLT168-3PH	1.000	Lagging	-2.61	0.942	Lagging	-71.03	1.000	Leading	1.76	1.000	Leading	2.25	0.876	Lagging	-110.18
169	FLT169-3PH	1.000	Lagging	-4.67	0.935	Lagging	-75.84	1.000	Lagging	-3.34	1.000	Lagging	-2.88	0.871	Lagging	-112.69
170	FLT170-3PH	1.000	Lagging	-2.38	0.941	Lagging	-71.62	1.000	Lagging	-0.09	1.000	Leading	0.79	0.866	Lagging	-115.66
184	FLT184-3PH	1.000	Lagging	-2.63	0.942	Lagging	-71.01	1.000	Leading	1.78	1.000	Leading	2.26	0.876	Lagging	-110.18
185	FLT185-3PH	1.000	Lagging	-2.63	0.942	Lagging	-71.04	1.000	Leading	1.70	1.000	Leading	2.20	0.876	Lagging	-110.18
186	FLT186-3PH	1.000	Lagging	-2.62	0.942	Lagging	-71.01	1.000	Leading	1.77	1.000	Leading	2.25	0.876	Lagging	-110.18
187	FLT187-3PH	1.000	Lagging	-2.65	0.942	Lagging	-71.04	1.000	Leading	1.74	1.000	Leading	2.23	0.876	Lagging	-110.18
188	FLT188-3PH	1.000	Lagging	-2.56	0.943	Lagging	-70.45	1.000	Leading	2.28	1.000	Leading	2.65	0.876	Lagging	-110.27
189	FLT189-3PH	1.000	Lagging	-2.46	0.943	Lagging	-70.46	1.000	Leading	2.13	1.000	Leading	2.74	0.876	Lagging	-110.22
190	FLT190-3PH	1.000	Lagging	-2.62	0.942	Lagging	-71.03	1.000	Leading	1.76	1.000	Leading	2.24	0.876	Lagging	-110.18

Study Generator GEN-2016-056

The Power Factor Analysis shows that GEN-2016-056 has a power factor range of the following:

- 2016 Winter Peak: 0.979 leading to 0.986 lagging
- 2017 Summer Peak: 0.830 to 0.998 lagging
- 2020 Summer Peak: 0.983 leading to 0.983 lagging
- 2020 Winter Peak: 0.989 leading to 0.997 lagging
- 2025 Summer Peak: 0.822 to 0.977 lagging

Table 5-7
Power Factor Analysis: GEN-2016-062

Cont. No.	Case	2016 Winter Peak			2017 Summer Peak			2020 Summer Peak			2020 Winter Peak			2025 Summer Peak		
		Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)
0	Base	1.000	Leading	7.03	0.997	Lagging	-19.40	1.000	Leading	6.08	0.999	Leading	10.01	0.998	Leading	16.88
20	FLT20-3PH	1.000	Leading	6.94	0.997	Lagging	-19.48	1.000	Leading	6.08	0.999	Leading	9.96	0.998	Leading	16.83
21	FLT21-3PH	1.000	Leading	3.65	0.996	Lagging	-21.05	1.000	Leading	6.07	0.999	Leading	9.11	0.998	Leading	15.88
22	FLT22-3PH	1.000	Leading	6.19	0.997	Lagging	-19.99	1.000	Leading	6.07	0.999	Leading	9.65	0.998	Leading	16.44
23	FLT23-3PH	1.000	Leading	6.46	0.997	Lagging	-19.86	1.000	Leading	6.08	0.999	Leading	9.75	0.998	Leading	16.89
24	FLT24-3PH	0.999	Leading	7.99	0.997	Lagging	-20.33	1.000	Leading	6.01	0.999	Leading	9.55	0.999	Leading	10.35
37	FLT37-3PH	1.000	Leading	6.17	0.997	Lagging	-20.02	1.000	Leading	6.07	0.999	Leading	9.55	0.998	Leading	16.71
39	FLT39-3PH	1.000	Leading	6.95	0.997	Lagging	-19.66	1.000	Leading	6.08	0.999	Leading	9.93	0.998	Leading	16.80
40	FLT40-3PH	1.000	Leading	6.54	0.997	Lagging	-20.00	1.000	Leading	6.07	0.999	Leading	9.73	0.998	Leading	16.71
41	FLT41-3PH	1.000	Leading	6.94	0.997	Lagging	-19.68	1.000	Leading	6.08	0.999	Leading	9.92	0.998	Leading	16.80
42	FLT42-3PH	1.000	Leading	4.85	0.996	Lagging	-21.15	1.000	Leading	6.06	0.999	Leading	8.99	0.998	Leading	15.67
43	FLT43-3PH	1.000	Leading	7.03	0.997	Lagging	-19.43	1.000	Leading	6.08	0.999	Leading	10.01	0.998	Leading	16.87
57	FLT57-3PH	1.000	Leading	7.20	0.997	Lagging	-19.32	1.000	Leading	5.96	0.999	Leading	10.01	0.998	Leading	16.55
60	FLT60-3PH	1.000	Leading	7.35	0.997	Lagging	-18.03	1.000	Leading	6.05	0.999	Leading	10.37	0.998	Leading	17.51
65	FLT65-3PH	0.999	Leading	8.20	0.997	Lagging	-19.41	1.000	Leading	5.98	0.999	Leading	9.76	0.997	Leading	18.04
73	FLT73-3PH	1.000	Leading	7.09	0.997	Lagging	-19.33	1.000	Leading	6.08	0.999	Leading	10.01	0.998	Leading	16.87
74	FLT74-3PH	1.000	Leading	6.19	0.997	Lagging	-19.99	1.000	Leading	6.07	0.999	Leading	9.65	0.998	Leading	16.44
75	FLT75-3PH	1.000	Leading	7.79	0.997	Lagging	-18.97	1.000	Leading	6.09	0.999	Leading	10.56	0.998	Leading	17.13
76	FLT76-3PH	1.000	Leading	6.96	0.997	Lagging	-19.46	1.000	Leading	6.08	0.999	Leading	9.98	0.998	Leading	16.73
84	FLT84-3PH	1.000	Leading	7.11	0.997	Lagging	-19.25	1.000	Leading	6.09	0.999	Leading	10.05	0.998	Leading	17.14
85	FLT85-3PH	1.000	Leading	6.49	0.997	Lagging	-19.84	1.000	Leading	6.07	0.999	Leading	9.82	0.998	Leading	16.47
86	FLT86-3PH	1.000	Leading	6.88	0.997	Lagging	-19.65	1.000	Leading	6.07	0.999	Leading	9.91	0.998	Leading	16.62
87	FLT87-3PH	1.000	Leading	6.92	0.997	Lagging	-19.82	1.000	Leading	6.08	0.999	Leading	9.87	0.998	Leading	16.74
88	FLT88-3PH	1.000	Leading	6.99	0.997	Lagging	-19.42	1.000	Leading	6.08	0.999	Leading	9.99	0.998	Leading	16.87
89	FLT89-3PH	1.000	Leading	6.85	0.997	Lagging	-19.50	1.000	Leading	6.08	0.999	Leading	9.95	0.998	Leading	16.78
90	FLT90-3PH	1.000	Leading	7.00	0.997	Lagging	-19.41	1.000	Leading	6.08	0.999	Leading	10.00	0.998	Leading	16.87
91	FLT91-3PH	1.000	Leading	7.01	0.997	Lagging	-19.47	1.000	Leading	6.08	0.999	Leading	10.00	0.998	Leading	16.83
92	FLT92-3PH	1.000	Leading	6.84	0.997	Lagging	-19.53	1.000	Leading	6.08	0.999	Leading	9.91	0.998	Leading	16.79
93	FLT93-3PH	1.000	Leading	6.35	0.997	Lagging	-20.86	1.000	Leading	6.05	0.999	Leading	9.41	0.998	Leading	15.88
94	FLT94-3PH	1.000	Leading	5.76	0.997	Lagging	-20.25	1.000	Leading	6.07	0.999	Leading	9.85	0.998	Leading	16.42
95	FLT95-3PH	1.000	Leading	7.03	0.997	Lagging	-19.61	1.000	Leading	6.08	0.999	Leading	9.86	0.998	Leading	16.61
100	FLT100-3PH	1.000	Leading	6.76	0.997	Lagging	-19.59	1.000	Leading	6.08	0.999	Leading	9.88	0.998	Leading	16.71
101	FLT101-3PH	1.000	Leading	7.04	0.997	Lagging	-19.39	1.000	Leading	6.08	0.999	Leading	10.00	0.998	Leading	16.88
104	FLT104-3PH	1.000	Leading	6.89	0.997	Lagging	-19.47	1.000	Leading	6.08	0.999	Leading	9.94	0.998	Leading	16.84
105	FLT105-3PH	1.000	Leading	6.91	0.997	Lagging	-19.46	1.000	Leading	6.08	0.999	Leading	9.94	0.998	Leading	16.85
106	FLT106-3PH	1.000	Leading	7.03	0.997	Lagging	-19.40	1.000	Leading	6.08	0.999	Leading	10.01	0.998	Leading	16.88
107	FLT107-3PH	1.000	Leading	6.89	0.997	Lagging	-19.47	1.000	Leading	6.08	0.999	Leading	9.93	0.998	Leading	16.83
108	FLT108-3PH	1.000	Leading	7.01	0.997	Lagging	-19.42	1.000	Leading	6.08	0.999	Leading	10.00	0.998	Leading	16.87
109	FLT109-3PH	1.000	Leading	6.90	0.997	Lagging	-19.47	1.000	Leading	6.08	0.999	Leading	9.94	0.998	Leading	16.85
110	FLT110-3PH	1.000	Leading	6.91	0.997	Lagging	-19.46	1.000	Leading	6.08	0.999	Leading	9.94	0.998	Leading	16.85
111	FLT111-3PH	1.000	Leading	7.02	0.997	Lagging	-19.41	1.000	Leading	6.08	0.999	Leading	10.00	0.998	Leading	16.87
117	FLT117-3PH	1.000	Leading	6.99	0.997	Lagging	-19.43	1.000	Leading	6.08	0.999	Leading	9.98	0.998	Leading	16.88
118	FLT118-3PH	1.000	Leading	6.99	0.997	Lagging	-19.44	1.000	Leading	6.08	0.999	Leading	9.98	0.998	Leading	16.85
119	FLT119-3PH	1.000	Leading	7.02	0.997	Lagging	-19.41	1.000	Leading	6.08	0.999	Leading	10.00	0.998	Leading	16.87
120	FLT120-3PH	1.000	Leading	6.93	0.997	Lagging	-19.43	1.000	Leading	6.08	0.999	Leading	9.95	0.998	Leading	16.88
121	FLT121-3PH	1.000	Leading	7.03	0.997	Lagging	-19.40	1.000	Leading	6.08	0.999	Leading	10.01	0.998	Leading	16.88
126	FLT126-3PH	1.000	Leading	7.03	0.997	Lagging	-19.40	1.000	Leading	6.08	0.999	Leading	10.01	0.998	Leading	16.88
127	FLT127-3PH	1.000	Leading	5.30	0.997	Lagging	-17.87	0.988	Leading	39.15	0.999	Leading	12.45	0.997	Leading	19.02
128	FLT128-3PH	1.000	Leading	5.11	0.996	Lagging	-21.14	1.000	Leading	6.09	0.999	Leading	9.16	0.998	Leading	15.26
129	FLT129-3PH	1.000	Leading	6.83	0.997	Lagging	-19.91	1.000	Leading	5.80	0.999	Leading	9.53	0.998	Leading	16.95
130	FLT130-3PH	1.000	Leading	7.16	0.997	Lagging	-19.30	1.000	Leading	5.94	0.999	Leading	10.07	0.998	Leading	16.97
131	FLT131-3PH	0.999	Leading	10.68	1.000	Leading	3.86	0.988	Leading	39.15	0.988	Leading	38.85	0.984	Leading	46.09
132	FLT132-3PH	1.000	Leading	4.00	0.995	Lagging	-24.26	1.000	Leading	4.92	0.999	Leading	8.41	0.998	Leading	14.35
133	FLT133-3PH	1.000	Leading	6.64	0.996	Lagging	-21.54	1.000	Leading	4.78	0.999	Leading	9.73	0.998	Leading	15.19
157	FLT157-3PH	1.000	Leading	6.70	0.997	Lagging	-19.48	1.000	Leading	6.08	0.999	Leading	9.97	0.998	Leading	16.72
158	FLT158-3PH	1.000	Leading	6.96	0.997	Lagging	-19.46	1.000	Leading	6.08	0.999	Leading	9.98	0.998	Leading	16.73
159	FLT159-3PH	1.000	Leading	7.10	0.997	Lagging	-19.21	1.000	Leading	6.08	0.999	Leading	10.11	0.998	Leading	16.93
168	FLT168-3PH	1.000	Leading	7.03	0.997	Lagging	-19.40	1.000	Leading	6.08	0.999	Leading	10.01	0.998	Leading	16.88
169	FLT169-3PH	0.998	Leading	16.94	1.000	Lagging	-0.24	1.000	Leading	6.24	0.998	Leading	16.41	0.997	Leading	19.07
170	FLT170-3PH	0.999	Leading	11.46	0.999	Lagging	-10.02	1.000	Leading	6.03	0.998	Leading	14.46	0.991	Leading	33.35
184	FLT184-3PH	1.000	Leading	7.03	0.997	Lagging	-19.38	1.000	Leading	6.08	0.999	Leading	10.00	0.998	Leading	16.86
185	FLT185-3PH	1.000	Leading	7.03	0.997	Lagging	-19.40	1.000	Leading	6.08	0.999	Leading	9.99	0.998	Leading	16.88
186	FLT186-3PH	1.000	Leading	7.03	0.997	Lagging	-19.39	1.000	Leading	6.08	0.999	Leading	10.01	0.998	Leading	16.87
187	FLT187-3PH	1.000	Leading	7.03	0.997	Lagging	-19.39	1.000	Leading	6.08	0.999	Leading	10.00	0.998	Leading	16.86
188	FLT188-3PH	1.000	Leading	7.16	0.997	Lagging	-19.04	1.000	Leading	6.07	0.999	Leading	10.07	0.998	Leading	16.80
189	FLT189-3PH	1.000	Leading	7.15	0.997	Lagging	-19.10	1.000	Leading	6.07	0.999	Leading	10.02	0.998	Leading	16.80
190	FLT190-3PH	1.000	Leading	7.03	0.997	Lagging	-19.39	1.000	Leading	6.08	0.999	Leading	10.00	0.998	Leading	16.87

Study Generator GEN-2016-062

The Power Factor Analysis shows that GEN-2016-062 has a power factor range of the following:

- 2016 Winter Peak: 0.998 leading to unity
- 2017 Summer Peak: 0.995 lagging to unity
- 2020 Summer Peak: 0.988 leading to unit
- 2020 Winter Peak: 0.988 to 0.999 leading
- 2025 Summer Peak: 0.984 to 0.999 leading

Table 5-8
Power Factor Analysis: GEN-2016-069

Cont. No.	Case	2016 Winter Peak			2017 Summer Peak			2020 Summer Peak			2020 Winter Peak			2025 Summer Peak		
		Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)
0	Base	1.000	Lagging	0.00	0.912	Leading	14.12	0.883	Leading	16.67	0.516	Leading	52.05	0.904	Leading	14.84
20	FLT20-3PH	0.885	Leading	16.51	0.912	Leading	14.12	0.883	Leading	16.67	0.516	Leading	52.05	0.904	Leading	14.84
21	FLT21-3PH	0.885	Leading	16.52	0.913	Leading	13.96	0.885	Leading	16.50	0.506	Leading	53.37	0.904	Leading	14.83
22	FLT22-3PH	0.884	Leading	16.56	0.913	Leading	14.03	0.884	Leading	16.56	0.517	Leading	51.97	0.904	Leading	14.84
23	FLT23-3PH	0.885	Leading	16.47	0.912	Leading	14.12	0.883	Leading	16.67	0.516	Leading	52.04	0.904	Leading	14.83
24	FLT24-3PH	0.883	Leading	16.70	0.914	Leading	13.96	0.888	Leading	16.27	0.506	Leading	53.44	0.903	Leading	14.90
37	FLT37-3PH	0.888	Leading	16.25	0.913	Leading	13.98	0.884	Leading	16.61	0.517	Leading	51.86	0.907	Leading	14.60
39	FLT39-3PH	0.885	Leading	16.49	0.912	Leading	14.09	0.883	Leading	16.67	0.516	Leading	52.04	0.904	Leading	14.81
40	FLT40-3PH	0.886	Leading	16.42	0.912	Leading	14.07	0.883	Leading	16.66	0.516	Leading	52.02	0.905	Leading	14.77
41	FLT41-3PH	0.885	Leading	16.49	0.912	Leading	14.09	0.883	Leading	16.67	0.516	Leading	52.04	0.904	Leading	14.80
42	FLT42-3PH	0.887	Leading	16.32	0.912	Leading	14.12	0.883	Leading	16.68	0.516	Leading	52.03	0.905	Leading	14.74
43	FLT43-3PH	0.885	Leading	16.50	0.912	Leading	14.09	0.883	Leading	16.64	0.516	Leading	52.05	0.904	Leading	14.84
57	FLT57-3PH	0.885	Leading	16.50	0.912	Leading	14.12	0.883	Leading	16.68	0.516	Leading	52.05	0.904	Leading	14.84
60	FLT60-3PH	0.885	Leading	16.52	0.912	Leading	14.12	0.883	Leading	16.67	0.516	Leading	52.05	0.904	Leading	14.84
65	FLT65-3PH	0.884	Leading	16.60	0.912	Leading	14.07	0.885	Leading	16.47	0.516	Leading	52.04	0.903	Leading	14.91
73	FLT73-3PH	0.885	Leading	16.51	0.912	Leading	14.12	0.883	Leading	16.66	0.516	Leading	52.05	0.904	Leading	14.84
74	FLT74-3PH	0.884	Leading	16.56	0.913	Leading	14.03	0.884	Leading	16.56	0.517	Leading	51.97	0.904	Leading	14.84
75	FLT75-3PH	0.885	Leading	16.51	0.911	Leading	14.15	0.882	Leading	16.71	0.516	Leading	52.01	0.904	Leading	14.85
76	FLT76-3PH	0.885	Leading	16.51	0.912	Leading	14.12	0.883	Leading	16.67	0.516	Leading	52.05	0.904	Leading	14.84
84	FLT84-3PH	0.885	Leading	16.51	0.912	Leading	14.12	0.883	Leading	16.67	0.516	Leading	52.05	0.904	Leading	14.85
85	FLT85-3PH	0.885	Leading	16.50	0.912	Leading	14.12	0.883	Leading	16.66	0.516	Leading	52.05	0.904	Leading	14.83
86	FLT86-3PH	0.885	Leading	16.51	0.912	Leading	14.12	0.883	Leading	16.67	0.516	Leading	52.05	0.904	Leading	14.83
87	FLT87-3PH	0.885	Leading	16.51	0.912	Leading	14.12	0.883	Leading	16.65	0.516	Leading	52.05	0.904	Leading	14.85
88	FLT88-3PH	0.885	Leading	16.51	0.912	Leading	14.12	0.883	Leading	16.67	0.516	Leading	52.05	0.904	Leading	14.84
89	FLT89-3PH	0.885	Leading	16.50	0.912	Leading	14.12	0.883	Leading	16.67	0.516	Leading	52.05	0.904	Leading	14.84
90	FLT90-3PH	0.885	Leading	16.51	0.912	Leading	14.12	0.883	Leading	16.67	0.516	Leading	52.05	0.904	Leading	14.84
91	FLT91-3PH	0.885	Leading	16.51	0.912	Leading	14.12	0.883	Leading	16.67	0.516	Leading	52.05	0.904	Leading	14.84
92	FLT92-3PH	0.885	Leading	16.50	0.912	Leading	14.12	0.883	Leading	16.67	0.516	Leading	52.05	0.904	Leading	14.84
93	FLT93-3PH	0.885	Leading	16.51	0.912	Leading	14.12	0.883	Leading	16.65	0.516	Leading	52.04	0.904	Leading	14.84
94	FLT94-3PH	0.885	Leading	16.50	0.912	Leading	14.12	0.883	Leading	16.66	0.516	Leading	52.05	0.904	Leading	14.84
95	FLT95-3PH	0.885	Leading	16.51	0.912	Leading	14.12	0.883	Leading	16.67	0.516	Leading	52.05	0.904	Leading	14.84
100	FLT100-3PH	0.885	Leading	16.50	0.912	Leading	14.12	0.883	Leading	16.67	0.516	Leading	52.05	0.904	Leading	14.84
101	FLT101-3PH	0.885	Leading	16.51	0.912	Leading	14.12	0.883	Leading	16.67	0.516	Leading	52.05	0.904	Leading	14.84
104	FLT104-3PH	0.885	Leading	16.51	0.912	Leading	14.11	0.883	Leading	16.66	0.516	Leading	52.03	0.904	Leading	14.83
105	FLT105-3PH	0.885	Leading	16.50	0.912	Leading	14.12	0.883	Leading	16.66	0.516	Leading	52.03	0.904	Leading	14.84
106	FLT106-3PH	0.885	Leading	16.51	0.912	Leading	14.12	0.883	Leading	16.67	0.516	Leading	52.05	0.904	Leading	14.84
107	FLT107-3PH	0.885	Leading	16.49	0.912	Leading	14.11	0.883	Leading	16.65	0.516	Leading	52.03	0.904	Leading	14.83
108	FLT108-3PH	0.885	Leading	16.50	0.912	Leading	14.12	0.883	Leading	16.67	0.516	Leading	52.05	0.904	Leading	14.84
109	FLT109-3PH	0.885	Leading	16.51	0.912	Leading	14.11	0.883	Leading	16.66	0.516	Leading	52.03	0.904	Leading	14.84
110	FLT110-3PH	0.885	Leading	16.50	0.912	Leading	14.12	0.883	Leading	16.66	0.516	Leading	52.03	0.904	Leading	14.84
111	FLT111-3PH	0.885	Leading	16.51	0.912	Leading	14.12	0.883	Leading	16.67	0.516	Leading	52.05	0.904	Leading	14.84
117	FLT117-3PH	0.885	Leading	16.51	0.912	Leading	14.11	0.883	Leading	16.66	0.516	Leading	52.03	0.904	Leading	14.85
118	FLT118-3PH	0.885	Leading	16.52	0.912	Leading	14.12	0.883	Leading	16.67	0.516	Leading	52.05	0.904	Leading	14.84
119	FLT119-3PH	0.885	Leading	16.51	0.912	Leading	14.12	0.883	Leading	16.67	0.516	Leading	52.05	0.904	Leading	14.84
120	FLT120-3PH	0.886	Leading	16.43	0.912	Leading	14.06	0.883	Leading	16.65	0.516	Leading	52.03	0.904	Leading	14.80
121	FLT121-3PH	0.885	Leading	16.51	0.912	Leading	14.12	0.883	Leading	16.67	0.516	Leading	52.03	0.904	Leading	14.83
126	FLT126-3PH	0.885	Leading	16.51	0.912	Leading	14.12	0.883	Leading	16.67	0.516	Leading	52.05	0.904	Leading	14.84
127	FLT127-3PH	0.885	Leading	16.50	0.912	Leading	14.12	0.883	Leading	16.69	0.516	Leading	52.05	0.904	Leading	14.84
128	FLT128-3PH	0.886	Leading	16.40	0.912	Leading	14.12	0.883	Leading	16.67	0.516	Leading	52.04	0.904	Leading	14.78
129	FLT129-3PH	0.893	Leading	15.78	0.912	Leading	14.07	0.883	Leading	16.68	0.516	Leading	51.98	0.904	Leading	14.85
130	FLT130-3PH	0.885	Leading	16.52	0.912	Leading	14.12	0.883	Leading	16.67	0.516	Leading	52.05	0.904	Leading	14.85
131	FLT131-3PH	0.886	Leading	16.41	0.912	Leading	14.13	0.883	Leading	16.69	0.516	Leading	52.04	0.904	Leading	14.81
132	FLT132-3PH	0.882	Leading	16.76	0.912	Leading	14.07	0.885	Leading	16.46	0.516	Leading	52.05	0.903	Leading	14.95
133	FLT133-3PH	0.891	Leading	15.99	0.914	Leading	13.95	0.880	Leading	16.89	0.515	Leading	52.17	0.904	Leading	14.82
157	FLT157-3PH	0.885	Leading	16.50	0.912	Leading	14.12	0.883	Leading	16.67	0.516	Leading	52.05	0.904	Leading	14.84
158	FLT158-3PH	0.885	Leading	16.52	0.912	Leading	14.12	0.883	Leading	16.67	0.516	Leading	52.05	0.904	Leading	14.84
159	FLT159-3PH	0.885	Leading	16.51	0.912	Leading	14.12	0.883	Leading	16.67	0.516	Leading	52.05	0.904	Leading	14.84
168	FLT168-3PH	0.885	Leading	16.51	0.912	Leading	14.12	0.883	Leading	16.67	0.516	Leading	52.05	0.904	Leading	14.84
169	FLT169-3PH	0.881	Leading	16.84	0.913	Leading	13.99	0.885	Leading	16.47	0.506	Leading	53.46	0.903	Leading	14.90
170	FLT170-3PH	0.884	Leading	16.55	0.912	Leading	14.12	0.882	Leading	16.71	0.516	Leading	52.05	0.904	Leading	14.84
184	FLT184-3PH	0.893	Leading	15.84	0.923	Leading	13.06	0.894	Leading	15.70	0.522	Leading	51.17	0.916	Leading	13.72
185	FLT185-3PH	0.919	Leading	13.49	0.918	Leading	13.54	0.939	Leading	11.52	0.578	Leading	44.21	0.921	Leading	13.27
186	FLT186-3PH	0.889	Leading	16.15	0.919	Leading	13.43	0.891	Leading	16.01	0.520	Leading	51.50	0.911	Leading	14.18
187	FLT187-3PH	0.892	Leading	15.91	0.921	Leading	13.26	0.893	Leading	15.81	0.521	Leading	51.31	0.916	Leading	13.73
188	FLT188-3PH	0.877	Leading	17.14	0.911	Leading	14.15	0.901	Leading	15.11	0.603	Leading	41.44	0.888	Leading	16.20
189	FLT189-3PH	0.792	Leading	24.21	0.842	Leading	20.05	0.937	Leading	11.71	0.686	Leading	33.21	0.907	Leading	14.59
190	FLT190-3PH	0.886	Leading	16.40	0.914	Leading	13.90	0.886	Leading	16.43	0.517	Leading	51.87	0.906	Leading	14.63

Study Generator GEN-2016-069

The Power Factor Analysis shows that GEN-2016-069 has a power factor range of the following:

- 2016 Winter Peak: 0.792 leading to unity
- 2017 Summer Peak: 0.842 to 0.969 leading
- 2020 Summer Peak: 0.880 to 0.939 leading
- 2020 Winter Peak: 0.506 to 0.686 leading
- 2025 Summer Peak: 0.888 to 0.921 leading

SECTION 6: LOW/NO WIND/IRRADIANCE ANALYSIS

The objective of this task was to determine the impact of low wind or no wind conditions/solar irradiance on wind farms and solar farms, respectively. The 2016 Winter Peak, 2017 Summer Peak, 2020 Summer Peak, 2020 Winter Peak, and 2025 Summer Peak power flows provided by SPP were examined for this analysis.

6.1 Approach

Low/no wind and low/no solar irradiance conditions were examined for all renewable interconnections. Generators were disabled (independently), but the collector systems remained in-service. In order to maintain generation and load balance in the SPP area, the generation was scaled after disabling the respective generator. The amount of reactive power injected into the transmission network was recorded at the respective point of interconnection. This reactive power comes from the capacitance of the project's transmission lines and collector cables. A shunt reactor was added at the high side bus to bring the Mvar flow into the POI down to approximately zero.

6.2 Low/No Wind/Irradiance Analysis Results

The reactance needed to bring the Mvar flow into the point of interconnect to zero Mvar was recorded for each season for renewable interconnections. Refer to Table 6-1 for the results of this analysis. The table lists the generators examined and the amount of reactive power needed for zero Mvar flow into the POI for each season.

Table 6-1
Low Wind/No Wind Analysis

Request	Size (MW)	Point of Interconnection	Reactor Size (Mvar)				
			16WP	17SP	20SP	20WP	25SP
ASGI-2016-001	2.5	Wolfforth 115 kV	0.00	0.00	0.00	0.00	0.00
ASGI-2016-002	0.35 Uprate	Hurlwood 69 kV	0.30	0.30	0.30	0.30	0.30
ASGI-2016-004	10	Palo Duro 115 kV	0.00	0.00	0.00	0.00	0.00
GEN-2016-015	100	Andrews 230 kV	0.79	0.79	0.79	0.79	0.79
GEN-2016-056	200	Carlisle 230 kV	3.23	3.23	3.23	3.23	3.23
GEN-2016-062	250.7	Andrews 230 kV	12.70	12.70	12.70	12.70	12.70
GEN-2016-069	31.35	Chaves County 115 kV	0.36	0.36	0.36	0.36	0.36

SECTION 7: CONCLUSIONS

Summary of Stability Analysis

The Stability Analysis determined that there were multiple contingencies across all seasons that resulted in system/voltage instability, generation tripping offline, and poor post-fault voltage recovery when all generation interconnection requests were at 100% output.

To mitigate the system/voltage instability, voltage violations, generation tripping offline, and poor post-fault steady-state voltages, the following upgrades were provided by SPP and implemented (upgrades provided here are required for 16WP season and thus, implemented in remaining years):

- Build Crawfish Draw to Tolk 345 kV Circuit #1
- Build Tolk to Potter County 345 kV Circuit #1
- Build Potter County 345/230 kV Transformer #2
- Build Potter County to Grapevine to Chisholm 345 kV Circuit #1
- Add +300 Mvar SVC at Border 345 kV
    - 600 total capacitive Mvars at Border 345 kV (300 Mvar switchable capacitor banks modeled as 6 blocks of 50 Mvar
- Add +/- 100 Mvar SVC at Oklaunion 345 kV
- Add 250 Mvar to existing switchable capacitor bank at Oklaunion 345kV (this brings total to 440 Mvar)
- Build Woodward to Tatonga to Mathewson 345 kV Circuit #2
    - Required to be implemented in 16WP and 17SP
    - Line exists in 20WP, 20SP, and 25SP
- Build Chaves County to Price to CV Pine to Capitan 115 kV Circuit #1
    - Required to be implemented in 16WP and 17SP
    - Line exists in 20WP, 20SP, and 25SP
- Convert existing Andrews 230 kV substation and Hobbs to Andrews 230 kV circuit to 345 kV

For a fault that results in the loss of the Tuco to Oklaunion 345 kV line, additional mitigation is required for 20WP conditions. After discussion with SPP, it was determined that area generation scheduled for retirement would be required to be retired for 20WP conditions.

Note due to the conversion of Andrews 230 kV substation and Hobbs to Andrews 230 kV circuit to 345 kV, FLT134 and FLT135 are no longer valid. Both of these faults are stuck breaker faults from the Hobbs 230 kV bus. However, if the Hobbs to Andrews 345 kV conversion does not take place, FLT134 and FLT135 will need to be mitigated because stability issues were identified.

For GEN-2016-015, the unit is observed to trip offline due to over frequency protection. For this study, the over frequency protection of the photovoltaic inverter model (PVGU1 and PVEU1) were set to 65 Hz to avoid instantaneous tripping. The GEN-2016-015 customer will need to coordinate with the inverter manufacturer to verify that the generators will not trip for faults on the system with normal clearing time.

After implementing the above upgrades, the contingency analysis was re-simulated for all contingencies. With the upgrades, the Stability Analysis determined that there was no wind turbine tripping or system instability observed as a result of interconnecting all study projects at 100% output.

Summary of the Short Circuit Analysis

The short circuit analysis was performed on the 2017 Summer Peak and 2025 Summer Peak power flows for all study projects. Refer to Table 7-1 and Table 7-2 for a list of maximum fault currents observed for each study project for the 17SP and 25SP cases, respectively.

Table 7-1
2017SP: List of Maximum Fault Currents Observed for Each Study Project

Study Project	Fault Current at POI (kA)	Maximum Fault Current (kA)	Fault Location	Bus Voltage (kV)
GEN-2015-041	16.68	30.64	Mathewson	345 kV
ASGI-2016-001	11.79	30.69	LP-Cook	69 kV
ASGI-2016-002	3.08	25.69	Tuco	230 kV
ASGI-2016-004	6.76	31.31	Nichols	115 kV
GEN-2016-015	6.46	32.84	Hobbs	115 kV
GEN-2016-056	12.51	30.69	LP-Cook	69 kV
GEN-2016-062	6.46	32.84	Hobbs	115 kV
GEN-2016-069	6.26	29.54	Cunningham	115 kV

Table 7-2
2025SP: List of Maximum Fault Currents Observed for Each Study Project

Study Project	Fault Current at POI (kA)	Maximum Fault Current (kA)	Fault Location	Bus Voltage (kV)
GEN-2015-041	16.86	35.17	LP-Cook	69 kV
ASGI-2016-001	11.92	35.17	LP-Cook	69 kV
ASGI-2016-002	3.09	26.11	Tuco	230 kV
ASGI-2016-004	6.77	31.51	Nichols	115 kV
GEN-2016-015	7.62	33.43	Hobbs	115 kV
GEN-2016-056	15.30	35.17	LP-Cook	69 kV
GEN-2016-062	7.62	33.43	Hobbs	115 kV
GEN-2016-069	6.36	30.12	Cunningham	115 kV

Summary of Power Factor Analysis

The upgrades identified in the Stability Analysis were implemented in the power flow cases and utilized for the Power Factor Analysis. Refer to Table 7-3 for the power factor analysis results for each study generator.

Table 7-3
Power Factor Analysis Summary for Study Projects

Study Project	Power Factor Range for Each Study Project[1]									
	16WP		17SP		20SP		20WP		25SP	
ASGI-2016-001	-0.148	0.369	-0.160	0.397	-0.158	0.370	-0.277	0.386	-0.111	0.347
ASGI-2016-002	-0.733	0.902	-0.716	0.832	-0.719	0.850	-0.840	0.907	-0.552	0.819
ASGI-2016-004	-0.315	0.845	-0.153	0.956	-0.525	0.926	-0.497	0.838	-0.533	0.577
GEN-2016-015	0.986	1.000	-0.972	0.999	0.931	0.999	0.932	0.996	0.908	0.995
GEN-2016-056	-0.986	0.979	-0.830	-0.998	-0.983	0.983	-0.997	0.989	-0.822	-0.977
GEN-2016-062	0.998	1.000	-0.995	1.000	0.988	1.000	0.988	0.999	0.984	0.999
GEN-2016-069	0.792	1.000	0.842	0.969	0.880	0.939	0.506	0.686	0.888	0.921

[1]Lagging power factors are negative and leading power factors are positive

Summary of Low/No Wind/Irradiance Analysis

The amount of reactive power injected into the transmission network was recorded at the point of interconnection for each wind and solar powered interconnection request for each season.

11.14.6 J7: GROUP 7 DYNAMIC STABILITY ANALYSIS REPORT

Previous stability analysis is still valid.

11.14.7 J8: GROUP 8 DYNAMIC STABILITY ANALYSIS REPORT

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Southwest Power Pool, Inc. (SPP)

DISIS-2016-001-1 (Group 08) Definitive Impact Study

Final Report

REP-0145
Revision #00

December 2017

Submitted By:
Mitsubishi Electric Power Products, Inc. (MEPPI)
Power Systems Engineering Division
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Title: **DISIS-2016-001-1 (Group 08) Definitive Impact Study: Final Report REP-0145**
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EXECUTIVE SUMMARY

SPP requested a Definitive Interconnection System Impact Study (DISIS). The DISIS required a Stability Analysis, Short Circuit Analysis, Power Factor Analysis, and Low/No Wind/Solar Irradiance Analysis detailing the impacts of the interconnecting projects as shown in Table ES-1.

Table ES-1
Interconnection Projects Evaluated

Request	Size (MW)	Generator Model	Point of Interconnection
GEN-2016-009	29	GENROU (Steam; 587073, 587074)	Osage 69Kv (514742)
GEN-2016-022	151.8	Vestas V126 3.45MW (wind; 587163)	Ranch Road 345kV (515576)
GEN-2016-031	1.5MW uprate of GEN-2015-001(total = 201.3MW)	Vestas V126 3.3MW (wind; 584453)	Ranch Road 345kV (515576)
GEN-2016-032	200	Vestas V110 2MW (wind; 587213)	Tap Marshall (514733)- Cottonwood Creek (514827) 138kV, (G16-032-TAP, 560077)
GEN -2016-048	82.3	Sunny Central 2940 2.94MW (solar; 587333)	Sooner 138kV (514802)
GEN-2016-060	25.3	G.E. 2.3MW (wind)	Belle Plain 138kV (533063)
GEN-2016-061	250.7	GE 2.3 MW (wind; 587413)	Tap Woodring (514715) – Sooner (514803) 345kV (G16-061-TAP, 560084)
GEN-2016-068	250	GE 2.0MW (wind; 587463)	Woodring 345kV (514715)
GEN-2016-071	200.1	GE 2.3MW (wind; 587483)	Chilocco 138kV (521198)
GEN-2016-073	220	GE 2.0MW (wind; 587503)	Tap on Thistle (539801) to Wichita (532796) 345kV, ckt1&2 (Buffalo Flats 345kV; 560033)

SUMMARY OF STABILITY ANALYSIS

The Stability Analysis determined that there were contingencies across all seasons that resulted in system/voltage instability, generation tripping offline, and poor post-fault voltage recovery when all generation interconnection requests were at 100% output.

To mitigate the system/voltage instability, voltage violations, generation tripping offline, and poor post-fault steady-state voltages, the following control actions were provided by SPP and implemented in each season:

- Dispatch of shunt capacitors at TIMBJCT2 and UDALL_2 after the prior outage for FLT98-PO to prevent post-fault steady-state voltages below 0.9 p.u. in the vicinity of TCROCK only in the 2016 Winter Peak (16WP) case.
- Reduction of generation at GEN-2016-071 by 110 MW in 2016 Winter Peak (16WP) and by 75 MW in 2017 Summer Peak (17SP) and 2025 Summer Peak (25 SP) cases following prior outage of Middleton Tap to Peckham Tap 345 kV line for FLT122-PO and FLT123-PO to mitigate instability and generator tripping.

After implementing the above control actions, the contingency analysis was re-simulated for all contingencies. With the upgrades, the Stability Analysis determined that there was no wind turbine tripping or system instability observed as a result of interconnecting all study projects at 100% output.

SUMMARY OF THE SHORT CIRCUIT ANALYSIS

The Short Circuit Analysis was performed on the 2017 Summer Peak (17SP) and 2025 Summer Peak (25SP) power flows for all study projects. Refer to Table ES-2 and Table ES-3 for a list of maximum fault currents observed for each study project for the 17SP and 25SP cases, respectively.

Table ES-2
2017SP: List of Maximum Fault Currents Observed for Each Study Project

Study Project	Fault Current at POI (kA)	Maximum Fault Current (kA)	Fault Location	Bus Voltage (kV)
GEN-2016-009	15.66	31.90	SOONER 4	138
GEN-2016-022	14.21	43.19	NORTWST4	138
GEN-2016-031	14.21	43.19	NORTWST4	138
GEN-2016-032	3.38	43.19	NORTWST4	138
GEN-2016-048	31.9	43.19	NORTWST4	138
GEN-2016-060	8.99	31.43	ROSEHIL4	138
GEN-2016-061	16.69	43.19	NORTWST4	138
GEN-2016-068	18.99	43.19	NORTWST4	138
GEN-2016-071	9.02	11.66	KILDARE4	138
GEN-2016-073	20.8	37.73	EVANS N4	138

Table ES-3
2025SP: List of Maximum Fault Currents Observed for Each Study Project

Study Project	Fault Current at POI (kA)	Maximum Fault Current (kA)	Fault Location	Bus Voltage (kV)
GEN-2016-009	18.54	32.33	SOONER 4	138
GEN-2016-022	14.24	43.56	NORTWST4	138
GEN-2016-031	14.24	43.56	NORTWST4	138
GEN-2016-032	3.38	43.56	NORTWST4	138
GEN-2016-048	31.9	43.43	NORTWST4	138
GEN-2016-060	10.45	42.82	EVANS N4	138
GEN-2016-061	16.82	43.56	NORTWST4	138
GEN-2016-068	19.31	43.56	NORTWST4	138
GEN-2016-071	9.26	22.35	VIOLA 4	138
GEN-2016-073	21.33	42.82	EVANS N4	138

SUMMARY OF POWER FACTOR ANALYSIS

Refer to Table ES-4 for the power factor range observed for each study project.

Table ES-4
Summary of Results for the Power Factory Analysis

Generator	Power Factor Range for each study generator[1]					
	16WP		17SP		25SP	
GEN-2016-022	-0.959	Unity	-0.984	0.998	-0.983	0.998
GEN-2016-031	-0.976	Unity	-0.991	0.999	-0.990	0.999
GEN-2016-032	-0.978	0.999	-0.985	0.999	-0.987	0.999
GEN-2016-048	-0.556	-0.773	-0.573	-0.795	-0.567	-0.782
GEN-2016-060	-0.888	-0.998	-0.982	0.993	-0.990	0.994
GEN-2016-061	-0.855	0.971	-0.870	0.972	-0.867	0.974
GEN-2016-068	-0.884	0.975	-0.860	0.976	-0.874	0.977
GEN-2016-071	-0.968	0.986	-0.997	0.989	-0.998	0.993
GEN-2016-073	-0.833	0.999	-0.966	0.992	-0.973	0.983

[1]Lagging power factors are negative and leading power factors are positive

SUMMARY OF LOW/NO WIND/IRRADIANCE ANALYSIS

The amount of reactive power injected into the transmission network was recorded at the point of interconnection for each wind and solar powered interconnection request for each season.

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SECTION 1: OBJECTIVES

The objective of this report is to provide Southwest Power Pool, Inc. (SPP) with the deliverables for the "DISIS-2016-001-1 (Group 08) Definitive Impact Study." SPP requested an Interconnection System Impact Study for ten (10) generation interconnections for 2016 Winter Peak, 2017 Summer Peak, and 2025 Summer Peak, which requires a Stability Analysis, Short Circuit Analysis, Power Factor Analysis, Low Wind/No Wind Analysis, and an Impact Study Report.

SECTION 2: BACKGROUND

The Siemens Power Technologies International PSS/E power system simulation program Version 32.2.2 was used for this study. SPP provided the stability database cases for 2016 Winter Peak, 2017 Summer Peak, and 2025 Summer Peak conditions and a list of contingencies to be examined. The model includes the study projects shown in Table 2-1 and the previously queued projects listed in Table 2-2. Refer to Appendix A for the steady-state and dynamic model data for the study projects. A power flow one-line diagram for each generation interconnection project is shown in Figures 2-1 through 2-9. Note that the one-line diagrams represent the 2017 Summer Peak case.

The Stability Analysis determined the impacts of the new interconnecting projects on the stability and voltage recovery of the nearby system and the ability of the interconnecting projects to meet FERC Order 661A. SPP Performance Criteria violations for stability and voltage recovery were identified and the need for reactive compensation or system upgrades was investigated. Three-phase faults and single line-to-ground faults were examined as listed in Table 2-3.

A Short Circuit Analysis was performed on the 2017 Summer Peak and 2025 Summer Peak study years for each study generator. The study was performed five buses out from the study generator's point of interconnection and results were documented.

The Power Factor Analysis determined the power factor at the point of interconnection for the wind or solar interconnection projects for pre-contingency and post-contingency conditions. Table 2-3 lists the contingencies developed from the three-phase fault definitions provided in the group's interconnection impact study request.

The Low/No Wind/Irradiance Analysis was completed for all wind farm and solar farm interconnections. This analysis determined the reactive support required to have a Mvar flow of approximately zero at the point of interconnection (POI).

Table 2-1
Interconnection Projects Evaluated

Request	Size (MW)	Generator Model	Point of Interconnection
GEN-2016-009	29	GENROU (Steam; 587073, 587074)	Osage 69Kv (514742)
GEN-2016-022	151.8	Vestas V126 3.45MW (wind; 587163)	Ranch Road 345kV (515576)
GEN-2016-031	1.5MW uprate of GEN-2015-001(total = 201.3MW)	Vestas V126 3.3MW (wind; 584453)	Ranch Road 345kV (515576)
GEN-2016-032	200	Vestas V110 2MW (wind; 587213)	Tap Marshall (514733)- Cottonwood Creek (514827) 138kV, (G16-032-TAP, 560077)
GEN -2016-048	74	Sunny Central 2940 2.94MW (solar; 587333)	Sooner 138kV (514802)
GEN-2016-060	25.3	G.E. 2.3MW (wind)	Belle Plain 138kV (533063)
GEN-2016-061	250.7	GE 2.3 MW (wind; 587413)	Tap Woodring (514715) – Sooner (514803) 345kV (G16-061-TAP, 560084)
GEN-2016-068	250	GE 2.0MW (wind; 587463)	Woodring 345kV (514715)
GEN-2016-071	200.1	GE 2.3MW (wind; 587483)	Chilocco 138kV (521198)
GEN-2016-073	220	GE 2.0MW (wind; 587503)	Tap on Thistle (539801) to Wichita (532796) 345kV, ckt1&2 (Buffalo Flats 345kV; 560033)

Table 2-2
Previously Queued Nearby Interconnection Projects Included

Request	Size (MW)	Generator Model	Point of Interconnection
GEN-2002-004	199.5	GE.1.5MW	Latham 345kV (532800)
GEN-2005-013	199.8	Vestas V90 1.8MW	Caney River 345kV (532780)
GEN-2007-025	299.2	GE 1.6MW	Viola 345kV (532798)
GEN-2008-013	300	G.E. 1.68MW	Hunter 345kV (515476)
GEN-2008-021	1261 Summer 1283 Winter	GENROU	Wolf Creek 345kV (532797)
GEN-2008-098	100.8	Vestas V100 1.8MW	Tap on the Wolf Creek – LaCygne 345kV line (560004)
GEN-2009-025	59.8	Siemens 2.3MW	Tap on the Deerck – Sincblk 69KV line (515528)
GEN-2010-003	100.8	Vestas V100 1.8MW	Tap on the Wolf Creek – LaCygne 345kV line (560004)
GEN-2010-005	299.2	GE 1.6MW	Viola 345kV (532798)
ASGI-2010-006	150	GE1.5MW	Remington 138kV (301369)
GEN-2010-055	4.8	GENROU	Wekiwa 138kV (509757)
GEN-2011-057	150.4	Vestas VCSS 2.0MW (533141)	Creswell 138kV (532981)
KCPL Distributed: Osawatomie	76.0	GENROU (543078)	Paola 161kV
GEN-2012-032	300	Vestas V112 3.0MW	Tap Rose Hill-Sooner 345kV (562318)
GEN-2012-033	98.8	GE 1.62MW	Tap Bunch Creek-South 4th 138kV(562303)
GEN-2012-041	85 Summer 121.5 Winter	GENROU	Tap Rose Hill-Sooner 345kV (562318)
GEN-2013-012	4 x 168.0MW Summer 4 x 215MW Winter	GENROU (514910) (514911) (514912) (514942)	Redbud 345kV (514909)

Request	Size (MW)	Generator Model	Point of Interconnection
GEN-2013-028	516.4 Summer 559.5 Winter	GENROU (583743, 583746)	Tap on Tulsa N to GRDA1 345kV (562423)
GEN-2013-029	300	Vestas V100 VCSS 2MW (583753, 583756)	Renfrow 345kV(515543)
GEN-2014-001	200.6	Gamesa 2.1MW (583853,583856)	Tap Wichita to Emporia Energy Center 345kV (562476)
GEN-2014-028	35 (Uprate) (Pgen=259W/256 S)	GENROU	Riverton 161kV (547469)
GEN-2014-064	248.4	GE 2.3MW	Otter 138kV (514708)
ASGI-2014-014	56.4W/54.3S	GENROU	Ferguson 69kV (512664)
GEN-2015-001	199.8	Vestas V126 3.3MW Vestas V126 3.0MW (wind; 584453, '1' & '2')	Ranch Road 345kV
GEN-2015-015	154.6	Siemens 2.3MW with Power Boost (115kW => 2.415MW)	Tap Medford Tap – Coyote 138kV
GEN-2015-016	200.0	Vestas V110 2.0MW	Tap Centerville – Marmaton 161kV
GEN-2015-024	220.0	GE 2.0MW	Tap on Thistle to Wichita 345kV, ckt1&2 (560033)
GEN-2015-025	220.0	GE 2.0MW	Tap on Thistle to Wichita 345kV, ckt1&2 (560033)
GEN-2015-030	200.1	GE 2.3MW	Sooner 345kV
ASGI-2015-004	54.300 Summer 56.364 Winter	GENSAL	Coffeyville Municipal Light & Power Northern Industrial Park Substation 69kV (512735)
GEN-2015-034	200	Vestas V112- 2MW	Ranch Road 345kV (515576)
GEN-2015-047	300	Vestas V110-2MW	Sooner 345kV Tap (514803)
GEN-2015-052	300	Vestas V110-2MW	Tap on Opensky (515621) to RoseHill (532794) 345 kV (560053)

Request	Size (MW)	Generator Model	Point of Interconnection
GEN-2015-062	4.5	G.E. 1.79MW	Breckenridge 138kV (514815)
GEN-2015-063	300	Vestas V110-2MW	Tap on Woodring (514715) to Matthewson (515497) 345 kV (560055)
GEN-2015-069	300	Vestas V110-2MW	Union Ridge 230kV (532874)
GEN-2015-073	200.1	Siemens 2.3MW	Emporia/Lang 345kV (532768)
GEN-2015-066	248	G.E. 2.3MW	Tap on Cleveland (512694) to Sooner (514803) 345 kV (560056)
GEN-2015-083	125	G.E. 2.3MW	Belle Plain 138kV (533063)
GEN-2015-090	220	G.E. 2MW	Wichita (532796)-Thistle (539801) 345kV Tap (GEN-2015-024 (560033) 345kV)

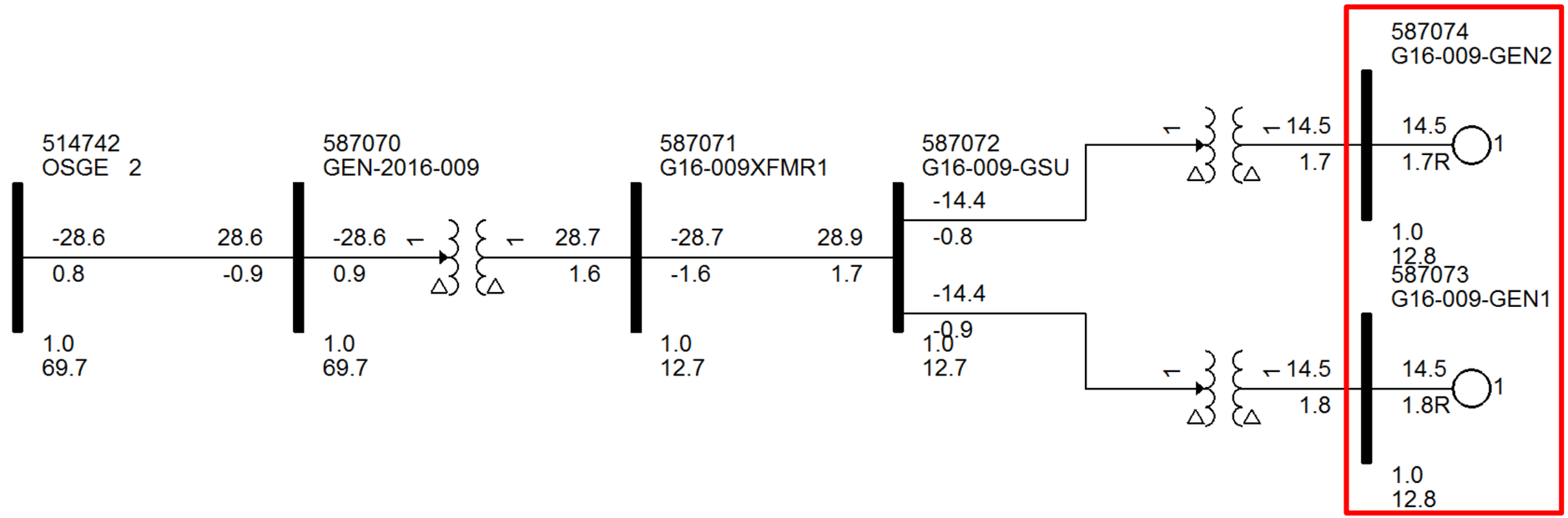

Figure 2-1. Power flow one-line diagram for interconnection project at the Osage 69 kV POI (GEN-2016-009).

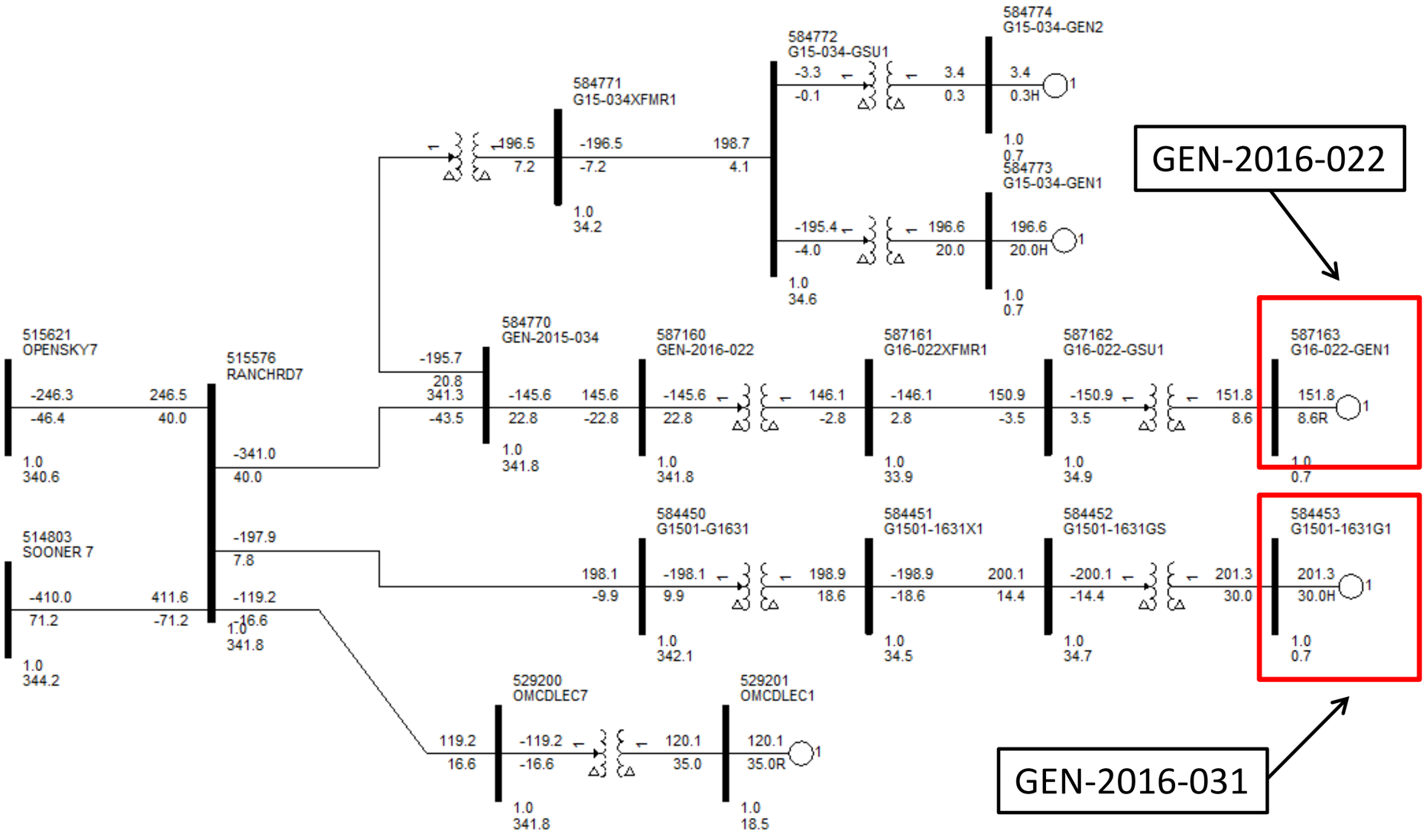

Figure 2-2. Power flow one-line diagram for interconnection project at the Ranch Road 345 kV POI (GEN-2016-022 & GEN-2016-031).

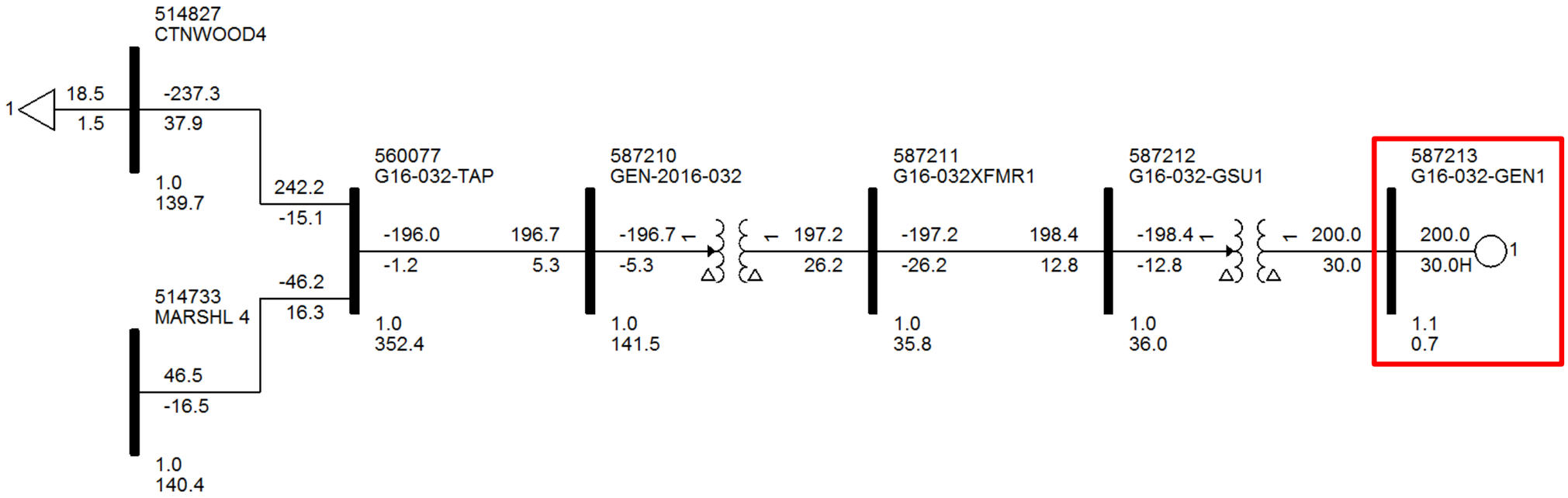

Figure 2-3. Power flow one-line diagram for interconnection project at the Marshall to Cottonwood Creek 138 kV POI (GEN-2016-032).

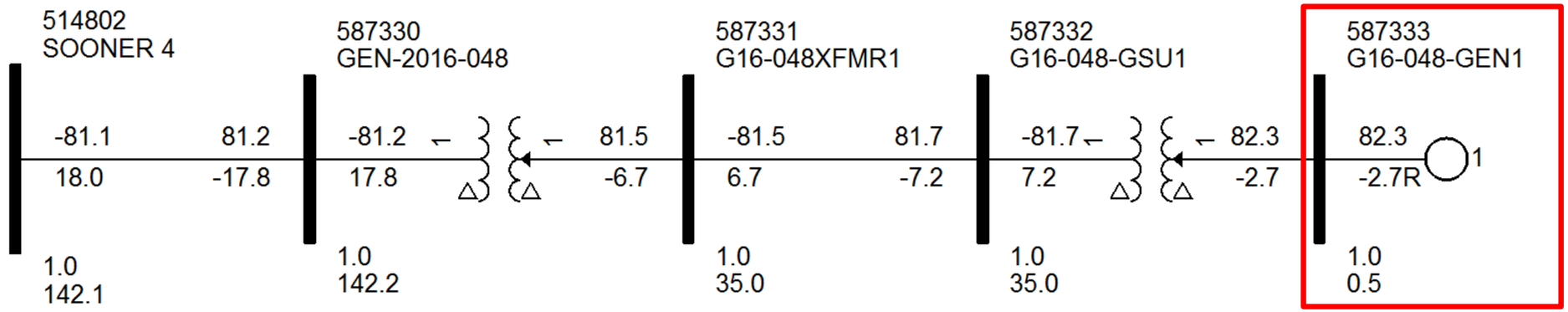

Figure 2-4. Power flow one-line diagram for interconnection project at Sooner 138 kV POI (GEN-2016-048).

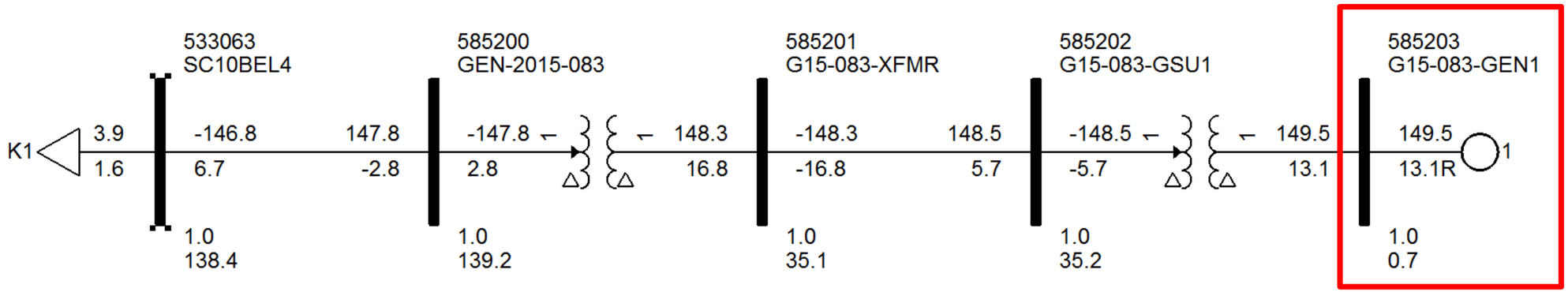

Figure 2-5. Power flow one-line diagram for interconnection project at the Belle Plain 138 kV POI (GEN-2016-060).

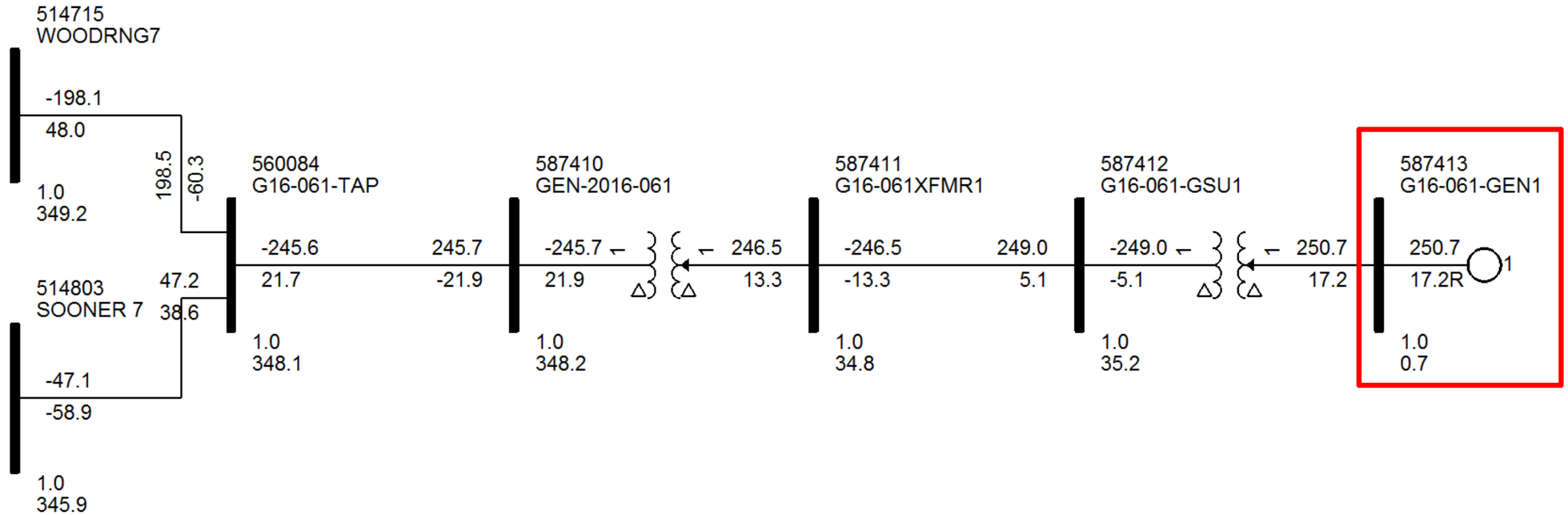

Figure 2-6. Power flow one-line diagram for interconnection project at the Woodring to Sooner 345 kV POI (GEN-2016-061).

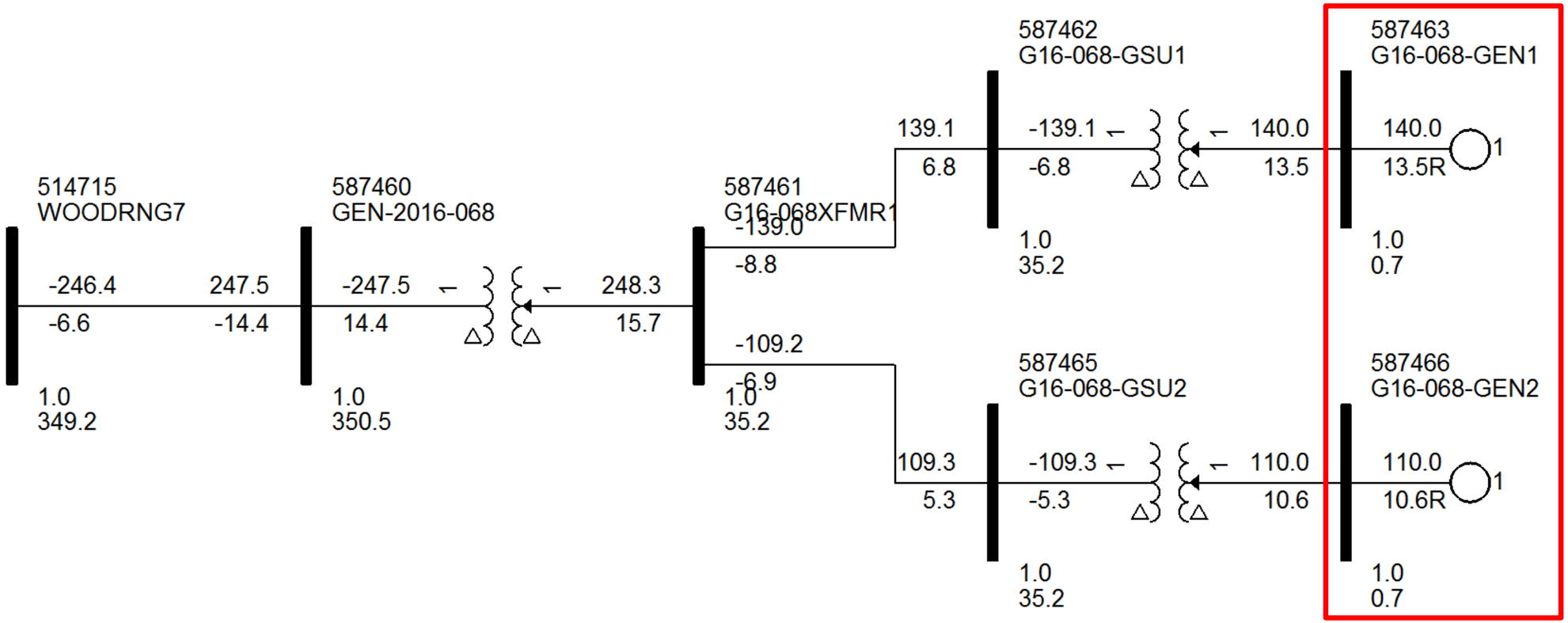

Figure 2-7. Power flow one-line diagram for interconnection project at Woodring 345 kV POI (GEN-2016-068).

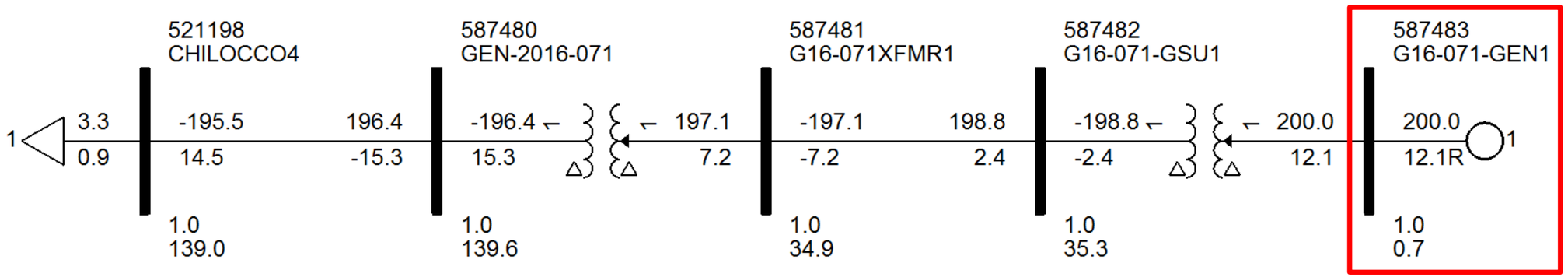

Figure 2-8. Power flow one-line diagram for interconnection project at Chilocco 138 kV POI (GEN-2016-071).

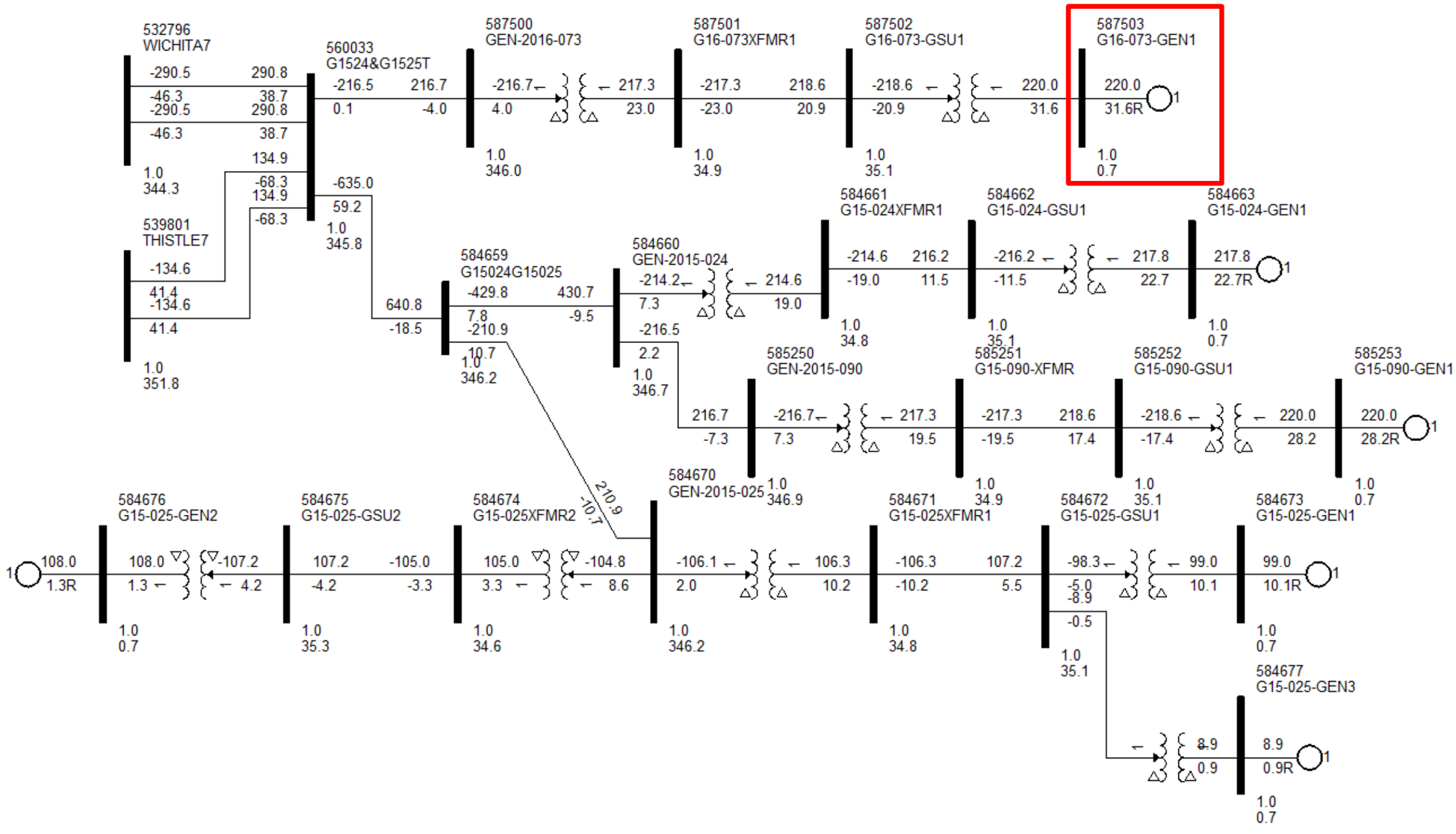

Figure 2-9. Power flow one-line diagram for interconnection project at Thistle to Wichita 345 kV POI (GEN-2016-073).

Table 2-3
Case List with Contingency Description

Cont. No.	Cont. Name	Description
1	FLT01-3PH	3 phase fault on the Osage (514742) to CONBLKT (515402) 69kV circuit 1 line, near Osage. a. Apply fault at the Osage 69kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
2	FLT02-3PH	3 phase fault on the Osage (514743) 138/(514742) 69/(515744) 13.2kV transformer, near Osage 69kV. a. Apply fault at the Osage 69kV bus. b. Clear fault after 5 cycles by tripping the faulted transformer.
3	FLT03-3PH	3 phase fault on the Osage (514742) to OMWW (529249) 69kV circuit 1 line, near Osage. a. Apply fault at the Osage 69kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
4	FLT04-3PH	3 phase fault on the Osage (514743) to White Eagle (514761) 138kV circuit 1 line, near Osage. a. Apply fault at the Osage 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
5	FLT05-3PH	3 phase fault on the Osage (514743) to Sooner Pump Tap (514798) 138kV circuit 1 line, near Osage. a. Apply fault at the Osage 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
6	FLT06-3PH	3 phase fault on the Osage (514743) to Marland Tap (514770) 138kV circuit 1 line, near Osage. a. Apply fault at the Osage 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
7	FLT07-3PH	3 phase fault on the Osage (514743) to Webber Tap (510376) 138kV circuit 1 line, near Osage. a. Apply fault at the Osage 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
8	FLT08-3PH	3 phase fault on the Osage (514743) to Standing Bear (514758) 138kV circuit 1 line, near Osage. a. Apply fault at the Osage 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
9	FLT09-SB	**Stuck Breaker on Osage – CONBLKT2 69kV circuit 1 line** a. Apply single-phase fault at Osage (514742) on the 69kV bus. b. After 16 cycles, trip the Osage 138 (514743)/69/(515744) 13.2kV transformer c. Trip the Osage – CONBLKT2 (515402) 69kV circuit 1 line, and remove the fault
10	FLT10-SB	**Stuck Breaker on Osage Transformer circuit 1 line** a. Apply single-phase fault at Osage (514742) on the 69kV bus. b. After 16 cycles, trip the Osage 138/69/13.2kV (514743/514742/515744) transformer c. Trip the Osage 138/69/13.2kV (514743/514742/515744) transformer, and remove the fault
11	FLT11-SB	**Stuck Breaker on Osage – Marland Tap 138kV circuit 1 line** a. Apply single-phase fault at Osage (514743) on the 138kV bus. b. After 16 cycles, trip the Osage – Marland Tap (514770) 138kV circuit 1 line c. Trip the Osage – Webber Tap (510376) 138kV circuit 1 line, and remove the fault
12	FLT12-PO	**Prior outage on the Osage (514742) – CONBLKT2 (515402) 69kV line** 3 phase fault on the Osage 138/69/13.2kV (514743/514742/515744) transformer, near Osage. a. Apply fault at the Osage 69kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
13	FLT13-PO	**Prior outage on the Osage 138/69/13.2kV (514743/514742/515744) transformer** 3 phase fault on the Osage 138/69/13.2kV (514743/514742/515745) transformer, near Osage. a. Apply fault at the Osage 69kV bus. b. Clear fault after 5 cycles by tripping the faulted line.

Cont. No.	Cont. Name	Description
14	FLT14-PO	**Prior outage on the Osage (514743) – Standing Bear (514758) 138kV line** 3 phase fault on the Osage (514743) – White Eagle (514761) 138kV line, near Osage. a. Apply fault at the Osage 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
15	FLT17-3PH	3 phase fault on the Waverly (532799) to Wolf Creek (532797) 345kV line, near Waverly. a. Apply fault at the Waverly 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
16	FLT18-3PH	3 phase fault on the Rose Hill (532794) to Wolf Creek (532797) 345kV line, near Wolf Creek. a. Apply fault at the Wolf Creek 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
17	FLT19-3PH	3 phase fault on the Benton (532791) to Wolf Creek (532797) 345kV line, near Wolf Creek. a. Apply fault at the Wolf Creek 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
18	FLT20-3PH	3 phase fault on Wolf Creek 345/69/17kV (532797/533653/532962) transformer, near Wolf Creek. a. Apply fault at the Wolf Creek 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
19	FLT21-3PH	3 phase fault on the LaCygne (542981) to West Gardner (542965) 345kV line, near LaCygne. a. Apply fault at the LaCygne 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
20	FLT22-3PH	3 phase fault on the LaCygne (542981) to Stilwell (542968) 345kV line, near LaCygne. a. Apply fault at the LaCygne 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
21	FLT23-3PH	3 phase fault on the LaCygne (542981) to Neosho (532793) 345kV line, near LaCygne. a. Apply fault at the LaCygne 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
22	FLT24-SB	**Stuck Breaker on LaCygne – G16-012-Tap 345kV circuit 1 line** a. Apply single-phase fault at LaCygne (542981) on the 345kV bus. b. After 16 cycles, trip the LaCygne – G16-012-Tap (560073) 345kV circuit 1 line c. Trip the LaCygne – West Gardner (542965) 345kV circuit 1 line, and remove the fault
23	FLT25-SB	**Stuck Breaker on LaCygne – West Gardner 345kV circuit 1 line** a. Apply single-phase fault at LaCygne (542981) on the 345kV bus. b. After 16 cycles, trip the LaCygne – West Gardner (542965) 345kV circuit 1 line c. Trip the LaCygne – Stilwell (542968) 345kV circuit 1 line and load #1 at LaCygne, and remove the fault.
24	FLT26-SB	**Stuck Breaker on Wolf Creek – Waverly 345kV circuit 1 line** a. Apply single-phase fault at Wolf Creek (532797) on the 345kV bus. b. After 3.6 cycles, trip the Wolf Creek – Waverly (532799) 345kV circuit 1 line c. After 6.6 additional cycles, trip Wolf Creek 345/69kV transformer (532797/533653/532962) and remove fault.

Cont. No.	Cont. Name	Description
25	FLT27-PO	**Prior outage of the LaCygne (542981) – Waverly (532799) 345kV line** a. Trip LaCygne (542981) – Waverly (532799) 345kV line b. Reduce Wolf Creek gen (532797) to 800MW. c. Solve for powerflow steady state Then the following stability contingency: 3 phase fault on the Wolf Creek (532797) – Rose Hill (532794) 345kV line, near Wolf Creek. a. Apply fault at the Wolf Creek 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
26	FLT28-PO	**Prior outage of the LaCygne (542981) – Waverly (532799) 345kV line** a. Trip LaCygne (542981) – Waverly (532799) 345kV line b. Reduce Wolf Creek gen (532797) to 800MW. c. Solve for powerflow steady state Then the following stability contingency: 3 phase fault on the Wolf Creek (532797) – Benton (532791) 345kV line, near Wolf Creek. a. Apply fault at the Wolf Creek 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
27	FLT29-PO	**Prior outage of the LaCygne (542981) – Waverly (532799) 345kV line** a. Trip LaCygne (542981) – Waverly (532799) 345kV line b. Reduce Wolf Creek gen (532797) to 800MW. c. Solve for powerflow steady state Then the following stability contingency: 3 phase fault on the LaCygne (542981) – West Gardner (542965) 345kV line, near LaCygne. a. Apply fault at the LaCygne 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
28	FLT30-PO	**Prior outage of the LaCygne (542981) – Waverly (532799) 345kV line** a. Trip LaCygne (542981) – Waverly (532799) 345kV line b. Reduce Wolf Creek gen (532797) to 800MW. c. Solve for powerflow steady state Then the following stability contingency: 3 phase fault on the LaCygne (542981) – Stilwell (542968) 345kV line, near LaCygne. a. Apply fault at the LaCygne 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
29	FLT31-PO	**Prior outage of the LaCygne (542981) – Waverly (532799) 345kV line** a. Trip LaCygne (542981) – Waverly (532799) 345kV line b. Reduce Wolf Creek gen (532797) to 800MW. c. Solve for powerflow steady state Then the following stability contingency: 3 phase fault on the LaCygne (542981) – Neosho (532793) 345kV line, near LaCygne. a. Apply fault at the LaCygne 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
30	FLT32-PO	**Prior outage of the LaCygne (542981) – West Gardner (542965) 345kV line** 3 phase fault on the LaCygne (542981) – Neosho (532793) 345kV line, near LaCygne. a. Apply fault at the LaCygne 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

Cont. No.	Cont. Name	Description
31	FLT33-3PH	3 phase fault on the Open Sky (515621) to Ranch Road (515576) 345kV line, near Ranch Road. a. Apply fault at the Ranch Road 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
32	FLT34-3PH	3 phase fault on the Open Sky (515621) to G15-052T (560053) 345kV line, near Open Sky. a. Apply fault at the Open Sky 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
33	FLT35-3PH	3 phase fault on the Ranch Road (515576) to Sooner (514803) 345kV line, near Ranch Road. a. Apply fault at the Ranch Road 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
34	FLT36-3PH	3 phase fault on the G15-052T (560053) to Rose Hill (532794) 345kV line, near Rose Hill. a. Apply fault at the Rose Hill 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
35	FLT37-3PH	3 phase fault on the Sooner (514803) to Spring Creek (514881) 345kV line, near Sooner. a. Apply fault at the Sooner 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
36	FLT38-3PH	3 phase fault on the Sooner (514803) to G15-066T (560056) 345kV line, near Sooner. a. Apply fault at the Sooner 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
37	FLT39-3PH	3 phase fault on the Sooner (514803) to G16-061-Tap (560084) 345kV line, near Sooner. a. Apply fault at the Sooner 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
38	FLT40-3PH	3 phase fault on the Sooner (514803) to G16-061-Tap (560084) 345kV line, near G16-061-Tap. a. Apply fault at the G16-061-Tap 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
39	FLT41-3PH	3 phase fault on the Sooner 345/138/13.8kV (514803/514802/515760) transformer, near Sooner. a. Apply fault at the Sooner 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
40	FLT42-SB	**Stuck Breaker on Ranch Road – Open Sky 345kV circuit 1 line** a. Apply single-phase fault at Open Sky (515621) on the 345kV bus. b. After 16 cycles, trip the Open Sky – Ranch Road (515576) 345kV circuit 1 line c. Trip the Open Sky – G15-052T (560053) 345kV circuit 1 line, and remove the fault
41	FLT43-SB	**Stuck Breaker on Rose Hill – Benton 345kV circuit 1 line** a. Apply single-phase fault at Rose Hill (532794) on the 345kV bus. b. After 16 cycles, trip the Rose Hill – Benton (532791) 345kV circuit 1 line c. Trip the Rose Hill – G15-052T (560053) 345kV circuit 1 line, and remove the fault
42	FLT44-SB	**Stuck Breaker on Sooner – Spring Creek 345kV circuit 1 line** a. Apply single-phase fault at Sooner (514803) on the 345kV bus. b. After 16 cycles, trip the Sooner – Spring Creek (514881) 345kV circuit 1 line c. Trip the Sooner – Ranch Road (515576) 345kV circuit 1 line, and remove the fault
43	FLT45-SB	**Stuck Breaker on Sooner – G15-066T 345kV circuit 1 line** a. Apply single-phase fault at Sooner (514803) on the 345kV bus. b. After 16 cycles, trip the Sooner – G15-066T (560056) 345kV circuit 1 line c. Trip the Sooner – Ranch Road (515576) 345kV circuit 1 line, and remove the fault

Cont. No.	Cont. Name	Description
44	FLT46-SB	**Stuck Breaker on Sooner – G15-066T 345kV circuit 1 line** a. Apply single-phase fault at Sooner (514803) on the 345kV bus. b. After 16 cycles, trip the Sooner – G15-066T (560056) 345kV circuit 1 line c. Trip the Sooner – G16-061-Tap (560084) 345kV circuit 1 line, and remove the fault
45	FLT47-PO	**Prior outage of the Rose Hill (532794) – G15-052T (560053) 345kV line** 3 phase fault on the Ranch Road (515576) – Open Sky (515621) 345kV line, near Ranch Road. a. Apply fault at the Ranch Road 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
46	FLT48-PO	**Prior outage of the Sooner (514803) – G15-066T (560056) 345kV line** 3 phase fault on the Ranch Road (515576) – Open Sky (515621) 345kV line, near Ranch Road. a. Apply fault at the Ranch Road 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
47	FLT49-PO	**Prior outage of the Sooner (514803) – G15-066T (560056) 345kV line** 3 phase fault on the Ranch Road (515576) – Sooner (514803) 345kV line, near Ranch Road. a. Apply fault at the Ranch Road 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
48	FLT50-3PH	3 phase fault on the Midian (532990) to Butler (532987) 138kV line, near Midian. a. Apply fault at the Midian 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
49	FLT51-3PH	3 phase fault on the Midian (532990) to Benton (532986) 138kV line, near Midian. a. Apply fault at the Midian 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
50	FLT52-3PH	3 phase fault on the Midian 138/69/13.2kV (532990/533597/533082) transformer, near Midian. a. Apply fault at the Midian 138kV bus. b. Clear fault after 5 cycles by tripping the faulted transformer.
51	FLT53-3PH	3 phase fault on the Butler (532987) to Butler Tap (532989) 138kV line, near Butler. a. Apply fault at the Butler 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
52	FLT54-3PH	3 phase fault on the Butler (532987) to Altoona (533001) 138kV line, near Butler. a. Apply fault at the Butler 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
53	FLT55-3PH	3 phase fault on the Butler 138/69kV (532987/533583) transformer, near Butler. a. Apply fault at the Butler 138kV bus. b. Clear fault after 5 cycles by tripping the faulted transformer.
54	FLT56-3PH	3 phase fault on the Benton (532986) to Chisholm (533035) 138kV line, near Benton. a. Apply fault at the Benton 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
55	FLT57-3PH	3 phase fault on the Benton (532986) to 29th (533024) 138kV line, near Benton. a. Apply fault at the Benton 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

Cont. No.	Cont. Name	Description
56	FLT58-3PH	3 phase fault on the Benton (532986) to Belaire (532988) 138kV line, near Benton. a. Apply fault at the Benton 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
57	FLT59-3PH	3 phase fault on the Benton 345/138/13.8kV (532791/532986/532821) transformer, near Benton. a. Apply fault at the Benton 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
58	FLT60-SB	**Stuck Breaker on Midian – Benton 138kV circuit 1 line** a. Apply single-phase fault at Midian (532990) on the 138kV bus. b. After 16 cycles, trip the Midian – Benton (532986) 138kV circuit 1 line c. Trip the Midian – Butler (532987) 138kV circuit 1 line, and remove the fault
59	FLT61-SB	**Stuck Breaker on Midian – Benton 138kV circuit 1 line** a. Apply single-phase fault at Midian (532990) on the 138kV bus. b. After 16 cycles, trip the Midian – Benton (532986) 138kV circuit 1 line c. Trip the Midian 138/69/13.2kV (532990/533597/533082) transformer, and remove the fault
60	FLT62-SB	**Stuck Breaker on Midian – Butler 138kV circuit 1 line** a. Apply single-phase fault at Midian (532990) on the 138kV bus. b. After 16 cycles, trip the Midian – Butler (532987) 138kV circuit 1 line c. Trip the Midian 138/69/13.2kV (532990/533597/533082) transformer, and remove the fault
61	FLT63-PO	**Prior outage of the Midian (532990) – Butler (532987) 138kV line** 3 phase fault on the Midian (532990) – Benton (532986) 138kV line, near Midian. a. Apply fault at the Midian 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
62	FLT64-PO	**Prior outage of the Midian (532990) – Butler (532987) 138kV line** 3 phase fault on the Midian 138/69/13.2kV (532990/533597/533082) transformer, near Midian. a. Apply fault at the Midian 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
63	FLT65-PO	**Prior outage of the Midian (532990) – Benton (532986) 138kV line** 3 phase fault on the Midian 138/69/13.2kV (532990/533597/533082) transformer, near Midian. a. Apply fault at the Midian 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
64	FLT66-3PH	3 phase fault on the G16-032-Tap (560077) to Marshall (514733) 138kV line, near G16-032-Tap. a. Apply fault at the G16-032-Tap 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
65	FLT67-3PH	3 phase fault on the G16-032-Tap (560077) to Cottonwood Creek (514827) 138kV line, near G16-032-Tap. a. Apply fault at the G16-032-Tap 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
66	FLT68-3PH	3 phase fault on the Cottonwood Creek (514827) to Cresent (515377) 138kV line, near Cottonwood Creek. a. Apply fault at the Cottonwood Creek 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
67	FLT69-3PH	3 phase fault on the Cottonwood Creek (514827) to Pine St (514829) 138kV line, near Cottonwood Creek. a. Apply fault at the Cottonwood 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

Cont. No.	Cont. Name	Description
68	FLT70-3PH	3 phase fault on the Cottonwood Creek (514827) to Arcadia (514907) 138kV line, near Cottonwood Creek. a. Apply fault at the Cottonwood 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
69	FLT71-3PH	3 phase fault on the Cottonwood Creek (514827) to Liberty Lake (515373) 138kV line, near Cottonwood Creek. a. Apply fault at the Cottonwood 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
70	FLT72-3PH	3 phase fault on the Marshall (514733) to Woodring (514714) 138kV line, near Marshall. a. Apply fault at the Marshall 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
71	FLT73-SB	**Stuck Breaker on Marshall – G16-032-Tap 138kV circuit 1 line** a. Apply single-phase fault at Marshall (514733) on the 138kV bus. b. After 16 cycles, trip the Marshall – G16-032-Tap (560077) 138kV circuit 1 line c. Trip the Marshall – Woodring (514714) 138kV circuit 1 line, and remove the fault
72	FLT74-SB	**Stuck Breaker on Cottonwood Creek – G16-032-Tap 138kV circuit 1 line** a. Apply single-phase fault at Cottonwood Creek (514827) on the 138kV bus. b. After 16 cycles, trip the Cottonwood Creek – G16-032-Tap (560077) 138kV circuit 1 line c. Trip the Cottonwood Creek – Arcadia (514907) 138kV circuit 1 line, and remove the fault
73	FLT75-SB	**Stuck Breaker on Cottonwood Creek – G16-032-Tap 138kV circuit 1 line** a. Apply single-phase fault at Cottonwood Creek (514827) on the 138kV bus. b. After 16 cycles, trip the Cottonwood Creek – G16-032-Tap (560077) 138kV circuit 1 line c. Trip the Cottonwood Creek – Liberty Lake (515373) 138kV circuit 1 line, and remove the fault
74	FLT76-SB	**Stuck Breaker on Cottonwood Creek – Arcadia 138kV circuit 1 line** a. Apply single-phase fault at Cottonwood Creek (514827) on the 138kV bus. b. After 16 cycles, trip the Cottonwood Creek – Arcadia (514907) 138kV circuit 1 line c. Trip the Cottonwood Creek – Liberty Lake (515373) 138kV circuit 1 line, and remove the fault
75	FLT77-PO	**Prior outage of the Cottonwood Creek (514827) – Liberty Lake (515373) 138kV line** 3 phase fault on the G16-032-Tap (560077) – Cottonwood Creek (514827) 138kV line, near G16-032-Tap. a. Apply fault at the G16-032-Tap 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
76	FLT78-PO	**Prior outage of the Cottonwood Creek (514827) – Liberty Lake (515373) 138kV line** 3 phase fault on the G16-032-Tap (560077) – Marshall (514733) 138kV line, near G16-032-Tap. a. Apply fault at the G16-032-Tap 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
77	FLT79-PO	**Prior outage of the Woodring (514714) – Wauko Tap (514711) 138kV line** 3 phase fault on the G16-032-Tap (560077) – Marshall (514733) 138kV line, near G16-032-Tap. a. Apply fault at the G16-032-Tap 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
78	FLT80-3PH	3 phase fault on the Ranch Road (515576) to Sooner (514803) 345kV line, near Sooner. a. Apply fault at the Sooner 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
79	FLT81-3PH	3 phase fault on the Spring Creek (514881) to Northwest (514880) 345kV line, near Spring Creek. a. Apply fault at the Spring Creek 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

Cont. No.	Cont. Name	Description
80	FLT82-3PH	3 phase fault on the G15-066T (560056) to Cleveland (512694) 345kV line, near G15-066T. a. Apply fault at the G15-066T 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
81	FLT83-3PH	3 phase fault on the G16-061-Tap (560084) to Woodring (514715) 345kV line, near G16-061-Tap. a. Apply fault at the G16-061-Tap 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
82	FLT84-PO	**Prior outage of the Sooner (514803) – G15-066T (560056) 345kV line** 3 phase fault on the Sooner (514803) – G16-061-Tap (560084) 345kV line, near Sooner. a. Apply fault at the Sooner 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
83	FLT85-PO	**Prior outage of the Sooner (514803) – G15-066T (560056) 345kV line** 3 phase fault on the Sooner (514803) – Spring Creek (514881) 345kV line, near Sooner. a. Apply fault at the Sooner 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
84	FLT86-PO	**Prior outage of the Sooner (514803) – Ranch Road (515576) 345kV line** 3 phase fault on the Sooner (514803) – Spring Creek (514881) 345kV line, near Sooner. a. Apply fault at the Sooner 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
85	FLT87-PO	**Prior outage of the Sooner (514803) – Ranch Road (515576) 345kV line** 3 phase fault on the Sooner 345/138/13.8kV (514803/514802/515760) transformer, near Sooner. a. Apply fault at the Sooner 345kV bus. b. Clear fault after 5 cycles by tripping the faulted transformer and remove fault.
86	FLT88-3PH	3 phase fault on the Belle Plaine (533063) to Sumner (532984) 138kV line, near Belle Plaine. a. Apply fault at the Belle Plaine 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
87	FLT89-3PH	3 phase fault on the Belle Plaine (533063) to Farber (533042) 138kV line, near Belle Plaine. a. Apply fault at the Belle Plaine 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
88	FLT90-3PH	3 phase fault on the Farber (533042) to El Paso (533039) 138kV line, near Farber. a. Apply fault at the Farber 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
89	FLT91-3PH	3 phase fault on the Sumner (532984) to Viola (533075) 138kV line, near Sumner. a. Apply fault at the Sumner 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
90	FLT92-3PH	3 phase fault on the Sumner (532984) to Oxford (532982) 138kV line, near Sumner. a. Apply fault at the Sumner 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

Cont. No.	Cont. Name	Description
91	FLT93-3PH	3 phase fault on the Sumner (532984) to TIMBJCT (532992) 138kV line, near Sumner. a. Apply fault at the Sumner 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
92	FLT94-SB	**Stuck Breaker on Sumner – Viola 138kV circuit 1 line** a. Apply single-phase fault at Sumner (532984) on the 138kV bus. b. After 16 cycles, trip the Sumner – Viola (533075) 138kV circuit 1 line c. Trip the Sumner – TIMBJCT (532992) 138kV circuit 1 line, and remove the fault
93	FLT95-SB	**Stuck Breaker on Sumner – Viola 138kV circuit 1 line** a. Apply single-phase fault at Sumner (532984) on the 138kV bus. b. After 16 cycles, trip the Sumner – Oxford (532982) 138kV circuit 1 line c. Trip the Sumner – TIMBJCT (532992) 138kV circuit 1 line, and remove the fault
94	FLT96-PO	**Prior outage of the Sumner (532984) – TIMBJCT (532992) 138kV line** 3 phase fault on the Belle Plaine (533063) – Farber (533042) 138kV line, near Belle Plaine. a. Apply fault at the Belle Plaine 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
95	FLT97-PO	**Prior outage of the Sumner (532984) – Oxford (532982) 138kV line** 3 phase fault on the Belle Plaine (533063) – Farber (533042) 138kV line, near Belle Plaine. a. Apply fault at the Belle Plaine 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
96	FLT98-PO	**Prior outage of the Belle Plaine (533063) – Farber (533042) 138kV line** 3 phase fault on the Sumner (532984) – TIMBJCT (532992) 138kV line, near Sumner. a. Apply fault at the Sumner 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
97	FLT99-3PH	3 phase fault on the Woodring (514715) to Hunters (515476) 345kV line, near Woodring. a. Apply fault at the Woodring 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
98	FLT100-3PH	3 phase fault on the Woodring (514715) to G15-063T (560055) 345kV line, near Woodring. a. Apply fault at the Woodring 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
99	FLT101-3PH	3 phase fault on the Woodring 345/138/13.8kV (514715/514714/515770) transformer, near Woodring. a. Apply fault at the Woodring 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
100	FLT102-SB	**Stuck Breaker on Woodring – G15-061-Tap 345kV circuit 1 line** a. Apply single-phase fault at Woodring (514715) on the 345kV bus. b. After 16 cycles, trip the Woodring – G16-061-Tap (560084) 345kV circuit 1 line c. Trip the Woodring – G15-063T (560055) 345kV circuit 1 line, and remove the fault
101	FLT103-PO	**Prior outage of the Woodring (514715) – Hunters (515476) 345kV line** 3 phase fault on the G16-061-Tap (560084) – Sooner (514803) 345kV line, near G16-061-Tap. a. Apply fault at the G16-061-Tap 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
102	FLT104-3PH	3 phase fault on the G15-063T (560055) to Mathewson (515497) 345kV line, near G15-063T. a. Apply fault at the G15-063T 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

Cont. No.	Cont. Name	Description
103	FLT105-3PH	3 phase fault on the Hunters (515476) to Chisholm (515477) 345kV line, near Hunters. a. Apply fault at the Hunters 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
104	FLT106-3PH	3 phase fault on the Woodring (514714) to Fairmont Tap (514709) 138kV line, near Woodring. a. Apply fault at the Woodring 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
105	FLT107-SB	**Stuck Breaker on Woodring – G15-061-Tap 345kV circuit 1 line** a. Apply single-phase fault at Woodring (514715) on the 345kV bus. b. After 16 cycles, trip the Woodring – G16-061-Tap (560084) 345kV circuit 1 line c. Trip the Woodring – Hunters (515476) 345kV circuit 1 line, and remove the fault
106	FLT108-SB	**Stuck Breaker on Woodring – G15-063T 345kV circuit 1 line** a. Apply single-phase fault at Woodring (514715) on the 345kV bus. b. After 16 cycles, trip the Woodring – G15-063T (560055) 345kV circuit 1 line c. Trip the Woodring – Hunters (515476) 345kV circuit 1 line, and remove the fault
107	FLT109-PO	**Prior outage of the Woodring (514715) – Hunters (515476) 345kV line** 3 phase fault on the Woodring (514715) – G15-063T (560055) 345kV line, near Woodring. a. Apply fault at the Woodring 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
108	FLT110-PO	**Prior outage of the Woodring (514715) – G16-061-Tap (560084) 345kV line** 3 phase fault on the Woodring 345/138/13.8kV (514715/514714/515770) transformer, near Woodring. a. Apply fault at the Woodring 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
109	FLT111-3PH	3 phase fault on the Middleton Tap (514804) to Peckham Tap (515381) 138kV line, near Middleton Tap. a. Apply fault at the Middleton Tap 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
110	FLT112-3PH	3 phase fault on the Middleton Tap (514804) to Creswell (532981) 138kV line, near Middleton Tap. a. Apply fault at the Middleton Tap 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
111	FLT113-3PH	3 phase fault on the Peckham Tap (515381) to Newkirk (514759) 138kV line, near Peckham Tap. a. Apply fault at the Peckham Tap 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
112	FLT114-3PH	3 phase fault on the Creswell (532981) to Oxford (532982) 138kV line, near Creswell. a. Apply fault at the Creswell 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
113	FLT115-3PH	3 phase fault on the Creswell 138/69/13.2kV (532981/533543/533080) transformer, near Creswell. a. Apply fault at the Creswell 138kV bus. b. Clear fault after 5 cycles by tripping the faulted transformer and remove fault.
114	FLT116-3PH	3 phase fault on the Creswell (532981) to Slate Creek (533070) 138kV line, near Creswell. a. Apply fault at the Creswell 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
115	FLT117-3PH	3 phase fault on the Kildare (514760) to Chikaskia (514757) 138kV line, near Kildare. a. Apply fault at the Kildare 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

Cont. No.	Cont. Name	Description
116	FLT118-SB	**Stuck Breaker on Peckham Tap – Middleton Tap 138kV circuit 1 line** a. Apply single-phase fault at Peckham Tap (515381) on the 138kV bus. b. After 16 cycles, trip the Peckham Tap – Middleton Tap (514804) 138kV circuit 1 line c. Trip the Peckham Tap – Newkirk (514759) 138kV circuit 1 line, and remove the fault
117	FLT119-SB	**Stuck Breaker on Creswell – Middleton Tap 138kV circuit 1 line** a. Apply single-phase fault at Creswell (532981) on the 138kV bus. b. After 16 cycles, trip the Creswell – Middleton Tap (514804) 138kV circuit 1 line c. Trip the Creswell – Slate Creek (533070) 138kV circuit 1 line, and remove the fault
118	FLT120-SB	**Stuck Breaker on Creswell – Oxford 138kV circuit 1 line** a. Apply single-phase fault at Creswell (532981) on the 138kV bus. b. After 16 cycles, trip the Creswell – Oxford (532982) 138kV circuit 1 line c. Trip the Creswell – Slate Creek (533070) 138kV circuit 1 line, and remove the fault
119	FLT121-PO	**Prior outage of the Middleton Tap (514804) – Peckham Tap (515381) 345kV line** 3 phase fault on the Creswell (532981) – Slate Creek (533070) 138kV line, near Creswell. a. Apply fault at the Creswell 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
120	FLT122-PO	**Prior outage of the Middleton Tap (514804) – Peckham Tap (515381) 345kV line** 3 phase fault on the Creswell 138/69/13.2kV (532981/533543/533080) transformer, near Creswell. a. Apply fault at the Creswell 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
121	FLT123-PO	**Prior outage of the Middleton Tap (514804) – Peckham Tap (515381) 345kV line** 3 phase fault on the Creswell (532981) – Oxford (532982) 138kV line, near Creswell. a. Apply fault at the Creswell 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
122	FLT124-PO	**Prior outage of the Middleton Tap (514804) – Creswell (532981) 345kV line** 3 phase fault on the Kildare (514760) to Chikaskia (514757) 138kV line, near Kildare. a. Apply fault at the Kildare 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
123	FLT125-3PH	3 phase fault on the Renfro (515543) to Hunters (515476) 345kV line, near Renfro. a. Apply fault at the Renfro 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
124	FLT126-3PH	3 phase fault on the Renfrow (515543) to Viola (532798) 345kV line, near Renfro. a. Apply fault at the Renfro 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
125	FLT127-3PH	3 phase fault on the Viola (532798) to Wichita (532796) 345kV line, near Viola. a. Apply fault at the Viola 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
126	FLT128-3PH	3 phase fault on the Wichita (532796) to Benton (532791) 345kV line, near Wichita. a. Apply fault at the Wichita 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
127	FLT129-3PH	3 phase fault on the Wichita (532796) to G14-001 Tap (562476) 345kV line, near Wichita. a. Apply fault at the Wichita 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

Cont. No.	Cont. Name	Description
128	FLT130-3PH	3 phase fault on the Emporia EC (532768) to G14-001 Tap (562476) 345kV line, near G14-001. a. Apply fault at the G14-001 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
129	FLT131-3PH	3 phase fault on the Wichita (532796) to G1524&G1525T (560033) 345kV line circuit 1, near Wichita. a. Apply fault at the Wichita 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
130	FLT132-3PH (25SP)	3 phase fault on the Viola 345/138/13.8kV (532798/533075/532832) transformer, near Viola 345. a. Apply fault at the Viola 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
131	FLT133-3PH	3 phase fault on the Renfrow (515543) 345/(515544) 138/(515545) 13.8kV transformer, near Renfrow 345. a. Apply fault at the Renfrow 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
132	FLT134-3PH	3 phase fault on the Renfrow (515544) to Sand Ridge (520409) 138kV circuit 1 line, near Renfrow. a. Apply fault at the Renfrow 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
133	FLT135-SB	**Stuck Breaker on Renfrow – Viola 345kV circuit 1 line** a. Apply single-phase fault at Renfrow (515543) on the 345kV bus. b. After 16 cycles, trip the Renfrow 345/138/13.8kV (515543/515544/515545) transformer c. Trip the Renfrow – Viola (532798) 345 kV circuit 1 line, and remove the fault
134	FLT136-SB	**Stuck Breaker on Renfrow – Hunters 345kV circuit 1 line** a. Apply single-phase fault at Renfrow (515543) on the 345kV bus. b. After 16 cycles, trip the Renfrow 345/138/13.8kV (515543/515544/515545) transformer c. Trip the Renfrow – Hunter (515476) 345 kV circuit 1 line, and remove the fault
135	FLT137-SB	**Stuck Breaker on Renfrow – Hunter 345kV circuit 1 line** a. Apply single-phase fault at Renfrow (515543) on the 345kV bus. b. After 16 cycles, trip the Renfrow – Viola (532798) 345 kV circuit 1 line, and remove the fault c. Trip the Renfrow – Hunter (515476) 345 kV circuit 1 line, and remove the fault
136	FLT138-PO	**Prior outage on the Renfrow (515543) 345/ (515544) 138/ (515545) 13.8kV transformer** 3 phase fault on the Renfrow (515543) to Viola (532798) 345kV line, near Renfrow. a. Apply fault at the Renfrow 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
137	FLT139-PO	**Prior outage on the Renfrow (515543) 345/ (515544) 138/ (515545) 13.8kV transformer** 3 phase fault on the Renfrow (515543) to Hunter (515543) 345kV line, near Renfrow. a. Apply fault at the Renfrow 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
138	FLT140-PO	**Prior outage on the Renfrow (515543) 345/ (515544) 138/ (515545) 13.8kV transformer** 3 phase fault on the Viola (532798) to Wichita (532796) 345kV line, near Viola. a. Apply fault at the Viola 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
139	FLT141-PO	**Prior outage on the Renfrow (515544) – Sand Ridge (520409) 138kV line** 3 phase fault on the Renfrow (515544) to Grant Co (515546) 138kV line, near Renfrow. a. Apply fault at the Renfrow 138kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

Cont. No.	Cont. Name	Description
140	FLT142-3PH	3 phase fault on the Wichita (532796) to Buffalo Flats (560033) 345kV line circuit 1, near Buffalo Flats. a. Apply fault at the Buffalo Flats 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
141	FLT143-3PH	3 phase fault on the Buffalo Flats (560033) to Thistle (539801) 345kV line circuit 1, near Buffalo Flats. a. Apply fault at the Buffalo Flats 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
142	FLT144-3PH	3 phase fault on the Wichita (532796) to Reno (532771) 345kV line circuit 1, near Wichita. a. Apply fault at the Wichita 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
143	FLT145-3PH	3 phase fault on the Thistle (539801) to Woodward (515375) 345kV line circuit 1, near Thistle. a. Apply fault at the Thistle 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
144	FLT146-3PH	3 phase fault on the Thistle (539801) to G16-005-Tap (560072) 345kV line circuit 1, near Thistle. a. Apply fault at the Thistle 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
145	FLT147-3PH	3 phase fault on the Thistle 345/138/13.8kV (539801/539804/539802) transformer, near Thistle. a. Apply fault at the Thistle 345kV bus. b. Clear fault after 5 cycles by tripping the faulted transformer and remove fault.
146	FLT148-SB	**Stuck Breaker on Wichita – Buffalo Flats 345kV circuit 1 line** a. Apply single-phase fault at Buffalo Flats (560003) on the 345kV bus. b. After 16 cycles, trip the Buffalo Flats - Wichita (532796) 345kV line circuit 1 c. Trip the Buffalo Flats – Wichita (532796) 345 kV circuit 2 line, and remove the fault
147	FLT149-SB	**Stuck Breaker on Buffalo Flats - Thistle 345kV circuit 1 line** a. Apply single-phase fault at Buffalo Flats (560003) on the 345kV bus. b. After 16 cycles, trip the Buffalo Flats - Thistle (539801) 345kV line circuit 1 c. Trip the Buffalo Flats – Thistle 345 kV circuit 2 line, and remove the fault
148	FLT150-SB	**Stuck Breaker on Wichita – Reno 345kV circuit 1 line** a. Apply single-phase fault at Wichita (532796) on the 345kV bus. b. After 16 cycles, trip the Wichita – Benton (532791) 345kV line circuit 1 c. Trip the Wichita – Reno (532771) 345 kV line, and remove the fault
149	FLT151-SB	**Stuck Breaker on Thistle – Woodward 345kV circuit 1 line** a. Apply single-phase fault at Thistle (539801) on the 345kV bus. b. After 16 cycles, trip the Thistle (539801) – Woodward (515375) 345kV line circuit 1 c. Trip the Thistle – Buffalo Flats (560033) 345 kV circuit 1 line, and remove the fault
150	FLT152-PO	**Prior outage on the Wichita (532796) – Benton (532791) 345kV line** 3 phase fault on the Wichita (532796) to Viola (532798) 345kV line, near Wichita. a. Apply fault at the Wichita 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
151	FLT153-PO	**Prior outage on the Wichita (532796) – Buffalo Flats (560033) 345kV circuit 1 line** 3 phase fault on the Wichita (532796) to Buffalo Flats (560033) 345kV circuit 2 line, near Buffalo Flats. a. Apply fault at the Buffalo Flats 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
152	FLT154-PO	**Prior outage on the Wichita (532796) – Buffalo Flats (560033) 345kV circuit 1 line** 3 phase fault on the Buffalo Flats (560033) to Thistle (539801) 345kV circuit 2 line, near Buffalo Flats. a. Apply fault at the Buffalo Flats 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.

Cont. No.	Cont. Name	Description
153	FLT155-PO	**Prior outage on the Buffalo Flats (560033) – Thistle (539801) 345kV circuit 1 line** 3 phase fault on the Buffalo Flats (560033) – Thistle (539801) 345kV circuit 2 line, near Buffalo Flats. a. Apply fault at the Buffalo Flats 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
154	FLT156-PO	**Prior outage on the Buffalo Flats (560033) – Thistle (539801) 345kV circuit 1 line** 3 phase fault on the Buffalo Flats (560033) – Wichita (532796) 345kV circuit 1 line, near Buffalo Flats. a. Apply fault at the Buffalo Flats 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
155	FLT157-PO	**Prior outage on the Thistle (539801) – Woodward (515375) 345kV circuit 1 line** 3 phase fault on the Thistle (539801) – Buffalo Flats (560033) 345kV circuit 1 line, near Thistle. a. Apply fault at the Thistle 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.

SECTION 3: STABILITY ANALYSIS

The objective of the Stability Analysis was to determine the impacts of the generator interconnections on the stability and voltage recovery on the SPP transmission system.

3.1 Approach

SPP provided MEPPI with the following three power flow cases:

- MDWG15-16WP_DIS16011_G08
- MDWG15-17SP_DIS16011_G08
- MDWG15-25SP_DIS16011_G08

Each case was examined prior to the Stability Analysis to ensure the case contained the proposed study projects and any previously queued projects listed in Tables 2-1 and 2-2 respectively. There was no suspect power flow data in the study area. The dynamic datasets were also verified and stable initial system conditions (i.e., "flat lines") were achieved. Three-phase and single phase-to-ground faults listed in Table 2-3 were examined. Single-phase fault impedances were calculated for each season to result in a voltage of approximately 60% of the pre-fault voltage. Refer to Table 3-1 for a list of the calculated single-phase fault impedances utilized.

Table 3-1
Calculated Single-Phase Fault Impedances

Cont. No.*	Cont. Name	Single-Phase Fault Impedance (MVA)		
		2016 Winter	2017 Summer	2025 Summer
9	FLT09-1PH	-1375.0	-1375.0	-1625.0
10	FLT10-1PH	-1375.0	-1375.0	-1625.0
11	FLT11-1PH	-2609.4	-2609.4	-2812.5
22	FLT24-1PH	-8500.0	-9312.5	-9312.5
23	FLT25-1PH	-8500.0	-9312.5	-9312.5
24	FLT26-1PH	-6062.5	-6062.5	-6062.5
40	FLT42-1PH	-4640.6	-4843.8	-4843.8
41	FLT43-1PH	-6468.8	-6875.0	-7281.3
42	FLT44-1PH	-9312.5	-9312.5	-10125.0
43	FLT45-1PH	-9312.5	-9312.5	-10125.0
44	FLT46-1PH	-9312.5	-9312.5	-10125.0
58	FLT60-1PH	-1500.0	-1625.0	-1625.0
59	FLT61-1PH	-1500.0	-1625.0	-1625.0
60	FLT62-1PH	-1500.0	-1625.0	-1625.0
71	FLT73-1PH	-1375.0	-1375.0	-1375.0
72	FLT74-1PH	-2812.5	-2812.5	-2812.5
73	FLT75-1PH	-2812.5	-2812.5	-2812.5
74	FLT76-1PH	-2812.5	-2812.5	-2812.5
92	FLT94-1PH	N/A	N/A	-1750.0
93	FLT95-1PH	-1125.0	-1250.0	-1750.0
100	FLT102-1PH	-6875.0	-6875.0	-7281.3
105	FLT107-1PH	-6875.0	-6875.0	-7281.3
106	FLT108-1PH	-6875.0	-6875.0	-7281.3
116	FLT118-1PH	-1375.0	-1500.0	-1500.0
117	FLT119-1PH	-1187.5	-1375.0	-1500.0
118	FLT120-1PH	-1187.5	-1375.0	-1500.0
133	FLT135-1PH	-4843.8	-4843.8	-5250.0
134	FLT136-1PH	-4843.8	-4843.8	-5250.0
135	FLT137-1PH	-4843.8	-4843.8	-5250.0
146	FLT148-1PH	-6875.0	-7687.5	-8093.8
147	FLT149-1PH	-6875.0	-7687.5	-8093.8
148	FLT150-1PH	-7687.5	-9312.5	-10125.0
149	FLT151-1PH	-6062.5	-6468.8	-6875.0

*Refer to Table 2-3 for a description of the contingency scenerio

Bus voltages, machine rotor angles, and previously queued generation in the study area were monitored in addition to bus voltages and machine rotor angles in the following areas:

- 520 AEPW
- 524 OKGE
- 525 WFEC

- 526 SPS
- 531 MIDW
- 534 SUNC
- 536 WERE
- 540 GMO
- 541 KCPL

Requested and previously queued generation outside the above study area was also monitored.

The results of the analysis determined that no upgrades were required to obtain acceptable system performance. However, some system adjustments were made for certain prior outage conditions and for a post fault steady state voltage level. The system adjustments are described later in this report. The contingencies simulated ensure the wind or solar farm meets FERC Order 661A low voltage requirements and return the wind or solar farm to its pre-disturbance operating voltage.

3.2 Stability Analysis Results

The Stability Analysis determined that there were a couple of contingencies across the three seasons that resulted in voltage instability, generation tripping offline, and poor post-fault voltage recovery when all generation interconnection requests were at 100% output.

Refer to Table 3-2 for a summary of the Stability Analysis results for the contingencies listed in Table 2-3. Table 3-2 is a summary of the stability results for the 2016 Winter Peak, 2017 Summer Peak, and 2025 Summer Peak conditions and states whether the system remained stable or generation tripped offline, if acceptable voltage recovery was observed after the fault was cleared, and if the voltage recovered to above 0.9 p.u. and below 1.1 p.u. post fault steady-state conditions. Voltage recovery criteria includes ensuring that the transient voltage recovery is between 0.7 p.u. within 2.5 seconds after the fault is cleared and 1.2 p.u. at any point after the fault is cleared and ending in a steady-state voltage (for N-1 contingencies) at the pre-contingent level or at least above 0.9 p.u. and below 1.1. p.u.

Refer to Appendix B, Appendix C, and Appendix D for a complete set of plots for all contingencies for 2016 Winter Peak, 2017 Summer Peak, and 2025 Summer Peak conditions, respectively.

Table 3-2
Stability Analysis Summary of Results for 2016 Winter, 2017 Summer, and 2025 Summer Peak Conditions

Cont. No.	Cont. Name	2016 Winter Peak				2017 Summer Peak				2025 Summer Peak			
		Voltage Recovery		Post Fault Steady-State Voltage	System Stability	Voltage Recovery		Post Fault Steady-State Voltage	System Stability	Voltage Recovery		Post Fault Steady-State Voltage	System Stability
		Less than .70 p.u.	Greater than 1.20 p.u.			Less than .70 p.u.	Greater than 1.20 p.u.			Less than .70 p.u.	Greater than 1.20 p.u.		
1	FLT01-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
2	FLT02-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
3	FLT03-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
4	FLT04-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
5	FLT05-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
6	FLT06-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
7	FLT07-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
8	FLT08-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
9	FLT09-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
10	FLT10-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
11	FLT11-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
12	FLT12-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
13	FLT13-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
14	FLT14-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
15	FLT17-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
16	FLT18-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
17	FLT19-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
18	FLT20-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
19	FLT21-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
20	FLT22-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
21	FLT23-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
22	FLT24-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
23	FLT25-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
24	FLT26-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
25	FLT27-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
26	FLT28-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
27	FLT29-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
28	FLT30-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable

Table 3-2 (continued)
Stability Analysis Summary of Results for 2016 Winter, 2017 Summer, and 2025 Summer Peak Conditions

Cont. No.	Cont. Name	2016 Winter Peak				2017 Summer Peak				2025 Summer Peak			
		Voltage Recovery		Post Fault Steady-State Voltage	System Stability	Voltage Recovery		Post Fault Steady-State Voltage	System Stability	Voltage Recovery		Post Fault Steady-State Voltage	System Stability
		Less than .70 p.u.	Greater than 1.20 p.u.			Less than .70 p.u.	Greater than 1.20 p.u.			Less than .70 p.u.	Greater than 1.20 p.u.		
29	FLT31-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
30	FLT32-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
31	FLT33-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
32	FLT34-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
33	FLT35-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
34	FLT36-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
35	FLT37-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
36	FLT38-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
37	FLT39-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
38	FLT40-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
39	FLT41-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
40	FLT42-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
41	FLT43-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
42	FLT44-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
43	FLT45-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
44	FLT46-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
45	FLT47-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
46	FLT48-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
47	FLT49-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
48	FLT50-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
49	FLT51-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
50	FLT52-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
51	FLT53-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
52	FLT54-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
53	FLT55-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
54	FLT56-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
55	FLT57-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
56	FLT58-3PH	N/A	N/A	N/A	N/A	-	-	Compliant	Stable	-	-	Compliant	Stable
57	FLT59-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
58	FLT60-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable

Table 3-2 (continued)
Stability Analysis Summary of Results for 2016 Winter, 2017 Summer, and 2025 Summer Peak Conditions

Cont. No.	Cont. Name	2016 Winter Peak				2017 Summer Peak				2025 Summer Peak			
		Voltage Recovery		Post Fault Steady-State Voltage	System Stability	Voltage Recovery		Post Fault Steady-State Voltage	System Stability	Voltage Recovery		Post Fault Steady-State Voltage	System Stability
		Less than .70 p.u.	Greater than 1.20 p.u.			Less than .70 p.u.	Greater than 1.20 p.u.			Less than .70 p.u.	Greater than 1.20 p.u.		
59	FLT61-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
60	FLT62-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
61	FLT63-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
62	FLT64-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
63	FLT65-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
64	FLT66-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
65	FLT67-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
66	FLT68-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
67	FLT69-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
68	FLT70-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
69	FLT71-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
70	FLT72-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
71	FLT73-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
72	FLT74-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
73	FLT75-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
74	FLT76-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
75	FLT77-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
76	FLT78-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
77	FLT79-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
78	FLT80-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
79	FLT81-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
80	FLT82-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
81	FLT83-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
82	FLT84-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
83	FLT85-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
84	FLT86-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
85	FLT87-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
86	FLT88-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
87	FLT89-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
88	FLT90-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable

[1]Voltage Instability

Table 3-2 (continued)
Stability Analysis Summary of Results for 2016 Winter, 2017 Summer, and 2025 Summer Peak Conditions

Cont. No.	Cont. Name	2016 Winter Peak				2017 Summer Peak				2025 Summer Peak			
		Voltage Recovery		Post Fault Steady-State Voltage	System Stability	Voltage Recovery		Post Fault Steady-State Voltage	System Stability	Voltage Recovery		Post Fault Steady-State Voltage	System Stability
		Less than .70 p.u.	Greater than 1.20 p.u.			Less than .70 p.u.	Greater than 1.20 p.u.			Less than .70 p.u.	Greater than 1.20 p.u.		
89	FLT91-3PH	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	-	Compliant	Stable
90	FLT92-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
91	FLT93-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
92	FLT94-SB	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	-	Compliant	Stable
93	FLT95-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
94	FLT96-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
95	FLT97-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
96	FLT98-PO			V < 0.9 p.u.	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
97	FLT99-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
98	FLT100-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
99	FLT101-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
100	FLT102-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
101	FLT103-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
102	FLT104-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
103	FLT105-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
104	FLT106-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
105	FLT107-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
106	FLT108-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
107	FLT109-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
108	FLT110-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
109	FLT111-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
110	FLT112-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
111	FLT113-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
112	FLT114-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
113	FLT115-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
114	FLT116-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
115	FLT117-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
116	FLT118-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
117	FLT119-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
118	FLT120-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable

Table 3-2 (continued)
Stability Analysis Summary of Results for 2016 Winter, 2017 Summer, and 2025 Summer Peak Conditions

Cont. No.	Cont. Name	2016 Winter Peak				2017 Summer Peak				2025 Summer Peak			
		Voltage Recovery		Post Fault Steady-State Voltage	System Stability	Voltage Recovery		Post Fault Steady-State Voltage	System Stability	Voltage Recovery		Post Fault Steady-State Voltage	System Stability
		Less than .70 p.u.	Greater than 1.20 p.u.			Less than .70 p.u.	Greater than 1.20 p.u.			Less than .70 p.u.	Greater than 1.20 p.u.		
119	FLT121-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
120	FLT122-PO	-	-	V < 0.9 p.u.	No[1]	-	-	Compliant	Stable	-	-	Compliant	Stable
121	FLT123-PO	-	-	V < 0.9 p.u.	No[1]	-	-	Compliant	No[1]	-	-	Compliant	No[1]
122	FLT124-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
123	FLT125-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
124	FLT126-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
125	FLT127-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
126	FLT128-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
127	FLT129-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
128	FLT130-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
129	FLT131-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
130	FLT132-3PH	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	-	Compliant	Stable
131	FLT133-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
132	FLT134-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
133	FLT135-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
134	FLT136-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
135	FLT137-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
136	FLT138-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
137	FLT139-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
138	FLT140-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
139	FLT141-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
140	FLT142-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
141	FLT143-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
142	FLT144-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
143	FLT145-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
144	FLT146-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
145	FLT147-3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
146	FLT148-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable

[1]Voltage Instability

Table 3-2 (continued)
Stability Analysis Summary of Results for 2016 Winter, 2017 Summer, and 2025 Summer Peak Conditions

Cont. No.	Cont. Name	2016 Winter Peak				2017 Summer Peak				2025 Summer Peak			
		Voltage Recovery		Post Fault Steady-State Voltage	System Stability	Voltage Recovery		Post Fault Steady-State Voltage	System Stability	Voltage Recovery		Post Fault Steady-State Voltage	System Stability
		Less than .70 p.u.	Greater than 1.20 p.u.			Less than .70 p.u.	Greater than 1.20 p.u.			Less than .70 p.u.	Greater than 1.20 p.u.		
147	FLT149-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
148	FLT150-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
149	FLT151-SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
150	FLT152-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
151	FLT153-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
152	FLT154-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
153	FLT155-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
154	FLT156-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
155	FLT157-PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable

To mitigate the voltage instability, voltage violations, generation tripping offline, and poor post-fault steady-state voltages, the following control actions were provided by SPP and implemented in each season.

- Dispatch of shunt capacitors at TIMBJCT2 and UDALL_2 after the prior outage for FLT98-PO to prevent post-fault steady-state voltages below 0.9 p.u. in the vicinity of TCROCK.
- Reduction of generation at GEN-2016-071 by 110 MW in 16WP and by 75 MW in 17SP and 25 SP following prior outage of Middleton Tap to Peckham Tap 345 kV line for FLT122-PO and FLT123-PO to mitigate instability and generator tripping. Refer to Table 3-3 for the amount of reduction of generation at GEN-2016-071 for all examined seasonal peak conditions.

Table 3-3
Reduction of Generation following Prior Outage of Middleton Tap to Peckham Tap 345 kV Line

Project	Percent Reduction of Output		
	2016 Winter	2017 Summer	2025 Summer
GEN-2016-071	55%	38%	38%

After the upgrades and adjustments were implemented, all violations were mitigated.

Post-fault voltages below 0.9 p.u. were observed for the TMBJCT 138 kV bus (532985) and the UDALL_2 138 kV bus (533559) in the 2016 Winter Peak case for FLT98-PO, prior outage of the Belle Plaine to Farber 138 kV line followed by loss of the Sumner to TIMBJCT 138 kV line. After implementing the system adjustment provided by SPP, the observed voltage violation was mitigated. Refer to Figure 3-1 for a one-line diagram of the post-fault topology near TCROCK 138 kV and UDALL_2 138 kV, respectively. Dispatch of capacitors at TIMBJCT2 and UDALL_2 after prior contingency result in post-fault steady-state voltages > 0.9 p.u.

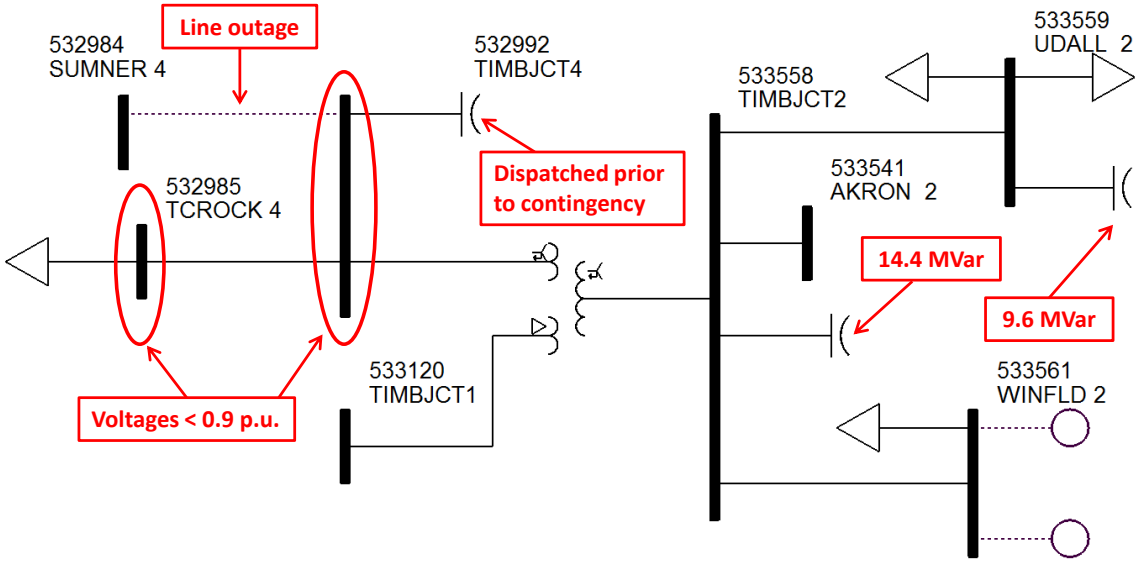

Figure 3-1: One-line diagram of post-fault steady-state topology for FLT98-PO.

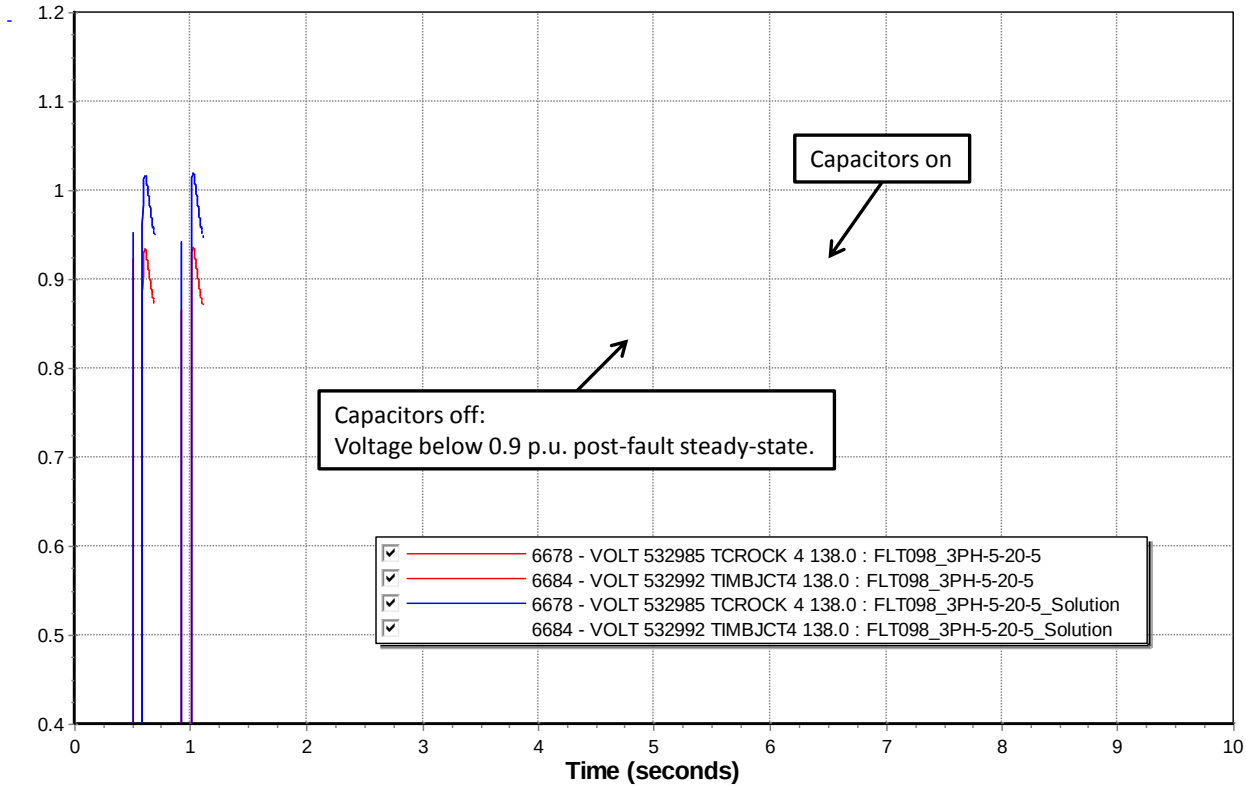

Figure 3-2: Representative plot of TCROCK area voltages for 2016 Winter Peak conditions with and without control actions for FLT98-PO.

Unstable voltages were observed for the Slate Creek 138 kV bus (533070) and Chilocco 345 kV bus (521198) for FLT122-PO in the 2016 Winter Peak case and for FLT123-PO in all examined seasonal peak conditions. After implementing the upgrades provided by SPP, the observed voltage stability issues were mitigated. Refer to Figure 3-3 for a representative plot of the bus voltage at Slate Creek 138 kV and Chilocco 345 kV for the 2016 Winter Peak Case with and without mitigation for FLT122-PO, which is the prior outage of the Middleton Tap to Peckham Tap followed by loss of the Creswell 138/69/13.2 kV transformer. Refer to Figure 3-4 for a representative plot of the bus voltage at Slate Creek 138 kV and Chilocco 345 kV for the 2017 Summer Peak Case for FLT123-PO, which is prior outage of the Middleton Tap to Peckham Tap followed by loss of the Creswell to Oxford 138 kV line.

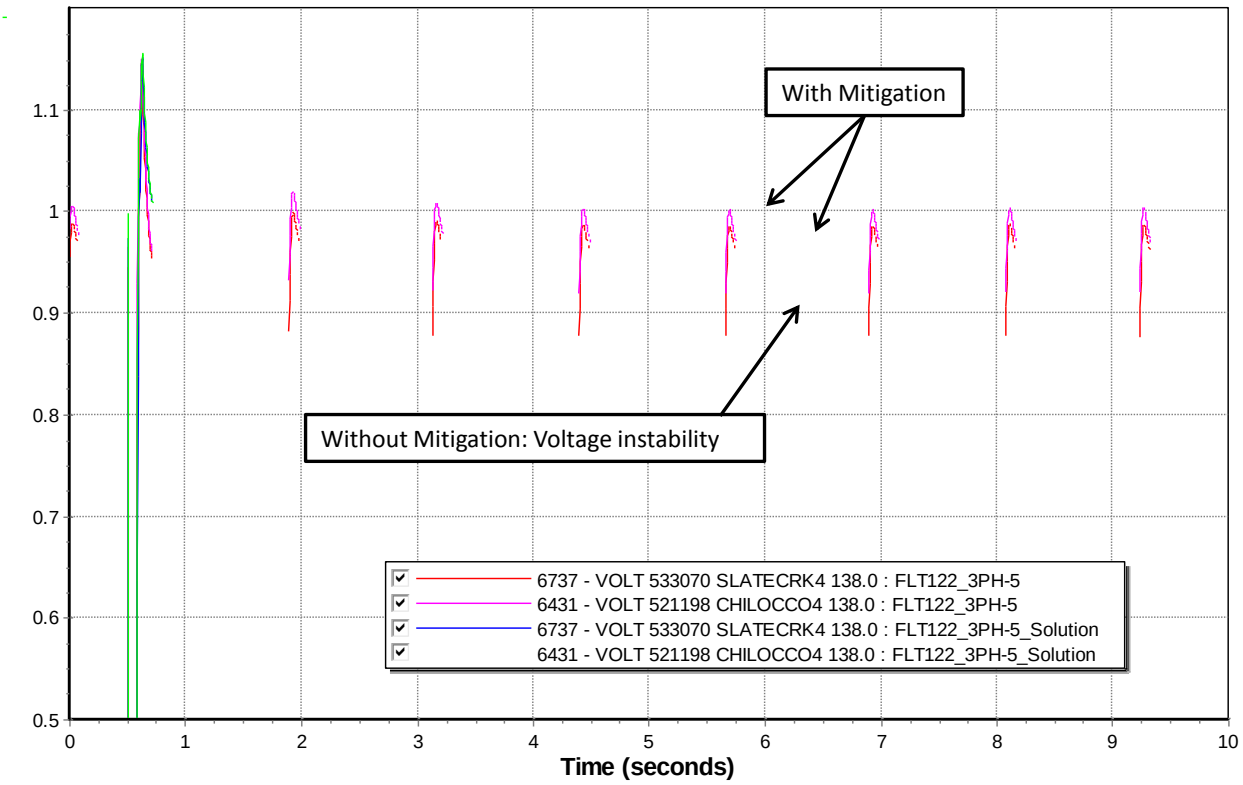

Figure 3-3: Representative plot of Slate Creek and Chilocco area voltages for FLT122-PO 2016 Winter Peak conditions with and without mitigation.

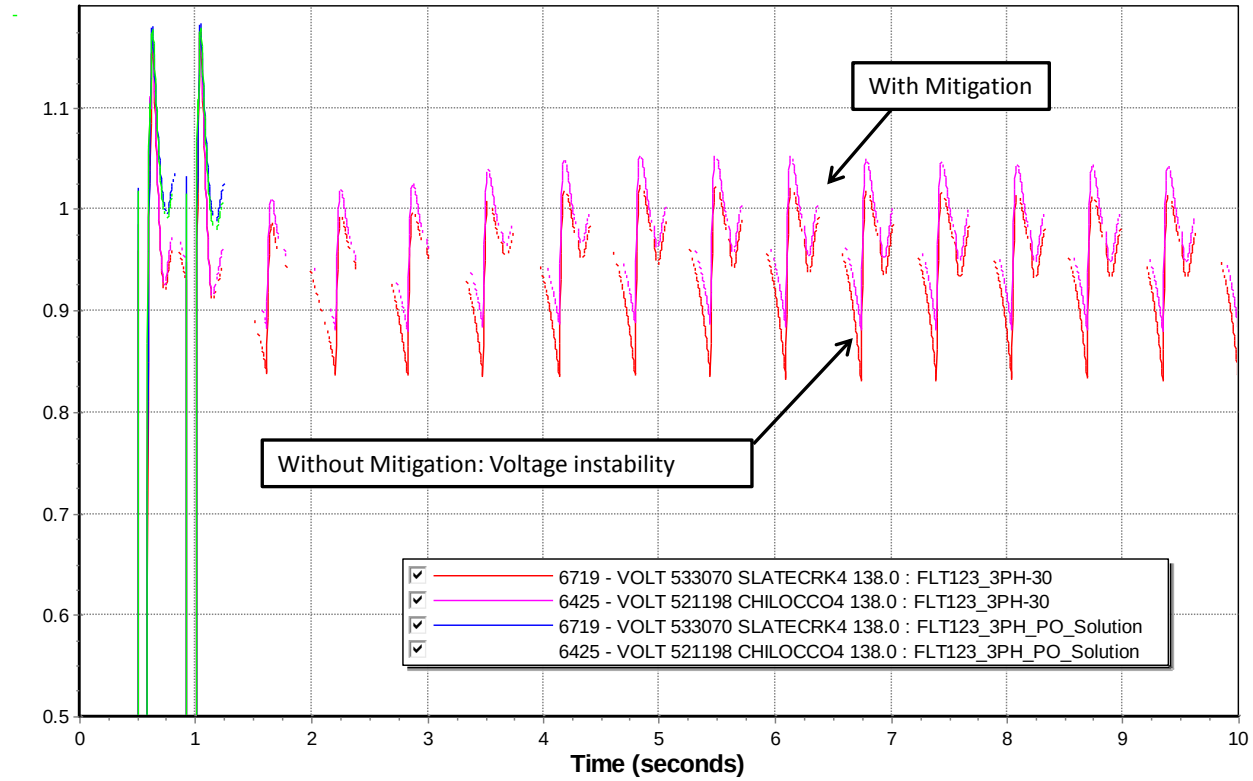

Figure 3-4: Representative plot of Slate Creek and Chilocco area voltages for FLT123-PO for 2017 Summer Peak conditions with and without mitigation.

SECTION 4: SHORT CIRCUIT ANALYSIS

The objective of this task is to quantify the three-phase to ground fault currents for the 2017 Summer Peak and 2025 Summer Peak seasons for each interconnecting generator.

4.1 Approach

The short-circuit analysis will assess breaker adequacy and fault duties for the generator interconnection bus and five buses away from the point of interconnection. MEPPI will assume no outages to find maximum short-circuit currents that flow through the breaker. The Automatic Sequencing Fault Calculation (ASCC) function in PSS/E was utilized to perform this task. FLAT conditions were applied to pre-fault conditions and the following adjustments were utilized:

- All synchronous and asynchronous machine P and Q output was set to zero
- All transformer tap ratios were set to 1.0 p.u. and all phase shift angles were set to zero
- All generator reactance's were fixed to the subtransient reactance
- All line charging was set to zero
- All shunts were set to zero
- All loads were set to zero
- All pre-fault bus voltages were set to 1.0 p.u. and a phase shift angle of zero

Note upgrades found to be necessary for the Stability Analysis were included in the Short-Circuit Analysis.

4.2 Short Circuit Results: 2017 Summer Peak

The maximum fault current for each bus is provided for the 2017 Summer Peak conditions. The following tables show the short circuit results for the study generators for the 2017 Summer Peak condition:

- Table 4-1: Short Circuit Analysis for GEN-2016-009
- Table 4-2: Short Circuit Analysis for GEN-2016-022 and GEN-2016-031
- Table 4-3: Short Circuit Analysis for GEN-2016-032
- Table 4-4: Short Circuit Analysis for GEN-2016-049
- Table 4-5: Short Circuit Analysis for GEN-2016-060
- Table 4-6: Short Circuit Analysis for GEN-2016-061
- Table 4-7: Short Circuit Analysis for GEN-2016-068
- Table 4-8: Short Circuit Analysis for GEN-2016-071
- Table 4-9: Short Circuit Analysis for GEN-2016-073

Table 4-1
Short Circuit Analysis for Study Project GEN-2016-009 (17SP)

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
301369	4REMNGTON	138	7.46	514757	CHIKASI4	138	9.32	515576	RANCHRD7	345	14.21
510374	HARDY 4	138	3.79	514758	STDBEAR4	138	13.75	515581	COYOTE 4	138	8.39
510375	WEBBCTY4	138	4.15	514759	NEWKIRK4	138	10.31	515635	BLLNGTP4	138	6.54
510376	WEBBTAP4	138	7.52	514760	KILDARE4	138	11.66	520432	FOUNTAIN4	138	5.17
510377	FAIRFXT4	138	7.55	514761	WHEAGLE4	138	15.68	521007	MARLAND_138	138	7.38
510382	WPAWHSK4	138	5.72	514762	3SANDS 2	69	4.73	521012	NEWKIRK4	138	11.39
510403	SHIDLER4	138	7.84	514763	CONBLKS2	69	14.02	529241	OMMORANT	69	9.48
510432	SHIDWFC4	138	5.35	514764	NWKRKAT4	138	11.39	529242	OMHUFFYT	69	8.90
514704	MILLERT4	138	20.46	514770	MARLNDT4	138	10.83	529243	OMNWESTT	69	8.22
514706	COWCRK 4	138	11.30	514798	SNRPMPT4	138	20.48	529244	OMNEASTT	69	7.90
514707	PERRY 4	138	11.00	514799	SNRPMP 4	138	11.28	529245	OMGONTER	69	8.93
514737	OTOE 4	138	16.30	514802	SOONER 4	138	31.90	529246	OMKAWS	69	9.51
514742	OSGE 2	69	15.66	514803	SOONER 7	345	25.70	529247	OMMCCORD	69	6.97
514743	OSAGE 4	138	16.32	514881	SPRNGCK7	345	22.14	529248	OMPECANT	69	10.27
514744	CHILOCO2	69	10.49	515006	MORRISN4	138	13.69	529249	OMWW	69	11.83
514745	CHERPLT2	69	11.66	515011	STILWTR4	138	13.33	529251	OMRIGGS	69	8.75
514746	CHERKPL2	69	9.21	515400	DMANCRK4	138	8.06	529252	OMKAWH	69	4.32
514748	CONTEMP4	138	13.39	515402	CONBLKT2	69	14.11	560056	G15-066T	345	18.41
514750	BRMAN 2	69	8.78	515403	FNTANTP4	138	6.80	560084	G16-061-TAP	345	16.69
514751	NEWKRKT2	69	5.50	515412	DMNCRKT4	138	13.74	584690	GEN-2015-030	345	19.36
514752	TONKAWA2	69	4.79	515447	MORISNT4	138	13.72	584880	GEN-2015-047	345	11.19
514753	CONORTH4	138	13.43	515541	COWBOYH4	138	7.41	587070	GEN-2016-009	69	14.77
514756	CHIKASI2	69	9.99	515542	CWBOYHT4	138	7.98	587330	GEN-2016-048	138	21.84

Table 4-2
Short Circuit Analysis for Study Projects GEN-2016-022 and GEN-2016-031 (17SP)

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
300138	4CLEVLND	138	16.71	514828	KETCHTP4	138	26.16	532794	ROSEHIL7	345	19.15
509755	WEKIWA-7	345	18.62	514854	BRADEN 4	138	31.05	532796	WICHITA7	345	25.09
509852	T.NO.--7	345	23.46	514873	LNEOAK 4	138	26.65	532797	WOLFCRK7	345	16.01
509895	T.NO.2-4	138	34.23	514879	NORTWST4	138	43.19	532799	WAVERLY7	345	14.74
510376	WEBBTAP4	138	7.52	514880	NORTWST7	345	30.97	532800	LATHAMS7	345	10.52
510406	N.E.S.-7	345	18.73	514881	SPRNGCK7	345	22.14	532801	ELKRVR17	345	9.28
512694	CLEVLND7	345	14.95	514898	CIMARON4	138	42.45	532986	BENTON 4	138	28.29
512729	CLEVLND 4	138	16.71	514901	CIMARON7	345	31.46	532991	WEAVER 4	138	22.01
512865	GREC TAP5	345	25.57	514907	ARCADIA4	138	41.12	533039	ELPASO 4	138	24.72
514704	MILLERT4	138	20.46	514908	ARCADIA7	345	25.18	533062	ROSEHIL4	138	31.43
514705	COWCRK 2	69	4.05	514909	REDBUD 7	345	24.08	533068	STEARMN4	138	19.56
514706	COWCRK 4	138	11.30	514934	DRAPER 7	345	20.58	533653	WOLFCRK2	69	5.81
514707	PERRY 4	138	11.00	515006	MORRISN4	138	13.69	560053	G15-052T	345	13.30
514708	OTTER 4	138	9.58	515011	STILWTR4	138	13.33	560055	G15-063T	345	17.87
514709	FRMNTAP4	138	17.77	515045	SEMINOL7	345	26.10	560056	G15-066T	345	18.41
514711	WAUKOTP4	138	15.14	515181	UNVRSTY4	138	13.45	560084	G16-061-TAP	345	16.69
514713	WRVALLY4	138	8.69	515400	DMANCRK4	138	8.06	584450	G1501-G1631	345	11.35
514714	WOODRNG4	138	18.99	515407	TATONGA7	345	10.30	584690	GEN-2015-030	345	19.36
514715	WOODRNG7	345	18.99	515412	DMNCRKT4	138	13.74	584770	GEN-2015-034	345	12.11
514733	MARSHL 4	138	7.82	515447	MORISNT4	138	13.72	584880	GEN-2015-047	345	11.19
514737	OTOE 4	138	16.30	515471	NW164TH4	138	35.32	584900	GEN-2015-052	345	13.25
514742	OSGE 2	69	15.66	515476	HUNTERS7	345	12.71	585010	GEN-2015-063	345	17.56
514743	OSAGE 4	138	16.32	515477	CHSHLMV7	345	12.70	585040	GEN-2015-066	345	18.24
514758	STDBEAR4	138	13.75	515497	MATHWSN7	345	30.50	587160	GEN-2016-022	345	12.11
514761	WHEAGLE4	138	15.68	515512	SPVALLY4	138	8.68	587300	G16-045-SUB1	345	2.83
514770	MARLNDT4	138	10.83	515543	RENFROW7	345	11.58	587304	G16-045-SUB2	345	2.79
514798	SNRPMPT4	138	20.48	515576	RANCHRD7	345	14.21	587330	GEN-2016-048	138	21.84
514799	SNRPMP 4	138	11.28	515610	FSHRTAP7	345	16.35	587380	G16-057-SUB1	345	2.81
514801	MINCO 7	345	16.43	515621	OPENSKY7	345	13.05	587384	G16-057-SUB2	345	2.74
514802	SOONER 4	138	31.90	529200	OMCDLEC7	345	14.19	587410	GEN-2016-061	345	16.37
514803	SOONER 7	345	25.70	532780	CANEYRV7	345	9.93	587460	GEN-2016-068	345	7.27
514825	KAYWIND7	345	13.01	532791	BENTON 7	345	19.48				

Table 4-3
Short Circuit Analysis for Study Project GEN-2016-032 (17SP)

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
300135	4LUTHER	138	8.18	514833	DANFRTH4	138	25.72	515461	RNDBARN4	138	39.10
300136	4MEMORAL	138	20.44	514840	JONESTP4	138	28.84	515464	SHDWLKE4	138	17.29
509782	R.S.S.-7	345	30.85	514842	CHTWOOD4	138	20.81	515465	LGARBER4	138	21.08
510907	PITTSB-7	345	13.23	514879	NORTWST4	138	43.19	515467	WHITESB4	138	15.21
512710	KINZEGR4	138	14.29	514880	NORTWST7	345	30.97	515476	HUNTERS7	345	12.71
514510	BURGETT4	138	22.18	514881	SPRNGCK7	345	22.14	515477	CHSHLMV7	345	12.70
514706	COWCRK 4	138	11.30	514884	DUNJEE 4	138	21.21	515497	MATHWSN7	345	30.50
514708	OTTER 4	138	9.58	514901	CIMARON7	345	31.46	515543	RENFROW7	345	11.58
514709	FRMNTAP4	138	17.77	514906	JNSKAMO4	138	20.58	515641	PLNSMEN4	138	13.67
514710	WAUKOMI4	138	9.59	514907	ARCADIA4	138	41.12	520847	CASHION4	138	5.03
514711	WAUKOTP4	138	15.14	514908	ARCADIA7	345	25.18	520879	DOVER 4	138	5.77
514712	FAIRMON4	138	13.81	514909	REDBUD 7	345	24.08	520882	DOVERSW4	138	7.41
514713	WRVALLY4	138	8.69	514934	DRAPER 7	345	20.58	521006	MARSHAL4	138	7.79
514714	WOODRNG4	138	18.99	514937	HSLWEST2	69	12.22	521037	REEDING2	138	4.25
514715	WOODRNG7	345	18.99	514941	HSL 4	138	43.00	521073	TWNLAKE4	138	6.54
514730	SO4TH 2	69	13.63	514966	MIDWAY 4	138	18.33	521100	WARREN 4	138	8.69
514731	SO4TH 4	138	15.01	514987	DALE 4	138	13.76	560055	G15-063T	345	17.87
514733	MARSHL 4	138	7.82	514993	SE15TH 4	138	15.08	560077	G16-032-TAP	345	3.38
514774	HENESEY4	138	7.35	515008	KINZE 4	138	14.30	560084	G16-061-TAP	345	16.69
514790	IMO 4	138	11.74	515009	MCELROY4	138	13.56	584170	GEN-2014-064	138	9.51
514803	SOONER 7	345	25.70	515044	SEMINOL4	138	39.23	585010	GEN-2015-063	345	17.56
514815	BRECKNR4	138	13.65	515045	SEMINOL7	345	26.10	587210	GEN-2016-032	138	6.76
514827	CTNWOOD4	138	16.62	515046	HAMMTAP4	138	14.70	587410	GEN-2016-061	345	16.37
514829	PINE ST4	138	11.75	515224	MUSKOGE7	345	28.82	587460	GEN-2016-068	345	7.27
514830	FITZGRD4	138	9.01	515373	LBRTYLK4	138	13.56				
514831	WATRLOO4	138	14.08	515377	CRESENT4	138	7.4297				

Table 4-4
Short Circuit Analysis for Study Project GEN-2016-048 (17SP)

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
300138	4CLEVLND	138	16.71	514798	SNRPMPT4	138	20.48	515514	KNIPE 4	138	5.02
509755	WEKIWA-7	345	18.62	514799	SNRPMP 4	138	11.28	515541	COWBOYH4	138	7.41
509852	T.NO.--7	345	23.46	514800	BRRDTP 2	69	1.79	515542	CWBOYHT4	138	7.98
509895	T.NO.2-4	138	34.23	514801	MINCO 7	345	16.43	515543	RENFROW7	345	11.58
510375	WEBBCTY4	138	4.15	514802	SOONER 4	138	31.90	515576	RANCHRD7	345	14.21
510376	WEBBTAP4	138	7.52	514803	SOONER 7	345	25.70	515610	FSHRTAP7	345	16.35
510377	FAIRFXT4	138	7.55	514825	KAYWIND7	345	13.01	515621	OPENSKY7	345	13.05
510403	SHIDLER4	138	7.84	514828	KETCHTP4	138	26.16	521007	MARLAND_138	138	7.38
510406	N.E.S.-7	345	18.73	514854	BRADEN 4	138	31.05	521034	PERRY 2	69	2.70
510432	SHIDWFC4	138	5.35	514873	LNEOAK 4	138	26.65	521100	WARREN 4	138	8.69
512694	CLEVLND7	345	14.95	514879	NORTWST4	138	43.19	529200	OMCDLEC7	345	14.19
512729	CLEVLND 4	138	16.71	514880	NORTWST7	345	30.97	529241	OMMORANT	69	9.48
512865	GREC TAP5	345	25.57	514881	SPRNGCK7	345	22.14	529242	OMHUFFYT	69	8.90
514704	MILLERT4	138	20.46	514898	CIMARON4	138	42.45	529248	OMPECANT	69	10.27
514705	COWCRK 2	69	4.05	514901	CIMARON7	345	31.46	529249	OMWW	69	11.83
514706	COWCRK 4	138	11.30	514907	ARCADIA4	138	41.12	532794	ROSEHIL7	345	19.15
514707	PERRY 4	138	11.00	514908	ARCADIA7	345	25.18	560053	G15-052T	345	13.30
514708	OTTER 4	138	9.58	514909	REDBUD 7	345	24.08	560055	G15-063T	345	17.87
514709	FRMNTAP4	138	17.77	514934	DRAPER 7	345	20.58	560056	G15-066T	345	18.41
514711	WAUKOTP4	138	15.14	515006	MORRISN4	138	13.69	560084	G16-061-TAP	345	16.69
514713	WRVALLY4	138	8.69	515008	KINZE 4	138	14.30	584170	GEN-2014-064	138	9.51
514714	WOODRNG4	138	18.99	515009	MCELROY4	138	13.56	584450	G1501-G1631	345	11.35
514715	WOODRNG7	345	18.99	515011	STILWTR4	138	13.33	584690	GEN-2015-030	345	19.36
514733	MARSHL 4	138	7.82	515033	CUSHING4	138	6.04	584770	GEN-2015-034	345	12.11
514737	OTOE 4	138	16.30	515039	PAYNESB4	138	7.63	584880	GEN-2015-047	345	11.19
514742	OSGE 2	69	15.66	515045	SEMINOL7	345	26.10	584900	GEN-2015-052	345	13.25
514743	OSAGE 4	138	16.32	515181	UNVRSTY4	138	13.45	585010	GEN-2015-063	345	17.56
514745	CHERPLT2	69	11.66	515400	DMANCRK4	138	8.06	585040	GEN-2015-066	345	18.24
514748	CONTEMP4	138	13.39	515402	CONBLKT2	69	14.11	587070	GEN-2016-009	69	14.77
514753	CONORTH4	138	13.43	515403	FNTANTP4	138	6.80	587160	GEN-2016-022	345	12.11
514757	CHIKASI4	138	9.32	515407	TATONGA7	345	10.30	587300	G16-045-SUB1	345	2.83
514758	STDBEAR4	138	13.75	515412	DMNCRKT4	138	13.74	587304	G16-045-SUB2	345	2.79
514760	KILDARE4	138	11.66	515447	MORISNT4	138	13.72	587330	GEN-2016-048	138	21.84
514761	WHEAGLE4	138	15.68	515471	NW164TH4	138	35.32	587380	G16-057-SUB1	345	2.81
514763	CONBLKS2	69	14.02	515476	HUNTERS7	345	12.71	587384	G16-057-SUB2	345	2.74
514764	NWKRKAT4	138	11.39	515477	CHSHLMV7	345	12.70	587410	GEN-2016-061	345	16.37
514768	WF KAY 2	69	2.95	515497	MATHWSN7	345	30.50	587460	GEN-2016-068	345	7.27
514770	MARLNDT4	138	10.83	515512	SPVALLY4	138	8.68				

Table 4-5
Short Circuit Analysis for Study Project GEN-2016-060 (17SP)

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
514804	MIDLTNT4	138	10.30	533033	CANAL 4	138	16.49	533553	SC4ROME2	69	5.44
515381	PECKHMT4	138	10.16	533039	ELPASO 4	138	24.72	533555	SC7CRES2	69	10.78
521198	CHILOCCO4	138	9.02	533042	FARBER 4	138	15.80	533556	STROTHR2	69	5.88
532791	BENTON 7	345	19.48	533045	GILL W 4	138	22.13	533558	TIMBJCT2	69	7.67
532794	ROSEHIL7	345	19.15	533046	GILL S 4	138	22.13	533559	UDALL 2	69	6.80
532797	WOLFCRK7	345	16.01	533048	HARRY 4	138	13.50	533561	WINFLD 2	69	6.22
532800	LATHAMS7	345	10.52	533062	ROSEHIL4	138	31.43	533604	WEAVER 2	69	11.67
532981	CRESWLN4	138	8.47	533063	SC10BEL4	138	8.99	533792	EASTBOR2	69	14.50
532982	OXFORD 4	138	7.49	533066	64TH 4	138	14.25	533793	ELPASO 2	69	11.73
532984	SUMNER 4	138	7.81	533067	SPRNGDL4	138	14.42	533795	GILL E 2	69	30.59
532985	TCROCK 4	138	4.73	533068	STEARMN4	138	19.56	533796	GILL W 2	69	30.59
532991	WEAVER 4	138	22.01	533070	SLATECRK4	138	4.64	533808	HYDRJN2	69	15.78
532992	TIMBJCT4	138	5.02	533541	AKRON 2	69	6.39	533821	MULVANE2	69	5.34
532993	TALLGRS4	138	10.02	533543	CRESWLN2	69	10.92	533824	OAKLAWN2	69	15.48
533026	ANDOVER4	138	17.77	533547	OAK 2	69	7.62	533826	OLIVER 2	69	14.02
533028	BEECHTP4	138	13.52	533548	PARIS 2	69	6.61	533842	64TH 2	69	14.63
533029	59TH ST4	138	17.43	533549	RAINBOW2	69	5.67	560053	G15-052T	345	13.30
533030	BOEING 4	138	16.95	533550	RICHLAN2	69	5.81	585200	GEN-2015-083	138	6.52
533032	BU11PON4	138	14.98	533551	SC1KING2	69	3.21				

Table 4-6
Short Circuit Analysis for Study Project GEN-2016-061 (17SP)

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
300138	4CLEVLND	138	16.71	514815	BRECKNR4	138	13.65	515610	FSHRTAP7	345	16.35
509755	WEKIWA-7	345	18.62	514825	KAYWIND7	345	13.01	515621	OPENSKY7	345	13.05
509852	T.NO.--7	345	23.46	514827	CTNWOOD4	138	16.62	515641	PLNSMEN4	138	13.67
509895	T.NO.2-4	138	34.23	514828	KETCHTP4	138	26.16	520409	RENFROW4	138	10.08
510376	WEBBTAP4	138	7.52	514854	BRADEN 4	138	31.05	521006	MARSHAL4	138	7.79
510406	N.E.S.-7	345	18.73	514873	LNEOAK 4	138	26.65	521100	WARREN 4	138	8.69
512694	CLEVLND7	345	14.95	514879	NORTWST4	138	43.19	529200	OMCDLEC7	345	14.19
512729	CLEVLND 4	138	16.71	514880	NORTWST7	345	30.97	532792	FR2EAST7	345	6.27
512865	GREC TAP5	345	25.57	514881	SPRNGCK7	345	22.14	532794	ROSEHIL7	345	19.15
514704	MILLERT4	138	20.46	514898	CIMARON4	138	42.45	532796	WICHITA7	345	25.09
514705	COWCRK 2	69	4.05	514901	CIMARON7	345	31.46	532798	VIOLA 7	345	11.65
514706	COWCRK 4	138	11.30	514907	ARCADIA4	138	41.12	560053	G15-052T	345	13.30
514707	PERRY 4	138	11.00	514908	ARCADIA7	345	25.18	560055	G15-063T	345	17.87
514708	OTTER 4	138	9.58	514909	REDBUD 7	345	24.08	560056	G15-066T	345	18.41
514709	FRMNTAP4	138	17.77	514934	DRAPER 7	345	20.58	560077	G16-032-TAP	345	3.38
514710	WAUKOMI4	138	9.59	515006	MORRISN4	138	13.69	560084	G16-061-TAP	345	16.69
514711	WAUKOTP4	138	15.14	515011	STILWTR4	138	13.33	583750	GEN-2013-029	345	10.28
514712	FAIRMON4	138	13.81	515045	SEMINOL7	345	26.10	584170	GEN-2014-064	138	9.51
514713	WRVALLY4	138	8.69	515181	UNVRSTY4	138	13.45	584450	G1501-G1631	345	11.35
514714	WOODRNG4	138	18.99	515375	WWRDEHV7	345	16.62	584690	GEN-2015-030	345	19.36
514715	WOODRNG7	345	18.99	515400	DMANCRK4	138	8.06	584700	GEN-2015-029	345	7.27
514730	SO4TH 2	69	13.63	515407	TATONGA7	345	10.30	584770	GEN-2015-034	345	12.11
514731	SO4TH 4	138	15.01	515412	DMNCRKT4	138	13.74	584880	GEN-2015-047	345	11.19
514733	MARSHL 4	138	7.82	515447	MORISNT4	138	13.72	584900	GEN-2015-052	345	13.25
514737	OTOE 4	138	16.30	515448	CRSRDSW7	345	8.04	585010	GEN-2015-063	345	17.56
514742	OSGE 2	69	15.66	515471	NW164TH4	138	35.32	585040	GEN-2015-066	345	18.24
514743	OSAGE 4	138	16.32	515476	HUNTERS7	345	12.71	587160	GEN-2016-022	345	12.11
514758	STDBEAR4	138	13.75	515477	CHSHLMV7	345	12.70	587210	GEN-2016-032	138	6.76
514761	WHEAGLE4	138	15.68	515497	MATHWSN7	345	30.50	587300	G16-045-SUB1	345	2.83
514770	MARLNDT4	138	10.83	515512	SPVALLY4	138	8.68	587304	G16-045-SUB2	345	2.79
514774	HENESEY4	138	7.35	515543	RENFROW7	345	11.58	587330	GEN-2016-048	138	21.84
514790	IMO 4	138	11.74	515544	RENFROW4	138	13.65	587380	G16-057-SUB1	345	2.81
514798	SNRPMPT4	138	20.48	515546	GRANTCO4	138	6.29	587384	G16-057-SUB2	345	2.74
514799	SNRPMP 4	138	11.28	515569	MDFRDTP4	138	11.06	587410	GEN-2016-061	345	16.37
514801	MINCO 7	345	16.43	515576	RANCHRD7	345	14.21	587460	GEN-2016-068	345	7.27
514802	SOONER 4	138	31.90	515582	SLNGWND7	345	6.96				
514803	SOONER 7	345	25.70	515585	MAMTHPW7	345	9.14				

Table 4-7
Short Circuit Analysis for Study Project GEN-2016-068 (17SP)

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
509852	T.NO.--7	345	23.46	514894	CZECHAL4	138	27.81	520409	RENFROW4	138	10.08
511425	TUTCONT4	138	10.54	514895	SARA 4	138	18.62	520882	DOVERSW4	138	7.41
512694	CLEVLND7	345	14.95	514898	CIMARON4	138	42.45	521006	MARSHAL4	138	7.79
512729	CLEVLND 4	138	16.71	514901	CIMARON7	345	31.46	521100	WARREN 4	138	8.69
514642	BRCKWND4	138	7.36	514907	ARCADIA4	138	41.12	522397	MDFRDJCT	138	7.24
514701	BUNCHCK4	138	6.55	514908	ARCADIA7	345	25.18	529200	OMCDLEC7	345	14.19
514704	MILLERT4	138	20.46	514909	REDBUD 7	345	24.08	532771	RENO 7	345	10.82
514706	COWCRK 4	138	11.30	514933	DRAPER 4	138	38.75	532791	BENTON 7	345	19.48
514707	PERRY 4	138	11.00	514934	DRAPER 7	345	20.58	532792	FR2EAST7	345	6.27
514708	OTTER 4	138	9.58	515006	MORRISN4	138	13.69	532795	FR2WEST7	345	5.24
514709	FRMNTAP4	138	17.77	515011	STILWTR4	138	13.33	532796	WICHITA7	345	25.09
514710	WAUKOMI4	138	9.59	515045	SEMINOL7	345	26.10	532798	VIOLA 7	345	11.65
514711	WAUKOTP4	138	15.14	515373	LBRTYLK4	138	13.56	533040	EVANS N4	138	37.73
514712	FAIRMON4	138	13.81	515375	WWRDEHV7	345	16.62	539801	THISTLE7	345	16.09
514713	WRVALLY4	138	8.69	515376	WWRDEHV4	138	21.44	560031	G15-015-TAP	138	8.36
514714	WOODRNG4	138	18.99	515377	CRESENT4	138	7.43	560033	G1524&G1525T	345	20.80
514715	WOODRNG7	345	18.99	515383	ENIDINT4	138	12.79	560053	G15-052T	345	13.30
514731	SO4TH 4	138	15.01	515407	TATONGA7	345	10.30	560055	G15-063T	345	17.87
514733	MARSHL 4	138	7.82	515412	DMNCRKT4	138	13.74	560056	G15-066T	345	18.41
514734	GLENWD 4	138	10.16	515444	MCNOWND7	345	16.38	560071	G16-003-TAP	345	13.75
514737	OTOE 4	138	16.30	515447	MORISNT4	138	13.72	560077	G16-032-TAP	345	3.38
514743	OSAGE 4	138	16.32	515448	CRSRDSW7	345	8.04	560084	G16-061-TAP	345	16.69
514774	HENESEY4	138	7.35	515458	BORDER 7	345	4.95	562476	G14-001-TAP	345	11.06
514789	MENOTAP4	138	7.06	515471	NW164TH4	138	35.32	579272	G0744&1403HV	345	6.96
514790	IMO 4	138	11.74	515476	HUNTERS7	345	12.71	583750	GEN-2013-029	345	10.28
514798	SNRPMPT4	138	20.48	515477	CHSHLMV7	345	12.70	584170	GEN-2014-064	138	9.51
514799	SNRPMP 4	138	11.28	515497	MATHWSN7	345	30.50	584450	G1501-G1631	345	11.35
514801	MINCO 7	345	16.43	515543	RENFROW7	345	11.58	584690	GEN-2015-030	345	19.36
514802	SOONER 4	138	31.90	515544	RENFROW4	138	13.65	584700	GEN-2015-029	345	7.27
514803	SOONER 7	345	25.70	515546	GRANTCO4	138	6.29	584770	GEN-2015-034	345	12.11
514815	BRECKNR4	138	13.65	515549	MNCWND37	345	11.40	584880	GEN-2015-047	345	11.19
514819	EL-RENO4	138	15.26	515569	MDFRDTP4	138	11.06	585010	GEN-2015-063	345	17.56
514820	JENSENT4	138	15.04	515576	RANCHRD7	345	14.21	585040	GEN-2015-066	345	18.24
514825	KAYWIND7	345	13.01	515582	SLNGWND7	345	6.96	587160	GEN-2016-022	345	12.11
514827	CTNWOOD4	138	16.62	515585	MAMTHPW7	345	9.14	587210	GEN-2016-032	138	6.76
514828	KETCHTP4	138	26.16	515599	G07621119-20	345	11.86	587300	G16-045-SUB1	345	2.83
514829	PINE ST4	138	11.75	515600	KNGFSHR7	345	11.19	587304	G16-045-SUB2	345	2.79
514854	BRADEN 4	138	31.05	515605	CANADN7	345	11.56	587330	GEN-2016-048	138	21.84
514863	HAYMAKR4	138	26.11	515610	FSHRTAP7	345	16.35	587380	G16-057-SUB1	345	2.81
514873	LNEOAK 4	138	26.65	515621	OPENSKY7	345	13.05	587384	G16-057-SUB2	345	2.74
514879	NORTWST4	138	43.19	515641	PLNSMEN4	138	13.67	587410	GEN-2016-061	345	16.37
514880	NORTWST7	345	30.97	515800	GRACMNT7	345	14.87	587460	GEN-2016-068	345	7.27
514881	SPRNGCK7	345	22.14	520205	WAKITAS4	138	5.67				

Table 4-8
Short Circuit Analysis for Study Project GEN-2016-071 (17SP)

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
514759	NEWKIRK4	138	10.31	532982	OXFORD 4	138	7.49	533549	RAINBOW2	69	5.67
514760	KILDARE4	138	11.66	532984	SUMNER 4	138	7.81	533553	SC4ROME2	69	5.44
514764	NWKRKAT4	138	11.39	532992	TIMBJCT4	138	5.02	533555	SC7CRES2	69	10.78
514804	MIDLTNT4	138	10.30	533063	SC10BEL4	138	8.99	533556	STROTHR2	69	5.88
515381	PECKHMT4	138	10.16	533070	SLATECRK4	138	4.64	533560	WELLING2	69	4.79
521012	NEWKIRK4	138	11.39	533542	ARKCITY2	69	6.29	533563	PRAIRIJ2	69	6.76
521198	CHILOCCO4	138	9.02	533543	CRESWLN2	69	10.92	587480	GEN-2016-071	138	8.86
529290	OMNUKRK4	138	10.18	533547	OAK 2	69	7.62				
532981	CRESWLN4	138	8.47	533548	PARIS 2	69	6.61				

Table 4-9
Short Circuit Analysis for Study Project GEN-2016-072 (17SP)

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
511456	O.K.U.-7	345	5.02	532871	CIRCLE 6	230	8.60	539001	ANTHONY4	138	3.48
514715	WOODRNG7	345	18.99	532872	EMCPHER6	230	7.76	539631	FLATRWD4	138	9.80
514782	WODWRD 2	69	10.64	532873	SUMMIT 6	230	12.98	539638	FLATRDG4	138	14.89
514785	WOODWRD4	138	12.11	532874	UNIONRG6	230	8.78	539639	ELMCREK6	230	7.29
514787	DEWEY 4	138	7.18	532986	BENTON 4	138	28.29	539668	HARPER 4	138	5.69
514796	IODINE-4	138	7.12	532987	BUTLER 4	138	9.92	539674	BARBER 4	138	8.10
514880	NORTWST7	345	30.97	532988	BELAIRE4	138	18.81	539675	MILANTP4	138	6.06
514901	CIMARON7	345	31.46	532990	MIDIAN 4	138	10.11	539760	BARBER 3	115	7.99
515363	CENT 4	138	3.04	532991	WEAVER 4	138	22.01	539800	CLARKCOUNTY7	345	14.62
515375	WWRDEHV7	345	16.62	533012	HALSTDS4	138	4.22	539801	THISTLE7	345	16.09
515376	WWRDEHV4	138	21.44	533013	MOUND 4	138	4.81	539803	IRONWOOD7	345	14.73
515394	KEENAN 4	138	7.82	533015	BENTLEY4	138	9.87	539804	THISTLE4	138	16.62
515398	OUSPRT 4	138	8.57	533016	WWUPLNT4	138	7.61	539805	ELMCREEK7	345	5.26
515407	TATONGA7	345	10.30	533024	29TH 4	138	19.59	542965	W.GRDNR7	345	25.27
515448	CRSRDSW7	345	8.04	533031	BURNSTP4	138	4.48	542981	LACYGNE7	345	24.97
515458	BORDER 7	345	4.95	533035	CHISHLM4	138	22.02	560000	G11-14-TAP	345	13.43
515476	HUNTERS7	345	12.71	533037	COMOTAR4	138	18.56	560002	IRONWOOD7	345	14.72
515477	CHSHLMV7	345	12.70	533038	COWSKIN4	138	18.49	560033	G1524&G1525T	345	20.80
515497	MATHWSN7	345	30.50	533039	ELPASO 4	138	24.72	560053	G15-052T	345	13.30
515543	RENFROW7	345	11.58	533040	EVANS N4	138	37.73	560055	G15-063T	345	17.87
515544	RENFROW4	138	13.65	533041	EVANS S4	138	37.73	560070	G16-001-TAP	345	12.86
515546	GRANTCO4	138	6.29	533049	HOOVERN4	138	17.79	560071	G16-003-TAP	345	13.75
515569	MDFRDTP4	138	11.06	533053	LAKERDG4	138	18.15	560072	G16-005-TAP	345	13.45
515582	SLNGWND7	345	6.96	533054	MAIZE 4	138	22.44	560080	G16-046-TAP	345	12.93
515585	MAMTHPW7	345	9.14	533060	NOEASTE4	138	20.49	562476	G14-001-TAP	345	11.06
515599	G07621119-20	345	11.86	533062	ROSEHIL4	138	31.43	578530	FR3	345	4.87
515621	OPENSKY7	345	13.05	533064	17TH 4	138	17.69	579272	G0744&1403HV	345	6.96
515785	WINDFRM4	138	19.86	533065	SG12COL4	138	20.34	582008	GEN-2011-008	345	11.65
515997	WWPAR4	138	16.16	533068	STEARMN4	138	19.56	582016	GEN-2011-016	345	7.82
520409	RENFROW4	138	10.08	533074	45TH ST4	138	26.27	582708	G-2011-008-1	345	9.60
525830	TUCO_INT 6	230	19.46	533304	LANG 3	115	14.45	583090	G1149&G1504	345	4.54
525832	TUCO_INT 7	345	9.90	533336	BLUSTEM3	115	16.98	583370	GEN-2012-024	345	12.28
530592	SMOKYHL6	230	6.94	533372	PHILIPS3	115	12.05	583750	GEN-2013-029	345	10.28
531469	SPERVIL7	345	15.24	533380	SPRGCRK3	115	3.59	583850	GEN-2014-001	345	7.55
532766	JEC N 7	345	23.32	533381	SUMMIT 3	115	16.87	584659	G15024G15025	345	6.89
532767	BLUSTEM7	345	9.63	533390	MAIZEW 4	138	26.27	584660	GEN-2015-024	345	5.71
532768	EMPEC 7	345	17.31	533391	MAIZEE 4	138	21.16	584670	GEN-2015-025	345	6.89
532769	LANG 7	345	17.10	533412	ARKVALJ3	115	9.87	584700	GEN-2015-029	345	7.27
532770	MORRIS 7	345	12.74	533413	CIRCLE 3	115	18.27	584900	GEN-2015-052	345	13.25
532771	RENO 7	345	10.82	533414	CITIES 3	115	8.14	585060	GEN-2015-068	345	8.36
532773	SUMMIT 7	345	10.29	533415	DAVIS 3	115	8.14	585100	GEN-2015-073	345	14.19
532774	SWISVAL7	345	16.37	533416	RENO 3	115	21.78	585250	GEN-2015-090	345	5.09
532780	CANEYRV7	345	9.93	533419	HEC 3	115	17.09	585410	GREAT_WESTRN	345	9.23
532791	BENTON 7	345	19.48	533421	HEC GT 3	115	17.76	585420	COWBOY_RIDGE	345	7.25
532792	FR2EAST7	345	6.27	533422	HEC U4 3	115	17.31	585430	PRSIMN_CRK1	345	10.58
532794	ROSEHIL7	345	19.15	533426	MANVILE3	115	8.30	585440	PRSIMN_CRK2	345	9.74
532795	FR2WEST7	345	5.24	533428	MCPHER 3	115	10.50	587020	GEN-2016-003	345	13.75
532796	WICHITA7	345	25.09	533429	MOUNDRG3	115	7.03	587040	GEN-2016-005	345	10.98
532797	WOLFCRK7	345	16.01	533438	WMCPHER3	115	10.88	587300	G16-045-SUB1	345	2.83
532798	VIOLA 7	345	11.65	533439	WHEATLD3	115	7.32	587304	G16-045-SUB2	345	2.79
532799	WAVERLY7	345	14.74	533506	DAVIS 2	69	7.25	587310	GEN-2016-046	345	11.29
532800	LATHAMS7	345	10.52	533597	MIDIAN 2	69	12.24	587380	G16-057-SUB1	345	2.81
532801	ELKRVR17	345	9.28	533626	BURLJCT2	69	4.77	587384	G16-057-SUB2	345	2.74
532802	WAVERTX7	345	12.58	533629	CC2SHAR2	69	4.52	587500	GEN-2016-073	345	15.74
532856	SWISVAL6	230	21.59	533653	WOLFCRK2	69	5.81				
532863	MORRIS 6	230	13.79	533786	CHISHLM2	69	18.59				

4.3 Short Circuit Results: 2025 Summer Peak

The maximum fault current for each bus is provided for the 2025 Summer Peak conditions. The following tables show the short circuit results for the study generators for the 2025 Summer Peak conditions:

- Table 4-10: Short Circuit Analysis for GEN-2016-009
- Table 4-11: Short Circuit Analysis for GEN-2016-022 and GEN-2016-031
- Table 4-12: Short Circuit Analysis for GEN-2016-032
- Table 4-13: Short Circuit Analysis for GEN-2016-048
- Table 4-14: Short Circuit Analysis for GEN-2016-060
- Table 4-15 Short Circuit Analysis for GEN-2016-061
- Table 4-16: Short Circuit Analysis for GEN-2016-068
- Table 4-17: Short Circuit Analysis for GEN-2016-071
- Table 4-18: Short Circuit Analysis for GEN-2016-073

Table 4-10
Short Circuit Analysis for Study Project GEN-2016-009 (25SP)

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
301369	4REMNGTON	138	7.52	514757	CHIKASI4	138	9.47	515576	RANCHRD7	345	14.24
510374	HARDY 4	138	3.81	514758	STDBEAR4	138	14.33	515581	COYOTE 4	138	8.48
510375	WEBBCTY4	138	4.18	514759	NEWKIRK4	138	10.59	515635	BLLNGTP4	138	6.59
510376	WEBBTAP4	138	7.61	514760	KILDARE4	138	11.96	520432	FOUNTAIN4	138	5.21
510377	FAIRFXT4	138	7.64	514761	WHEAGLE4	138	16.33	521007	MARLAND_138	138	7.53
510382	WPAWHSK4	138	5.84	514762	3SANDS 2	69	4.82	521012	NEWKIRK4	138	11.67
510403	SHIDLER4	138	7.93	514763	CONBLKS2	69	16.18	529241	OMMORANT	69	12.62
510432	SHIDWFC4	138	5.40	514764	NWKRKAT4	138	11.67	529242	OMHUFFYT	69	12.81
514704	MILLERT4	138	20.71	514770	MARLNDT4	138	11.16	529243	OMNWESTT	69	11.61
514706	COWCRK 4	138	11.37	514798	SNRPMPT4	138	20.75	529244	OMNEASTT	69	9.96
514707	PERRY 4	138	11.06	514799	SNRPMP 4	138	11.36	529245	OMGONTER	69	10.63
514737	OTOE 4	138	16.46	514802	SOONER 4	138	32.33	529246	OMKAWS	69	11.23
514742	OSGE 2	69	18.54	514803	SOONER 7	345	25.85	529247	OMMCCORD	69	7.79
514743	OSAGE 4	138	17.21	514881	SPRNGCK7	345	22.56	529248	OMPECANT	69	12.04
514744	CHILOCO2	69	11.46	515006	MORRISN4	138	13.90	529249	OMWW	69	13.84
514745	CHERPLT2	69	12.98	515011	STILWTR4	138	13.91	529251	OMRIGGS	69	13.42
514746	CHERKPL2	69	10.01	515400	DMANCRK4	138	8.13	529252	OMKAWH	69	4.56
514748	CONTEMP4	138	13.92	515402	CONBLKT2	69	16.31	560056	G15-066T	345	18.49
514750	BRMAN 2	69	8.91	515403	FNTANTP4	138	6.87	560084	G16-061-TAP	345	16.82
514751	NEWKRKT2	69	5.61	515412	DMNCRKT4	138	13.97	584690	GEN-2015-030	345	19.45
514752	TONKAWA2	69	4.88	515447	MORISNT4	138	13.93	584880	GEN-2015-047	345	11.22
514753	CONORTH4	138	13.97	515541	COWBOYH4	138	7.53	587070	GEN-2016-009	69	17.29
514756	CHIKASI2	69	10.15	515542	CWBOYHT4	138	8.12	587330	GEN-2016-048	138	22.04

Table 4-11
Short Circuit Analysis for Study Projects GEN-2016-022 and GEN-2016-031 (25SP)

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
300138	4CLEVLND	138	16.76	514828	KETCHTP4	138	26.18	532791	BENTON 7	345	19.82
509755	WEKIWA-7	345	18.80	514854	BRADEN 4	138	31.17	532794	ROSEHIL7	345	19.43
509852	T.NO.--7	345	23.65	514873	LNEOAK 4	138	26.74	532796	WICHITA7	345	26.06
509895	T.NO.2-4	138	34.41	514879	NORTWST4	138	43.56	532797	WOLFCRK7	345	16.08
510376	WEBBTAP4	138	7.61	514880	NORTWST7	345	32.00	532799	WAVERLY7	345	14.79
510406	N.E.S.-7	345	18.86	514881	SPRNGCK7	345	22.56	532800	LATHAMS7	345	10.57
512694	CLEVLND7	345	15.01	514898	CIMARON4	138	42.72	532801	ELKRVR17	345	9.32
512729	CLEVLND 4	138	16.76	514901	CIMARON7	345	32.78	532986	BENTON 4	138	28.81
512865	GREC TAP5	345	25.89	514907	ARCADIA4	138	41.50	532991	WEAVER 4	138	22.52
514704	MILLERT4	138	20.71	514908	ARCADIA7	345	26.33	533039	ELPASO 4	138	25.96
514705	COWCRK 2	69	4.05	514909	REDBUD 7	345	25.60	533062	ROSEHIL4	138	32.18
514706	COWCRK 4	138	11.37	514934	DRAPER 7	345	20.71	533068	STEARMN4	138	20.09
514707	PERRY 4	138	11.06	515006	MORRISN4	138	13.90	533653	WOLFCRK2	69	6.02
514708	OTTER 4	138	9.60	515011	STILWTR4	138	13.91	560053	G15-052T	345	13.36
514709	FRMNTAP4	138	17.86	515045	SEMINOL7	345	26.25	560055	G15-063T	345	18.25
514711	WAUKOTP4	138	15.21	515181	UNVRSTY4	138	13.74	560056	G15-066T	345	18.49
514713	WRVALLY4	138	8.73	515400	DMANCRK4	138	8.13	560084	G16-061-TAP	345	16.82
514714	WOODRNG4	138	19.10	515407	TATONGA7	345	15.87	584450	G1501-G1631	345	11.37
514715	WOODRNG7	345	19.31	515412	DMNCRKT4	138	13.97	584690	GEN-2015-030	345	19.45
514733	MARSHL 4	138	7.84	515447	MORISNT4	138	13.93	584770	GEN-2015-034	345	12.13
514737	OTOE 4	138	16.46	515471	NW164TH4	138	35.56	584880	GEN-2015-047	345	11.22
514742	OSGE 2	69	18.54	515476	HUNTERS7	345	13.06	584900	GEN-2015-052	345	13.31
514743	OSAGE 4	138	17.21	515477	CHSHLMV7	345	13.04	585010	GEN-2015-063	345	17.92
514758	STDBEAR4	138	14.33	515497	MATHWSN7	345	32.58	585040	GEN-2015-066	345	18.31
514761	WHEAGLE4	138	16.33	515512	SPVALLY4	138	8.87	587160	GEN-2016-022	345	12.13
514770	MARLNDT4	138	11.16	515543	RENFROW7	345	12.22	587300	G16-045-SUB1	345	2.84
514798	SNRPMPT4	138	20.75	515576	RANCHRD7	345	14.24	587304	G16-045-SUB2	345	2.79
514799	SNRPMP 4	138	11.36	515610	FSHRTAP7	345	16.66	587330	GEN-2016-048	138	22.04
514801	MINCO 7	345	16.77	515621	OPENSKY7	345	13.08	587380	G16-057-SUB1	345	2.81
514802	SOONER 4	138	32.33	515644	STLWTR2	69	16.29	587384	G16-057-SUB2	345	2.74
514803	SOONER 7	345	25.85	529200	OMCDLEC7	345	14.22	587410	GEN-2016-061	345	16.49
514825	KAYWIND7	345	13.04	532780	CANEYRV7	345	9.97	587460	GEN-2016-068	345	7.30

Table 4-12
Short Circuit Analysis for Study Project GEN-2016-032 (25SP)

300135	4LUTHER	138	8.16	514833	DANFRTH4	138	25.71	515464	SHDWLKE4	138	17.31
300136	4MEMORAL	138	20.22	514842	CHTWOOD4	138	20.59	515465	LGARBER4	138	21.05
509782	R.S.S.-7	345	31.52	514879	NORTWST4	138	43.56	515467	WHITESB4	138	15.23
510907	PITTSB-7	345	13.26	514880	NORTWST7	345	32.00	515476	HUNTERS7	345	13.06
512710	KINZEGR4	138	14.32	514881	SPRNGCK7	345	22.56	515477	CHSHLMV7	345	13.04
514510	BURGETT4	138	22.21	514884	DUNJEE 4	138	20.67	515480	JONESSB4	138	28.22
514706	COWCRK 4	138	11.37	514901	CIMARON7	345	32.78	515497	MATHWSN7	345	32.58
514708	OTTER 4	138	9.60	514906	JNSKAMO4	138	20.36	515543	RENFROW7	345	12.22
514709	FRMNTAP4	138	17.86	514907	ARCADIA4	138	41.50	515641	PLNSMEN4	138	13.73
514710	WAUKOMI4	138	9.63	514908	ARCADIA7	345	26.33	520847	CASHION4	138	5.05
514711	WAUKOTP4	138	15.21	514909	REDBUD 7	345	25.60	520879	DOVER 4	138	5.80
514712	FAIRMON4	138	13.87	514934	DRAPER 7	345	20.71	520882	DOVERSW4	138	7.49
514713	WRVALLY4	138	8.73	514937	HSLWEST2	69	12.13	521006	MARSHAL4	138	7.80
514714	WOODRNG4	138	19.10	514941	HSL 4	138	39.65	521037	REEDING2	138	4.26
514715	WOODRNG7	345	19.31	514966	MIDWAY 4	138	17.83	521073	TWNLAKE4	138	6.57
514730	SO4TH 2	69	13.66	514987	DALE 4	138	13.56	521100	WARREN 4	138	8.73
514731	SO4TH 4	138	15.08	514993	SE15TH 4	138	14.95	560055	G15-063T	345	18.25
514733	MARSHL 4	138	7.84	515008	KINZE 4	138	14.33	560077	G16-032-TAP	345	3.38
514774	HENESEY4	138	7.40	515009	MCELROY4	138	13.76	560084	G16-061-TAP	345	16.82
514790	IMO 4	138	11.78	515044	SEMINOL4	138	39.35	584170	GEN-2014-064	138	9.53
514803	SOONER 7	345	25.85	515045	SEMINOL7	345	26.25	585010	GEN-2015-063	345	17.92
514815	BRECKNR4	138	13.71	515046	HAMMTAP4	138	14.37	587210	GEN-2016-032	138	6.77
514827	CTNWOOD4	138	16.67	515224	MUSKOGE7	345	28.92	587410	GEN-2016-061	345	16.49
514829	PINE ST4	138	11.77	515373	LBRTYLK4	138	13.58	587460	GEN-2016-068	345	7.30
514830	FITZGRD4	138	9.02	515377	CRESENT4	138	7.45				
514831	WATRLOO4	138	14.10	515461	RNDBARN4	138	39.4406				

Table 4-13
Short Circuit Analysis for Study Project GEN-2016-048 (25SP)

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
300138	4CLEVLND	138	15.74	514768	WF KAY 2	69	2.98	515512	SPVALLY4	138	8.78
509755	WEKIWA-7	345	18.82	514770	MARLNDT4	138	11.23	515514	KNIPE 4	138	5.02
509852	T.NO.--7	345	23.55	514798	SNRPMPT4	138	20.82	515541	COWBOYH4	138	7.57
509895	T.NO.2-4	138	34.42	514799	SNRPMP 4	138	11.50	515542	CWBOYHT4	138	8.16
510375	WEBBCTY4	138	4.12	514800	BRRDTP 2	69	1.80	515543	RENFROW7	345	12.21
510376	WEBBTAP4	138	7.53	514801	MINCO 7	345	16.85	515576	RANCHRD7	345	14.11
510377	FAIRFXT4	138	7.56	514802	SOONER 4	138	31.90	515610	FSHRTAP7	345	16.77
510403	SHIDLER4	138	7.85	514803	SOONER 7	345	25.71	515621	OPENSKY7	345	12.94
510406	N.E.S.-7	345	18.85	514825	KAYWIND7	345	12.91	515644	STLWTR2	69	16.30
510432	SHIDWFC4	138	5.34	514828	KETCHTP4	138	26.63	521007	MARLAND_138	138	7.57
512653	CENTRL 2	69	14.47	514854	BRADEN 4	138	31.59	521034	PERRY 2	69	2.72
512662	STILWTP2	69	16.32	514873	LNEOAK 4	138	27.20	521100	WARREN 4	138	8.79
512663	BOOMER 2	69	15.16	514879	NORTWST4	138	43.43	529200	OMCDLEC7	345	14.08
512694	CLEVLND7	345	14.78	514880	NORTWST7	345	32.02	529241	OMMORANT	69	12.91
512729	CLEVLND 4	138	15.74	514881	SPRNGCK7	345	22.58	529242	OMHUFFYT	69	13.17
512865	GREC TAP5	345	26.33	514898	CIMARON4	138	42.55	529248	OMPECANT	69	12.24
514704	MILLERT4	138	20.77	514901	CIMARON7	345	32.78	529249	OMWW	69	14.05
514705	COWCRK 2	69	4.09	514907	ARCADIA4	138	40.83	532794	ROSEHIL7	345	19.34
514706	COWCRK 4	138	11.43	514908	ARCADIA7	345	25.87	560053	G15-052T	345	13.20
514707	PERRY 4	138	11.13	514909	REDBUD 7	345	24.99	560055	G15-063T	345	18.26
514708	OTTER 4	138	9.70	514934	DRAPER 7	345	21.07	560056	G15-066T	345	18.28
514709	FRMNTAP4	138	18.07	515006	MORRISN4	138	13.85	560084	G16-061-TAP	345	16.84
514711	WAUKOTP4	138	15.38	515008	KINZE 4	138	14.35	584170	GEN-2014-064	138	9.62
514713	WRVALLY4	138	8.79	515009	MCELROY4	138	13.77	584450	G1501-G1631	345	11.28
514714	WOODRNG4	138	19.31	515011	STILWTR4	138	13.89	584690	GEN-2015-030	345	19.38
514715	WOODRNG7	345	19.32	515033	CUSHING4	138	6.01	584770	GEN-2015-034	345	12.02
514733	MARSHL 4	138	7.94	515039	PAYNESB4	138	7.66	584880	GEN-2015-047	345	11.20
514737	OTOE 4	138	16.57	515045	SEMINOL7	345	26.41	584900	GEN-2015-052	345	13.15
514742	OSGE 2	69	18.83	515181	UNVRSTY4	138	13.74	585010	GEN-2015-063	345	17.94
514743	OSAGE 4	138	17.38	515400	DMANCRK4	138	8.24	585040	GEN-2015-066	345	18.11
514745	CHERPLT2	69	13.10	515402	CONBLKT2	69	16.52	587070	GEN-2016-009	69	17.54
514748	CONTEMP4	138	14.09	515403	FNTANTP4	138	6.91	587160	GEN-2016-022	345	12.02
514753	CONORTH4	138	14.14	515407	TATONGA7	345	15.91	587300	G16-045-SUB1	345	2.80
514757	CHIKASI4	138	9.52	515412	DMNCRKT4	138	14.10	587304	G16-045-SUB2	345	2.75
514758	STDBEAR4	138	14.50	515447	MORISNT4	138	13.88	587330	GEN-2016-048	138	22.02
514760	KILDARE4	138	11.99	515471	NW164TH4	138	35.75	587380	G16-057-SUB1	345	2.77
514761	WHEAGLE4	138	16.48	515476	HUNTERS7	345	13.07	587384	G16-057-SUB2	345	2.70
514763	CONBLKS2	69	16.39	515477	CHSHLMV7	345	13.06	587410	GEN-2016-061	345	16.51
514764	NWKRKAT4	138	11.70	515497	MATHWSN7	345	32.18	587460	GEN-2016-068	345	7.36

Table 4-14
Short Circuit Analysis for Study Project GEN-2016-060 (25SP)

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
514804	MIDLTNT4	138	10.69	533036	CLEARWT4	138	22.00	533559	UDALL 2	69	7.16
515381	PECKHMT4	138	10.46	533039	ELPASO 4	138	25.96	533561	WINFLD 2	69	6.43
515476	HUNTERS7	345	13.06	533040	EVANS N4	138	42.82	533604	WEAVER 2	69	11.80
515543	RENFROW7	345	12.22	533041	EVANS S4	138	42.82	533792	EASTBOR2	69	14.73
515544	RENFROW4	138	13.86	533042	FARBER 4	138	16.62	533793	ELPASO 2	69	11.88
521198	CHILOCCO4	138	9.26	533044	GILL E 4	138	28.72	533795	GILL E 2	69	34.11
532771	RENO 7	345	11.60	533045	GILL W 4	138	28.72	533796	GILL W 2	69	34.11
532791	BENTON 7	345	19.82	533046	GILL S 4	138	28.72	533798	GILLJCT2	69	22.02
532792	FR2EAST7	345	6.70	533048	HARRY 4	138	13.76	533804	HAYSVLJ2	69	14.33
532794	ROSEHIL7	345	19.43	533062	ROSEHIL4	138	32.18	533808	HYDRJN2	69	16.17
532795	FR2WEST7	345	5.52	533063	SC10BEL4	138	10.45	533813	MACARTH2	69	22.62
532796	WICHITA7	345	26.06	533066	64TH 4	138	14.56	533821	MULVANE2	69	5.37
532797	WOLFCRK7	345	16.08	533067	SPRNGDL4	138	14.67	533824	OAKLAWN2	69	15.76
532798	VIOLA 7	345	13.81	533068	STEARMN4	138	20.09	533826	OLIVER 2	69	14.16
532800	LATHAMS7	345	10.57	533070	SLATECRK4	138	4.82	533830	PECK 2	69	6.63
532981	CRESWLN4	138	9.19	533072	WACO 4	138	23.66	533842	64TH 2	69	14.82
532982	OXFORD 4	138	9.70	533075	VIOLA 4	138	22.35	533850	VULCAN 2	69	20.62
532984	SUMNER 4	138	10.65	533541	AKRON 2	69	6.76	533851	VULCTP 2	69	24.68
532985	TCROCK 4	138	5.44	533543	CRESWLN2	69	11.47	533879	GODDTAP2	69	8.19
532991	WEAVER 4	138	22.52	533547	OAK 2	69	7.91	533880	GODDARD2	138	19.10
532992	TIMBJCT4	138	5.83	533548	PARIS 2	69	6.81	539668	HARPER 4	138	5.98
532993	TALLGRS4	138	10.12	533549	RAINBOW2	69	5.84	539675	MILANTP4	138	7.11
533026	ANDOVER4	138	18.07	533550	RICHLAN2	69	5.94	539676	MILAN 4	138	4.22
533028	BEECHTP4	138	13.76	533551	SC1KING2	69	3.29	560033	G1524&G1525T	345	21.33
533029	59TH ST4	138	19.13	533553	SC4ROME2	69	5.54	560053	G15-052T	345	13.36
533030	BOEING 4	138	17.36	533555	SC7CRES2	69	11.31	562476	G14-001-TAP	345	11.16
533032	BU11PON4	138	15.28	533556	STROTHR2	69	6.06	583750	GEN-2013-029	345	10.77
533033	CANAL 4	138	16.90	533558	TIMBJCT2	69	8.20	585200	GEN-2015-083	138	7.20

Table 4-15
Short Circuit Analysis for Study Project GEN-2016-061 (25SP)

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
300138	4CLEVLND	138	16.76	514815	BRECKNR4	138	13.71	515610	FSHRTAP7	345	16.66
509755	WEKIWA-7	345	18.80	514825	KAYWIND7	345	13.04	515621	OPENSKY7	345	13.08
509852	T.NO.--7	345	23.65	514827	CTNWOOD4	138	16.67	515641	PLNSMEN4	138	13.73
509895	T.NO.2-4	138	34.41	514828	KETCHTP4	138	26.18	515644	STLWTR2	69	16.29
510376	WEBBTAP4	138	7.61	514854	BRADEN 4	138	31.17	520409	RENFROW4	138	10.18
510406	N.E.S.-7	345	18.86	514873	LNEOAK 4	138	26.74	521006	MARSHAL4	138	7.80
512694	CLEVLND7	345	15.01	514879	NORTWST4	138	43.56	521100	WARREN 4	138	8.73
512729	CLEVLND 4	138	16.76	514880	NORTWST7	345	32.00	529200	OMCDLEC7	345	14.22
512865	GREC TAP5	345	25.89	514881	SPRNGCK7	345	22.56	532792	FR2EAST7	345	6.70
514704	MILLERT4	138	20.71	514898	CIMARON4	138	42.72	532794	ROSEHIL7	345	19.43
514705	COWCRK 2	69	4.05	514901	CIMARON7	345	32.78	532796	WICHITA7	345	26.06
514706	COWCRK 4	138	11.37	514907	ARCADIA4	138	41.50	532798	VIOLA 7	345	13.81
514707	PERRY 4	138	11.06	514908	ARCADIA7	345	26.33	533075	VIOLA 4	138	22.35
514708	OTTER 4	138	9.60	514909	REDBUD 7	345	25.60	560053	G15-052T	345	13.36
514709	FRMNTAP4	138	17.86	514934	DRAPER 7	345	20.71	560055	G15-063T	345	18.25
514710	WAUKOMI4	138	9.63	515006	MORRISN4	138	13.90	560056	G15-066T	345	18.49
514711	WAUKOTP4	138	15.21	515011	STILWTR4	138	13.91	560077	G16-032-TAP	345	3.38
514712	FAIRMON4	138	13.87	515045	SEMINOL7	345	26.25	560084	G16-061-TAP	345	16.82
514713	WRVALLY4	138	8.73	515181	UNVRSTY4	138	13.74	583750	GEN-2013-029	345	10.77
514714	WOODRNG4	138	19.10	515375	WWRDEHV7	345	18.94	584170	GEN-2014-064	138	9.53
514715	WOODRNG7	345	19.31	515400	DMANCRK4	138	8.13	584450	G1501-G1631	345	11.37
514730	SO4TH 2	69	13.66	515407	TATONGA7	345	15.87	584690	GEN-2015-030	345	19.45
514731	SO4TH 4	138	15.08	515412	DMNCRKT4	138	13.97	584700	GEN-2015-029	345	9.58
514733	MARSHL 4	138	7.84	515447	MORISNT4	138	13.93	584770	GEN-2015-034	345	12.13
514737	OTOE 4	138	16.46	515448	CRSRDSW7	345	11.07	584880	GEN-2015-047	345	11.22
514742	OSGE 2	69	18.54	515471	NW164TH4	138	35.56	584900	GEN-2015-052	345	13.31
514743	OSAGE 4	138	17.21	515476	HUNTERS7	345	13.06	585010	GEN-2015-063	345	17.92
514758	STDBEAR4	138	14.33	515477	CHSHLMV7	345	13.04	585040	GEN-2015-066	345	18.31
514761	WHEAGLE4	138	16.33	515497	MATHWSN7	345	32.58	587160	GEN-2016-022	345	12.13
514770	MARLNDT4	138	11.16	515512	SPVALLY4	138	8.87	587210	GEN-2016-032	138	6.77
514774	HENESEY4	138	7.40	515543	RENFROW7	345	12.22	587300	G16-045-SUB1	345	2.84
514790	IMO 4	138	11.78	515544	RENFROW4	138	13.86	587304	G16-045-SUB2	345	2.79
514798	SNRPMPT4	138	20.75	515546	GRANTCO4	138	6.33	587330	GEN-2016-048	138	22.04
514799	SNRPMP 4	138	11.36	515569	MDFRDTP4	138	11.19	587380	G16-057-SUB1	345	2.81
514801	MINCO 7	345	16.77	515576	RANCHRD7	345	14.24	587384	G16-057-SUB2	345	2.74
514802	SOONER 4	138	32.33	515582	SLNGWND7	345	8.97	587410	GEN-2016-061	345	16.49
514803	SOONER 7	345	25.85	515585	MAMTHPW7	345	13.21	587460	GEN-2016-068	345	7.30

Table 4-16
Short Circuit Analysis for Study Project GEN-2016-068 (25SP)

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
509852	T.NO.--7	345	23.65	514880	NORTWST7	345	32.00	520409	RENFROW4	138	10.18
511425	TUTCONT4	138	10.61	514881	SPRNGCK7	345	22.56	520882	DOVERSW4	138	7.49
512694	CLEVLND7	345	15.01	514894	CZECHAL4	138	27.44	521006	MARSHAL4	138	7.80
512729	CLEVLND 4	138	16.76	514895	SARA 4	138	18.64	521100	WARREN 4	138	8.73
514642	BRCKWND4	138	7.38	514898	CIMARON4	138	42.72	522397	MDFRDJCT	138	7.30
514701	BUNCHCK4	138	6.60	514901	CIMARON7	345	32.78	529200	OMCDLEC7	345	14.22
514704	MILLERT4	138	20.71	514907	ARCADIA4	138	41.50	532771	RENO 7	345	11.60
514705	COWCRK 2	69	4.05	514908	ARCADIA7	345	26.33	532791	BENTON 7	345	19.82
514706	COWCRK 4	138	11.37	514909	REDBUD 7	345	25.60	532792	FR2EAST7	345	6.70
514707	PERRY 4	138	11.06	514933	DRAPER 4	138	38.77	532795	FR2WEST7	345	5.52
514708	OTTER 4	138	9.60	514934	DRAPER 7	345	20.71	532796	WICHITA7	345	26.06
514709	FRMNTAP4	138	17.86	515006	MORRISN4	138	13.90	532798	VIOLA 7	345	13.81
514710	WAUKOMI4	138	9.63	515011	STILWTR4	138	13.91	532984	SUMNER 4	138	10.65
514711	WAUKOTP4	138	15.21	515045	SEMINOL7	345	26.25	533036	CLEARWT4	138	22.00
514712	FAIRMON4	138	13.87	515373	LBRTYLK4	138	13.58	533040	EVANS N4	138	42.82
514713	WRVALLY4	138	8.73	515375	WWRDEHV7	345	18.94	533046	GILL S 4	138	28.72
514714	WOODRNG4	138	19.10	515376	WWRDEHV4	138	22.47	533075	VIOLA 4	138	22.35
514715	WOODRNG7	345	19.31	515377	CRESENT4	138	7.45	539801	THISTLE7	345	16.45
514718	VANCE 2	69	6.98	515383	ENIDINT4	138	12.84	560031	G15-015-TAP	138	8.44
514721	IMO 2	69	11.86	515407	TATONGA7	345	15.87	560033	G1524&G1525T	345	21.33
514722	CLEVETP2	69	11.64	515412	DMNCRKT4	138	13.97	560053	G15-052T	345	13.36
514727	ENID 2	69	11.91	515444	MCNOWND7	345	16.72	560055	G15-063T	345	18.25
514730	SO4TH 2	69	13.66	515447	MORISNT4	138	13.93	560056	G15-066T	345	18.49
514731	SO4TH 4	138	15.08	515448	CRSRDSW7	345	11.07	560071	G16-003-TAP	345	14.78
514733	MARSHL 4	138	7.84	515456	CHSTNTT2	69	11.55	560077	G16-032-TAP	345	3.38
514734	GLENWD 4	138	10.19	515458	BORDER 7	345	5.07	560084	G16-061-TAP	345	16.82
514737	OTOE 4	138	16.46	515471	NW164TH4	138	35.56	562476	G14-001-TAP	345	11.16
514743	OSAGE 4	138	17.21	515476	HUNTERS7	345	13.06	579272	G0744&1403HV	345	8.97
514774	HENESEY4	138	7.40	515477	CHSHLMV7	345	13.04	583750	GEN-2013-029	345	10.77
514789	MENOTAP4	138	7.07	515497	MATHWSN7	345	32.58	584170	GEN-2014-064	138	9.53
514790	IMO 4	138	11.78	515543	RENFROW7	345	12.22	584450	G1501-G1631	345	11.37
514798	SNRPMPT4	138	20.75	515544	RENFROW4	138	13.86	584690	GEN-2015-030	345	19.45
514799	SNRPMP 4	138	11.36	515546	GRANTCO4	138	6.33	584700	GEN-2015-029	345	9.58
514801	MINCO 7	345	16.77	515547	GRANTCO2	69	7.21	584770	GEN-2015-034	345	12.13
514802	SOONER 4	138	32.33	515549	MNCWND37	345	11.55	584880	GEN-2015-047	345	11.22
514803	SOONER 7	345	25.85	515569	MDFRDTP4	138	11.19	585010	GEN-2015-063	345	17.92
514815	BRECKNR4	138	13.71	515576	RANCHRD7	345	14.24	585040	GEN-2015-066	345	18.31
514819	EL-RENO4	138	15.31	515582	SLNGWND7	345	8.97	587160	GEN-2016-022	345	12.13
514820	JENSENT4	138	15.09	515585	MAMTHPW7	345	13.21	587210	GEN-2016-032	138	6.77
514825	KAYWIND7	345	13.04	515599	G07621119-20	345	12.86	587300	G16-045-SUB1	345	2.84
514827	CTNWOOD4	138	16.67	515600	KNGFSHR7	345	11.33	587304	G16-045-SUB2	345	2.79
514828	KETCHTP4	138	26.18	515605	CANADN7	345	11.71	587330	GEN-2016-048	138	22.04
514829	PINE ST4	138	11.77	515610	FSHRTAP7	345	16.66	587380	G16-057-SUB1	345	2.81
514854	BRADEN 4	138	31.17	515621	OPENSKY7	345	13.08	587384	G16-057-SUB2	345	2.74
514863	HAYMAKR4	138	26.13	515641	PLNSMEN4	138	13.73	587410	GEN-2016-061	345	16.49
514873	LNEOAK 4	138	26.74	515800	GRACMNT7	345	15.29	587460	GEN-2016-068	345	7.30
514879	NORTWST4	138	43.56	520205	WAKITAS4	138	5.69				

Table 4-17
Short Circuit Analysis for Study Project GEN-2016-071 (25SP)

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
514759	NEWKIRK4	138	10.59	532982	OXFORD 4	138	9.70	533548	PARIS 2	69	6.81
514760	KILDARE4	138	11.96	532984	SUMNER 4	138	10.65	533549	RAINBOW2	69	5.84
514764	NWKRKAT4	138	11.67	532992	TIMBJCT4	138	5.83	533553	SC4ROME2	69	5.54
514804	MIDLTNT4	138	10.69	533063	SC10BEL4	138	10.45	533555	SC7CRES2	69	11.31
515381	PECKHMT4	138	10.46	533070	SLATECRK4	138	4.82	533556	STROTHR2	69	6.06
521012	NEWKIRK4	138	11.67	533075	VIOLA 4	138	22.35	533560	WELLING2	69	4.87
521198	CHILOCCO4	138	9.26	533542	ARKCITY2	69	6.47	533563	PRAIRIJ2	69	6.98
529290	OMNUKRK4	138	10.46	533543	CRESWLN2	69	11.47	587480	GEN-2016-071	138	9.08
532981	CRESWLN4	138	9.19	533547	OAK 2	69	7.91				

Table 4-18
Short Circuit Analysis for Study Project GEN-2016-073 (25SP)

Study Generator GEN-2016-073											
Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)	Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
511456	O.K.U.-7	345	5.10	532873	SUMMIT 6	230	13.54	533653	WOLFCRK2	69	6.02
514715	WOODRNG7	345	19.31	532874	UNIONRG6	230	8.87	533786	CHISHLM2	69	18.87
514782	WODWRD 2	69	10.69	532982	OXFORD 4	138	9.70	533795	GILL E 2	69	34.11
514785	WOODWRD4	138	12.24	532984	SUMNER 4	138	10.65	533796	GILL W 2	69	34.11
514787	DEWEY 4	138	7.21	532986	BENTON 4	138	28.81	533879	GODDTAP2	69	8.19
514796	IODINE-4	138	7.18	532987	BUTLER 4	138	10.02	533880	GODDARD2	138	19.10
514880	NORTWST7	345	32.00	532988	BELAIRE4	138	19.06	539000	RAGO 4	138	3.61
514901	CIMARON7	345	32.78	532990	MIDIAN 4	138	10.20	539001	ANTHONY4	138	3.63
515363	CENT 4	138	3.05	532991	WEAVER 4	138	22.52	539631	FLATRWD4	138	9.89
515375	WWRDEHV7	345	18.94	532992	TIMBJCT4	138	5.83	539638	FLATRDG4	138	15.10
515376	WWRDEHV4	138	22.47	533012	HALSTDS4	138	4.27	539639	ELMCREK6	230	7.35
515394	KEENAN 4	138	7.96	533013	MOUND 4	138	4.89	539668	HARPER 4	138	5.98
515398	OUSPRT 4	138	8.73	533015	BENTLEY4	138	10.16	539674	BARBER 4	138	8.15
515407	TATONGA7	345	15.87	533016	WWUPLNT4	138	7.78	539675	MILANTP4	138	7.11
515448	CRSRDSW7	345	11.07	533024	29TH 4	138	19.86	539760	BARBER 3	115	8.03
515458	BORDER 7	345	5.07	533029	59TH ST4	138	19.13	539800	CLARKCOUNTY7	345	14.70
515476	HUNTERS7	345	13.06	533031	BURNSTP4	138	4.50	539801	THISTLE7	345	16.45
515477	CHSHLMV7	345	13.04	533035	CHISHLM4	138	22.68	539803	IRONWOOD7	345	14.79
515497	MATHWSN7	345	32.58	533036	CLEARWT4	138	22.00	539804	THISTLE4	138	16.84
515543	RENFROW7	345	12.22	533037	COMOTAR4	138	18.82	539805	ELMCREEK7	345	5.32
515544	RENFROW4	138	13.86	533038	COWSKIN4	138	20.49	542981	LACYGNE7	345	25.08
515546	GRANTCO4	138	6.33	533039	ELPASO 4	138	25.96	560000	G11-14-TAP	345	13.81
515569	MDFRDTP4	138	11.19	533040	EVANS N4	138	42.82	560002	IRONWOOD7	345	14.78
515582	SLNGWND7	345	8.97	533041	EVANS S4	138	42.82	560033	G1524&G1525T	345	21.33
515585	MAMTHPW7	345	13.21	533045	GILL W 4	138	28.72	560053	G15-052T	345	13.36
515599	G07621119-20	345	12.86	533046	GILL S 4	138	28.72	560055	G15-063T	345	18.25
515621	OPENSKY7	345	13.08	533049	HOOVERN4	138	19.00	560070	G16-001-TAP	345	13.47
515785	WINDFRM4	138	19.97	533053	LAKERDG4	138	19.12	560071	G16-003-TAP	345	14.78
515997	WWPAR4	138	16.63	533054	MAIZE 4	138	23.62	560072	G16-005-TAP	345	13.54
520409	RENFROW4	138	10.18	533060	NOEASTE4	138	20.83	560080	G16-046-TAP	345	12.98
525830	TUCO_INT 6	230	22.50	533062	ROSEHIL4	138	32.18	562476	G14-001-TAP	345	11.16
525832	TUCO_INT 7	345	12.08	533063	SC10BEL4	138	10.45	578530	FR3	345	5.10
526936	YOAKUM_345	345	8.58	533064	17TH 4	138	18.14	579272	G0744&1403HV	345	8.97
530592	SMOKYHL6	230	6.99	533065	SG12COL4	138	21.70	582008	GEN-2011-008	345	11.70
531469	SPERVIL7	345	15.30	533068	STEARMN4	138	20.09	582016	GEN-2011-016	345	7.83
532766	JEC N 7	345	23.53	533074	45TH ST4	138	29.58	582708	G-2011-008-1	345	9.63
532767	BLUSTEM7	345	9.75	533075	VIOLA 4	138	22.35	583090	G1149&G1504	345	4.64
532768	EMPEC 7	345	17.42	533304	LANG 3	115	14.48	583370	GEN-2012-024	345	12.33
532769	LANG 7	345	17.20	533336	BLUSTEM3	115	17.09	583750	GEN-2013-029	345	10.77
532770	MORRIS 7	345	12.80	533372	PHILIPS3	115	12.39	583850	GEN-2014-001	345	7.59
532771	RENO 7	345	11.60	533380	SPRGCRK3	115	3.62	584659	G15024G15025	345	6.94
532773	SUMMIT 7	345	10.65	533381	SUMMIT 3	115	17.41	584660	GEN-2015-024	345	5.74
532774	SWISVAL7	345	16.66	533390	MAIZEW 4	138	28.20	584670	GEN-2015-025	345	6.94
532776	DOUGLAS7	345	18.19	533391	MAIZEE 4	138	22.09	584700	GEN-2015-029	345	9.58
532780	CANEYRV7	345	9.97	533412	ARKVALJ3	115	10.95	584900	GEN-2015-052	345	13.31
532791	BENTON 7	345	19.82	533413	CIRCLE 3	115	22.91	585060	GEN-2015-068	345	9.83
532792	FR2EAST7	345	6.70	533414	CITIES 3	115	8.91	585100	GEN-2015-073	345	14.26
532794	ROSEHIL7	345	19.43	533415	DAVIS 3	115	8.77	585250	GEN-2015-090	345	5.11
532795	FR2WEST7	345	5.52	533416	RENO 3	115	25.27	585410	GREAT_WESTRN	345	9.77
532796	WICHITA7	345	26.06	533419	HEC 3	115	22.37	585420	COWBOY_RIDGE	345	7.57
532797	WOLFCRK7	345	16.08	533422	HEC U4 3	115	21.96	585430	PRSIMN_CRK1	345	11.36
532798	VIOLA 7	345	13.81	533426	MANVILE3	115	10.23	585440	PRSIMN_CRK2	345	10.39
532799	WAVERLY7	345	14.79	533428	MCPHER 3	115	11.98	587020	GEN-2016-003	345	14.78
532800	LATHAMS7	345	10.57	533429	MOUNDRG3	115	7.20	587040	GEN-2016-005	345	11.04
532801	ELKRVR17	345	9.32	533438	WMCPHER3	115	12.46	587300	G16-045-SUB1	345	2.84
532802	WAVERTX7	345	12.61	533439	WHEATLD3	115	7.91	587304	G16-045-SUB2	345	2.79
532856	SWISVAL6	230	21.68	533506	DAVIS 2	69	7.57	587310	GEN-2016-046	345	11.33
532863	MORRIS 6	230	13.86	533597	MIDIAN 2	69	12.32	587380	G16-057-SUB1	345	2.81
532871	CIRCLE 6	230	9.59	533626	BURLJCT2	69	5.03	587384	G16-057-SUB2	345	2.74
532872	EMCPHER6	230	8.56	533629	CC2SHAR2	69	4.64	587500	GEN-2016-073	345	16.03

SECTION 5: POWER FACTOR ANALYSIS

The objective of this task is to quantify the power factor (pf) at the point of interconnection (POI) for the wind farms or solar farms during base case and system contingencies. SPP transmission planning practice requires interconnecting generation projects to maintain the power factor at the POI within +/- 0.95 pf for system intact conditions and for post-contingency conditions. This is analyzed by having the wind farm or solar farm maintain a prescribed voltage schedule at the POI of 1.0 p.u. voltage or higher.

The 2016 Winter Peak, 2017 Summer Peak, and 2025 Summer Peak power flows provided by SPP were examined prior to the Power Factor Analysis to ensure they contained the proposed study project modeled at 100% of the nameplate rating and any previously queued projects listed in Table 2-2. There was no suspect power flow data in the study area. The proposed study project and any previously queued projects at the same point of interconnection were turned off during the power factor analysis. The wind farm(s) were then replaced by a generator modeled at the high side bus with the same real power (MW) capability as the wind farm(s) and open limits for the reactive power set points (Mvar). The generator was set to hold the POI scheduled bus voltage. All N-1, three-phase fault contingencies from Table 2-3 were then applied and the reactive power required to maintain the bus voltage was recorded.

5.1 Approach

GEN-2016-022, GEN-2016-031, and GEN-2015-034 were all disabled in the power flow case. A generator was placed at the high side bus of GEN-2016-022 and modeled with PGEN = 151.8 MW, Qmin = -999 Mvar, and Qmax = 999 Mvar. A second study generator was placed at the high side bus of GEN-2016-031 and modeled with PGEN = 201.3 MW, Qmin = -999 Mvar, and Qmax = 999 Mvar. A third generator was placed at the high side bus of GEN-2015-034 and modeled with PGEN = 200.0 MW, Qmin = -999 Mvar, and Qmax = 999 Mvar. All buses, transformers, and equivalent lines connected from the high side bus of each project to the corresponding generator were disabled. Note the Power Factor Analysis was performed separately for GEN-2016-022 and GEN-2016-031. The scheduled voltage for each project was set to hold the voltage at the Ranch Road 345 kV POI. That is, the scheduled voltage was set to 1.0 p.u. for the 2016 Winter Peak case, 1.0 p.u. for the 2017 Summer Peak case, and 1.0 p.u. for the 2025 Summer Peak case.

GEN-2016-032 was disabled and a generator was placed at the study project's high side voltage bus. The generator was modeled with PGEN = 200 MW, Qmin = -999 Mvar, and Qmax = 999 Mvar. All buses, transformers, and equivalent lines connected from the study project's high side voltage bus to GEN-2016-032 were disabled. The scheduled voltage was set to 1.023 p.u. for the 2016 Winter Peak case, 1.022 p.u. for the 2017 Summer Peak case, and 1.019 p.u. for the 2025 Summer Peak case.

GEN-2016-048 was disabled in the power flow case and a generator was placed at the project's high side bus. The generator was modeled with PGEN = 82.32 MW, Qmin = -999 Mvar, and Qmax = 999 Mvar. All buses, transformers, and equivalent lines connected from the project's high side bus to GEN-2016-048 were disabled. The scheduled voltage was set to 1.03 p.u. for the 2016 Winter Peak case, 1.03 p.u. for the 2017 Summer Peak case, and 1.03 p.u. for the 2025 Summer Peak case.

GEN-2016-060 was disabled and a generator was placed at the study project's high side voltage bus. The generator was modeled with PGEN = 149.5 MW, Qmin = -999 Mvar, and Qmax = 999 Mvar. All buses, transformers, and equivalent lines connected from the study project's high side voltage bus to GEN-2016-060 were disabled. The scheduled voltage was set to 1.0 p.u. for the 2016 Winter Peak case, 1.003 p.u. for the 2017 Summer Peak case, and 1.003 p.u. for the 2025 Summer Peak case.

GEN-2016-061 was disabled and a generator was placed at the study project's high side voltage bus. The generator was modeled with PGEN = 250.7 MW, Qmin = -999 Mvar, and Qmax = 999 Mvar. All buses, transformers, and equivalent lines connected from the study project's high side voltage bus to GEN-2016-061 were disabled. The scheduled voltage was set to 1.0 p.u. for the 2016 Winter Peak case, 1.009 p.u. for the 2017 Summer Peak case, and 1.009 p.u. for the 2025 Summer Peak case.

GEN-2016-068 was disabled and a generator was placed at the study project's high side voltage bus. The generator was modeled with PGEN = 250 MW, Qmin = -999 Mvar, and Qmax = 999 Mvar. All buses, transformers, and equivalent lines connected from the study project's high side voltage bus to GEN-2016-068 were disabled. The scheduled voltage was set to 1.009 p.u. for the 2016 Winter Peak case, 1.012 p.u. for the 2017 Summer Peak case, and 1.012 p.u. for the 2025 Summer Peak case.

GEN-2016-071 was disabled and a generator was placed at the study project's high side voltage bus. The generator was modeled with PGEN = 200.1 MW, Qmin = -999 Mvar, and Qmax = 999 Mvar. All buses, transformers, and equivalent lines connected from the study project's high side voltage bus to GEN-2016-071 were disabled. The scheduled voltage was set to 1.0 p.u. for the 2016 Winter Peak case, 1.008 p.u. for the 2017 Summer Peak case, and 1.006 p.u. for the 2025 Summer Peak case.

GEN-2016-073, GEN-2015-024, GEN-2015-025, and GEN-2015-090 were all disabled in the power flow case. A generator was placed at the high side bus of GEN-2016-073 and modeled with PGEN = 220.0 MW, Qmin = -999 Mvar, and Qmax = 999 Mvar. A second study generator was placed at the high side bus of GEN-2015-024 and modeled with PGEN = 217.8 MW, Qmin

= -999 Mvar, and Qmax = 999 Mvar. A third generator was placed at the high side bus of GEN-2015-025 and modeled with PGEN = 216 MW, Qmin = -999 Mvar, and Qmax = 999 Mvar. A fourth generator was placed at the high side bus of GEN-2015-090 and modeled with PGEN = 220.0 MW, Qmin = -999 Mvar, and Qmax = 999 Mvar. All buses, transformers, and equivalent lines connected from the high side bus of each project to the corresponding generator were disabled. The scheduled voltage was set to 1.0 p.u. for the 2016 Winter Peak case, 1.004 p.u. for the 2017 Summer Peak case, and 1.006 p.u. for the 2025 Summer Peak case.

5.2 Power Factor Analysis Results

The power factor was calculated for the 2016 Winter Peak, 2017 Summer Peak, and 2025 Summer Peak condition. The following tables show the power factor results for the study generators:

- Table 5-1: Power Factor Analysis for GEN-2016-022
- Table 5-2: Power Factor Analysis for GEN-2016-031
- Table 5-3: Power Factor Analysis for GEN-2016-032
- Table 5-4: Power Factor Analysis for GEN-2016-048
- Table 5-5: Power Factor Analysis for GEN-2016-060
- Table 5-6: Power Factor Analysis for GEN-2016-061
- Table 5-7: Power Factor Analysis for GEN-2016-068
- Table 5-8: Power Factor Analysis for GEN-2016-071
- Table 5-9: Power Factor Analysis for GEN-2016-073

Note that a positive Q (Mvar) output illustrates that the generator is absorbing reactive power from the system, implying a leading power factor; a negative Q (Mvar) illustrates that the generator is supplying reactive power to the system, implying a lagging power factor.

Table 5-1
Power Factor Analysis: GEN-2016-022

Reference Number	Case	16 Winter Peak			17 Summer Peak			25 Summer Peak		
		Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)
0	Base	0.998	Lagging	-9.01	0.999	Leading	5.39	0.999	Leading	6.61
1	FLT1-3PH	0.998	Lagging	-9.12	0.999	Leading	5.34	0.999	Leading	6.54
2	FLT2-3PH	0.998	Lagging	-9.01	0.999	Leading	5.38	0.999	Leading	6.61
3	FLT3-3PH	0.998	Lagging	-9.02	0.999	Leading	5.39	0.999	Leading	6.61
4	FLT4-3PH	0.998	Lagging	-9.06	0.999	Leading	5.36	0.999	Leading	6.59
5	FLT5-3PH	0.998	Lagging	-9.62	1.000	Leading	4.74	0.999	Leading	6.00
6	FLT6-3PH	0.998	Lagging	-9.13	0.999	Leading	5.28	0.999	Leading	6.39
7	FLT7-3PH	0.997	Lagging	-11.64	1.000	Leading	3.27	1.000	Leading	4.80
8	FLT8-3PH	0.998	Lagging	-9.02	0.999	Leading	5.38	0.999	Leading	6.61
15	FLT17-3PH	0.969	Lagging	-38.43	0.998	Lagging	-10.32	0.998	Lagging	-8.43
16	FLT18-3PH	0.992	Lagging	-19.60	1.000	Lagging	-0.66	1.000	Leading	0.56
17	FLT19-3PH	0.995	Lagging	-15.34	1.000	Leading	1.96	1.000	Leading	3.11
18	FLT20-3PH	0.998	Lagging	-9.99	1.000	Leading	4.42	0.999	Leading	5.96
19	FLT21-3PH	0.998	Lagging	-10.18	1.000	Leading	4.73	0.999	Leading	5.80
20	FLT22-3PH	0.997	Lagging	-11.65	1.000	Leading	3.85	0.999	Leading	4.84
21	FLT23-3PH	0.998	Lagging	-10.06	1.000	Leading	4.22	0.999	Leading	5.32
31	FLT33-3PH	1.000	Leading	2.08	0.999	Leading	6.46	0.999	Leading	7.92
32	FLT34-3PH	0.996	Lagging	-12.86	0.999	Lagging	-7.64	0.999	Lagging	-6.29
33	FLT35-3PH	0.998	Lagging	-9.01	0.999	Leading	5.39	0.999	Leading	6.61
34	FLT36-3PH	0.978	Lagging	-32.22	0.986	Lagging	-25.86	0.987	Lagging	-24.27
35	FLT37-3PH	0.989	Lagging	-22.60	0.998	Lagging	-8.82	0.999	Lagging	-7.66
36	FLT38-3PH	0.997	Lagging	-10.930	1.000	Leading	3.90	0.999	Leading	6.27
37	FLT39-3PH	0.996	Lagging	-13.09	1.000	Leading	0.90	1.000	Leading	1.06
38	FLT40-3PH	0.996	Lagging	-13.09	1.000	Leading	0.90	1.000	Leading	1.06
39	FLT41-3PH	0.998	Lagging	-9.52	0.999	Leading	5.12	0.999	Leading	6.42
48	FLT50-3PH	0.998	Lagging	-9.14	0.999	Leading	5.28	0.999	Leading	6.51
41	FLT51-3PH	0.998	Lagging	-9.58	1.000	Leading	4.60	0.999	Leading	5.81
50	FLT52-3PH	0.998	Lagging	-9.10	0.999	Leading	5.25	0.999	Leading	6.46
51	FLT53-3PH	0.998	Lagging	-9.01	0.999	Leading	5.39	0.999	Leading	6.61
52	FLT54-3PH	0.998	Lagging	-9.42	0.999	Leading	5.27	0.999	Leading	6.38
53	FLT55-3PH	0.998	Lagging	-9.05	0.999	Leading	5.34	0.999	Leading	6.56
54	FLT56-3PH	0.998	Lagging	-8.79	0.999	Leading	5.50	0.999	Leading	6.81
55	FLT57-3PH	0.998	Lagging	-9.23	0.999	Leading	5.15	0.999	Leading	6.36
56	FLT58-3PH	0.998	Lagging	-9.01	0.999	Leading	5.12	0.999	Leading	6.34
57	FLT59-3PH	0.998	Lagging	-9.58	0.999	Leading	4.95	0.999	Leading	5.98
64	FLT66-3PH	0.998	Lagging	-9.55	0.999	Leading	5.03	0.999	Leading	6.32
65	FLT67-3PH	0.997	Lagging	-11.83	1.000	Leading	3.25	1.000	Leading	4.52
66	FLT68-3PH	0.998	Lagging	-9.12	0.999	Leading	5.33	0.999	Leading	6.57
67	FLT69-3PH	0.998	Lagging	-9.03	0.999	Leading	5.34	0.999	Leading	6.58
68	FLT70-3PH	0.998	Lagging	-9.51	0.999	Leading	5.07	0.999	Leading	6.34
69	FLT71-3PH	0.998	Lagging	-9.29	0.999	Leading	5.14	0.999	Leading	6.35
70	FLT72-3PH	0.998	Lagging	-9.58	0.999	Leading	5.01	0.999	Leading	6.31
78	FLT80-3PH	0.959	Lagging	-44.96	0.984	Lagging	-27.77	0.983	Lagging	-28.57
79	FLT81-3PH	0.994	Lagging	-17.31	0.998	Lagging	-8.51	0.999	Lagging	-8.27
80	FLT82-3PH	0.988	Lagging	-23.92	1.000	Lagging	-2.18	1.000	Leading	0.65
81	FLT83-3PH	0.994	Lagging	-16.59	1.000	Lagging	-2.85	1.000	Lagging	-2.89

Table 5-1 (continued)
Power Factor Analysis: GEN-2016-022

Reference Number	Case	16 Winter Peak			17 Summer Peak			25 Summer Peak		
		Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)
86	**FLT88-3PH**	0.998	Lagging	-9.01	0.999	Leading	5.39	0.999	Leading	6.61
87	**FLT89-3PH**	0.997	Lagging	-10.75	1.000	Leading	3.69	0.999	Leading	5.57
88	**FLT90-3PH**	0.998	Lagging	-10.04	1.000	Leading	4.40	0.999	Leading	6.08
89	**FLT91-3PH**	0.998	Lagging	-9.01	0.999	Leading	5.39	0.999	Leading	6.48
90	**FLT92-3PH**	0.998	Lagging	-9.20	0.999	Leading	5.03	0.999	Leading	6.31
91	**FLT93-3PH**	0.998	Lagging	-9.57	0.999	Leading	5.11	0.999	Leading	6.34
97	**FLT99-3PH**	0.999	Lagging	-8.08	0.999	Leading	7.90	0.998	Leading	8.55
98	**FLT100-3PH**	0.988	Lagging	-23.23	0.999	Lagging	-5.75	1.000	Lagging	-3.95
99	**FLT101-3PH**	0.998	Lagging	-10.07	1.000	Leading	4.45	0.999	Leading	5.94
102	**FLT104-3PH**	0.978	Lagging	-32.67	0.996	Lagging	-13.56	0.997	Lagging	-10.81
103	**FLT105-3PH**	1.000	Lagging	-3.28	0.998	Leading	9.80	0.998	Leading	10.50
104	**FLT106-3PH**	0.998	Lagging	-9.01	0.999	Leading	5.37	0.999	Leading	6.63
109	**FLT111-3PH**	0.997	Lagging	-11.22	0.999	Leading	5.40	0.999	Leading	6.66
110	**FLT112-3PH**	0.997	Lagging	-10.99	1.000	Leading	4.15	0.999	Leading	5.74
111	**FLT113-3PH**	0.997	Lagging	-11.02	0.999	Leading	5.40	0.999	Leading	6.67
112	**FLT114-3PH**	0.998	Lagging	-9.20	0.999	Leading	4.95	0.999	Leading	6.32
113	**FLT115-3PH**	0.998	Lagging	-9.30	0.999	Leading	5.26	0.999	Leading	6.47
114	**FLT116-3PH**	0.999	Lagging	-6.51	0.999	Leading	6.89	0.999	Leading	7.97
115	**FLT117-3PH**	0.998	Lagging	-9.04	0.999	Leading	5.34	0.999	Leading	6.57
123	**FLT125-3PH**	0.998	Lagging	-8.77	0.999	Leading	5.53	0.999	Leading	6.02
124	**FLT126-3PH**	0.997	Lagging	-11.48	1.000	Leading	2.78	1.000	Leading	3.02
125	**FLT127-3PH**	0.982	Lagging	-29.56	0.996	Lagging	-13.23	1.000	Leading	1.65
126	**FLT128-3PH**	0.995	Lagging	-15.62	1.000	Leading	0.36	1.000	Leading	0.20
127	**FLT129-3PH**	0.997	Lagging	-11.75	1.000	Leading	3.88	0.999	Leading	5.38
128	**FLT130-3PH**	0.996	Lagging	-13.57	1.000	Leading	2.86	1.000	Leading	4.57
129	**FLT131-3PH**	0.998	Lagging	-10.32	0.999	Leading	4.88	0.999	Leading	6.18
130	**FLT132-3PH**	N/A			N/A			1.000	Leading	4.73
131	**FLT133-3PH**	0.998	Lagging	-9.05	0.999	Leading	5.24	0.999	Leading	6.78
132	**FLT134-3PH**	0.998	Lagging	-10.25	1.000	Leading	4.41	0.999	Leading	5.77
140	**FLT142-3PH**	0.998	Lagging	-10.32	0.999	Leading	4.88	0.999	Leading	6.18
141	**FLT143-3PH**	0.998	Lagging	-10.58	1.000	Leading	4.71	0.999	Leading	6.00
142	**FLT144-3PH**	0.996	Lagging	-13.91	1.000	Leading	3.25	1.000	Leading	4.21
143	**FLT145-3PH**	0.998	Lagging	-9.11	0.999	Leading	5.48	0.999	Leading	6.80
144	**FLT146-3PH**	0.998	Lagging	-9.56	0.999	Leading	5.15	0.999	Leading	6.37
145	**FLT147-3PH**	0.998	Lagging	-9.41	0.999	Leading	5.08	0.999	Leading	6.45

Study Generator GEN-2016-022

The Power Factor Analysis shows that GEN-2016-022 has a power factor range of 0.959 lagging (supplying) to 1.00 (unity) for the 2016 Winter Peak conditions, a power factor range of 0.998 leading (absorbing) to 0.984 lagging (supplying) for the 2017 Summer Peak conditions, a power factor range of 0.998 leading (supplying) to 0.983 lagging (supplying) for the 2025 Summer Peak conditions.

Table 5-2
Power Factor Analysis: GEN-2016-031

Reference Number	Case	16 Winter Peak			17 Summer Peak			25 Summer Peak		
		Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)
0	Base	0.999	Lagging	-9.01	1.000	Leading	5.39	0.999	Leading	6.61
1	FLT1-3PH	0.999	Lagging	-9.12	1.000	Leading	5.34	0.999	Leading	6.54
2	FLT2-3PH	0.999	Lagging	-9.01	1.000	Leading	5.38	0.999	Leading	6.61
3	FLT3-3PH	0.999	Lagging	-9.02	1.000	Leading	5.39	0.999	Leading	6.61
4	FLT4-3PH	0.999	Lagging	-9.06	1.000	Leading	5.36	0.999	Leading	6.59
5	FLT5-3PH	0.999	Lagging	-9.62	1.000	Leading	4.74	1.000	Leading	6.00
6	FLT6-3PH	0.999	Lagging	-9.13	1.000	Leading	5.28	0.999	Leading	6.39
7	FLT7-3PH	0.998	Lagging	-11.64	1.000	Leading	3.27	1.000	Leading	4.80
8	FLT8-3PH	0.999	Lagging	-9.02	1.000	Leading	5.38	0.999	Leading	6.61
15	FLT17-3PH	0.982	Lagging	-38.43	0.999	Lagging	-10.32	0.999	Lagging	-8.43
16	FLT18-3PH	0.995	Lagging	-19.60	1.000	Lagging	-0.66	1.000	Leading	0.56
17	FLT19-3PH	0.997	Lagging	-15.34	1.000	Leading	1.96	1.000	Leading	3.11
18	FLT20-3PH	0.999	Lagging	-9.99	1.000	Leading	4.42	1.000	Leading	5.96
19	FLT21-3PH	0.999	Lagging	-10.18	1.000	Leading	4.73	1.000	Leading	5.80
20	FLT22-3PH	0.998	Lagging	-11.65	1.000	Leading	3.85	1.000	Leading	4.84
21	FLT23-3PH	0.999	Lagging	-10.06	1.000	Leading	4.22	1.000	Leading	5.32
31	FLT33-3PH	1.000	Leading	2.08	0.999	Leading	6.46	0.999	Leading	7.92
32	FLT34-3PH	0.998	Lagging	-12.86	0.999	Lagging	-7.64	1.000	Lagging	-6.29
33	FLT35-3PH	0.999	Lagging	-9.01	1.000	Leading	5.39	0.999	Leading	6.61
34	FLT36-3PH	0.987	Lagging	-32.22	0.992	Lagging	-25.86	0.993	Lagging	-24.27
35	FLT37-3PH	0.994	Lagging	-22.60	0.999	Lagging	-8.82	0.999	Lagging	-7.66
36	FLT38-3PH	0.999	Lagging	-10.930	1.000	Leading	3.90	1.000	Leading	6.27
37	FLT39-3PH	0.998	Lagging	-13.09	1.000	Leading	0.90	1.000	Leading	1.06
38	FLT40-3PH	0.998	Lagging	-13.09	1.000	Leading	0.90	1.000	Leading	1.06
39	FLT41-3PH	0.999	Lagging	-9.52	1.000	Leading	5.12	0.999	Leading	6.42
48	FLT50-3PH	0.999	Lagging	-9.14	1.000	Leading	5.28	0.999	Leading	6.51
41	FLT51-3PH	0.999	Lagging	-9.58	1.000	Leading	4.60	1.000	Leading	5.81
50	FLT52-3PH	0.999	Lagging	-9.10	1.000	Leading	5.25	0.999	Leading	6.46
51	FLT53-3PH	0.999	Lagging	-9.01	1.000	Leading	5.39	0.999	Leading	6.61
52	FLT54-3PH	0.999	Lagging	-9.42	1.000	Leading	5.27	0.999	Leading	6.38
53	FLT55-3PH	0.999	Lagging	-9.05	1.000	Leading	5.34	0.999	Leading	6.56
54	FLT56-3PH	0.999	Lagging	-8.79	1.000	Leading	5.50	0.999	Leading	6.81
55	FLT57-3PH	0.999	Lagging	-9.23	1.000	Leading	5.15	1.000	Leading	6.36
56	FLT58-3PH	0.999	Lagging	-9.01	1.000	Leading	5.12	1.000	Leading	6.34
57	FLT59-3PH	0.999	Lagging	-9.58	1.000	Leading	4.95	1.000	Leading	5.98
64	FLT66-3PH	0.999	Lagging	-9.55	1.000	Leading	5.03	1.000	Leading	6.32
65	FLT67-3PH	0.998	Lagging	-11.83	1.000	Leading	3.25	1.000	Leading	4.52
66	FLT68-3PH	0.999	Lagging	-9.12	1.000	Leading	5.33	0.999	Leading	6.57
67	FLT69-3PH	0.999	Lagging	-9.03	1.000	Leading	5.34	0.999	Leading	6.58
68	FLT70-3PH	0.999	Lagging	-9.51	1.000	Leading	5.07	1.000	Leading	6.34
69	FLT71-3PH	0.999	Lagging	-9.29	1.000	Leading	5.14	1.000	Leading	6.35
70	FLT72-3PH	0.999	Lagging	-9.58	1.000	Leading	5.01	1.000	Leading	6.31
78	FLT80-3PH	0.976	Lagging	-44.96	0.991	Lagging	-27.77	0.990	Lagging	-28.57
79	FLT81-3PH	0.996	Lagging	-17.31	0.999	Lagging	-8.51	0.999	Lagging	-8.27
80	FLT82-3PH	0.993	Lagging	-23.92	1.000	Lagging	-2.18	1.000	Leading	0.65
81	FLT83-3PH	0.997	Lagging	-16.59	1.000	Lagging	-2.85	1.000	Lagging	-2.89

Table 5-2 (continued)
Power Factor Analysis: GEN-2016-031

Reference Number	Case	16 Winter Peak			17 Summer Peak			25 Summer Peak		
		Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)
86	FLT88-3PH	0.999	Lagging	-9.01	1.000	Leading	5.39	0.999	Leading	6.61
87	FLT89-3PH	0.999	Lagging	-10.75	1.000	Leading	3.69	1.000	Leading	5.57
88	FLT90-3PH	0.999	Lagging	-10.04	1.000	Leading	4.40	1.000	Leading	6.08
89	FLT91-3PH	0.999	Lagging	-9.01	1.000	Leading	5.39	0.999	Leading	6.48
90	FLT92-3PH	0.999	Lagging	-9.20	1.000	Leading	5.03	1.000	Leading	6.31
91	FLT93-3PH	0.999	Lagging	-9.57	1.000	Leading	5.11	1.000	Leading	6.34
97	FLT99-3PH	0.999	Lagging	-8.08	0.999	Leading	7.90	0.999	Leading	8.55
98	FLT100-3PH	0.993	Lagging	-23.23	1.000	Lagging	-5.75	1.000	Lagging	-3.95
99	FLT101-3PH	0.999	Lagging	-10.07	1.000	Leading	4.45	1.000	Leading	5.94
102	FLT104-3PH	0.987	Lagging	-32.67	0.998	Lagging	-13.56	0.999	Lagging	-10.81
103	FLT105-3PH	1.000	Lagging	-3.28	0.999	Leading	9.80	0.999	Leading	10.50
104	FLT106-3PH	0.999	Lagging	-9.01	1.000	Leading	5.37	0.999	Leading	6.63
109	FLT111-3PH	0.998	Lagging	-11.22	1.000	Leading	5.40	0.999	Leading	6.66
110	FLT112-3PH	0.999	Lagging	-10.99	1.000	Leading	4.15	1.000	Leading	5.74
111	FLT113-3PH	0.999	Lagging	-11.02	1.000	Leading	5.40	0.999	Leading	6.67
112	FLT114-3PH	0.999	Lagging	-9.20	1.000	Leading	4.95	1.000	Leading	6.32
113	FLT115-3PH	0.999	Lagging	-9.30	1.000	Leading	5.26	0.999	Leading	6.47
114	FLT116-3PH	0.999	Lagging	-6.51	0.999	Leading	6.89	0.999	Leading	7.97
115	FLT117-3PH	0.999	Lagging	-9.04	1.000	Leading	5.34	0.999	Leading	6.57
123	FLT125-3PH	0.999	Lagging	-8.77	1.000	Leading	5.53	1.000	Leading	6.02
124	FLT126-3PH	0.998	Lagging	-11.48	1.000	Leading	2.78	1.000	Leading	3.02
125	FLT127-3PH	0.989	Lagging	-29.56	0.998	Lagging	-13.23	1.000	Leading	1.65
126	FLT128-3PH	0.997	Lagging	-15.62	1.000	Leading	0.36	1.000	Leading	0.20
127	FLT129-3PH	0.998	Lagging	-11.75	1.000	Leading	3.88	1.000	Leading	5.38
128	FLT130-3PH	0.998	Lagging	-13.57	1.000	Leading	2.86	1.000	Leading	4.57
129	FLT131-3PH	0.999	Lagging	-10.32	1.000	Leading	4.88	1.000	Leading	6.18
130	FLT132-3PH	N/A			N/A			1.000	Leading	4.73
131	FLT133-3PH	0.999	Lagging	-9.05	1.000	Leading	5.24	0.999	Leading	6.78
132	FLT134-3PH	0.999	Lagging	-10.25	1.000	Leading	4.41	1.000	Leading	5.77
140	FLT142-3PH	0.999	Lagging	-10.32	1.000	Leading	4.88	1.000	Leading	6.18
141	FLT143-3PH	0.999	Lagging	-10.58	1.000	Leading	4.71	1.000	Leading	6.00
142	FLT144-3PH	0.998	Lagging	-13.91	1.000	Leading	3.25	1.000	Leading	4.21
143	FLT145-3PH	0.999	Lagging	-9.11	1.000	Leading	5.48	0.999	Leading	6.80
144	FLT146-3PH	0.999	Lagging	-9.56	1.000	Leading	5.15	0.999	Leading	6.37
145	FLT147-3PH	0.999	Lagging	-9.41	1.000	Leading	5.08	0.999	Leading	6.45

Study Generator GEN-2015-031

The Power Factor Analysis shows that GEN-2016-031 has a power factor range of 0.976 lagging (supplying) to 1.00 (unity) for the 2016 Winter Peak conditions, a power factor range of 0.999 leading (absorbing) to 0.991 lagging (supplying) for the 2017 Summer Peak conditions, a power factor range of 0.999 leading (absorbing) to 0.990 lagging (supplying) for the 2025 Summer Peak conditions.

Table 5-3
Power Factor Analysis: GEN-2016-032

Reference Number	Case	16 Winter Peak			17 Summer Peak			25 Summer Peak		
		Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)
0	Base	1.000	Lagging	-6.28	1.000	Lagging	-5.07	1.000	Lagging	-4.98
1	FLT1-3PH	1.000	Lagging	-6.32	1.000	Lagging	-5.12	1.000	Lagging	-5.06
2	FLT2-3PH	1.000	Lagging	-6.28	1.000	Lagging	-5.09	1.000	Lagging	-4.99
3	FLT3-3PH	1.000	Lagging	-6.30	1.000	Lagging	-5.06	1.000	Lagging	-4.99
4	FLT4-3PH	1.000	Lagging	-6.02	1.000	Lagging	-4.84	1.000	Lagging	-4.77
5	FLT5-3PH	0.999	Lagging	-7.01	1.000	Lagging	-5.65	1.000	Lagging	-5.59
6	FLT6-3PH	1.000	Lagging	-5.56	1.000	Lagging	-4.92	1.000	Lagging	-4.95
7	FLT7-3PH	0.999	Lagging	-10.08	0.999	Lagging	-8.33	0.999	Lagging	-7.85
8	FLT8-3PH	1.000	Lagging	-6.16	1.000	Lagging	-4.96	1.000	Lagging	-4.87
15	FLT17-3PH	0.997	Lagging	-16.59	0.999	Lagging	-10.63	0.999	Lagging	-9.87
16	FLT18-3PH	0.999	Lagging	-7.16	1.000	Lagging	-5.30	1.000	Lagging	-5.11
17	FLT19-3PH	0.999	Lagging	-6.96	1.000	Lagging	-5.18	1.000	Lagging	-5.01
18	FLT20-3PH	0.999	Lagging	-6.71	1.000	Lagging	-5.47	1.000	Lagging	-5.25
19	FLT21-3PH	0.999	Lagging	-6.74	1.000	Lagging	-5.39	1.000	Lagging	-5.37
20	FLT22-3PH	0.999	Lagging	-7.68	1.000	Lagging	-6.08	1.000	Lagging	-6.03
21	FLT23-3PH	0.999	Lagging	-6.44	1.000	Lagging	-5.43	1.000	Lagging	-5.32
31	FLT33-3PH	0.999	Lagging	-8.12	0.999	Lagging	-7.14	0.999	Lagging	-6.87
32	FLT34-3PH	0.998	Lagging	-13.21	0.998	Lagging	-11.65	0.998	Lagging	-11.52
33	FLT35-3PH	1.000	Lagging	-6.28	1.000	Lagging	-5.07	1.000	Lagging	-4.98
34	FLT36-3PH	0.995	Lagging	-20.52	0.996	Lagging	-17.98	0.996	Lagging	-17.66
35	FLT37-3PH	0.995	Lagging	-20.04	0.997	Lagging	-16.16	0.997	Lagging	-16.01
36	FLT38-3PH	0.993	Lagging	-24.05	0.995	Lagging	-19.04	0.997	Lagging	-16.57
37	FLT39-3PH	1.000	Lagging	-5.48	1.000	Lagging	-4.14	1.000	Lagging	-3.75
38	FLT40-3PH	1.000	Lagging	-5.48	1.000	Lagging	-4.14	1.000	Lagging	-3.75
39	FLT41-3PH	0.999	Lagging	-9.59	0.999	Lagging	-6.40	1.000	Lagging	-5.99
48	FLT50-3PH	1.000	Lagging	-6.32	1.000	Lagging	-5.10	1.000	Lagging	-5.00
41	FLT51-3PH	0.999	Lagging	-6.42	1.000	Lagging	-5.20	1.000	Lagging	-5.04
50	FLT52-3PH	1.000	Lagging	-6.29	1.000	Lagging	-5.07	1.000	Lagging	-4.99
51	FLT53-3PH	1.000	Lagging	-6.28	1.000	Lagging	-5.07	1.000	Lagging	-4.98
52	FLT54-3PH	0.999	Lagging	-6.77	1.000	Lagging	-5.42	1.000	Lagging	-5.27
53	FLT55-3PH	1.000	Lagging	-6.29	1.000	Lagging	-5.07	1.000	Lagging	-4.98
54	FLT56-3PH	1.000	Lagging	-6.33	1.000	Lagging	-5.05	1.000	Lagging	-4.96
55	FLT57-3PH	1.000	Lagging	-6.30	1.000	Lagging	-5.07	1.000	Lagging	-4.99
56	FLT58-3PH	1.000	Lagging	-6.28	1.000	Lagging	-5.07	1.000	Lagging	-5.00
57	FLT59-3PH	0.999	Lagging	-6.36	1.000	Lagging	-5.08	1.000	Lagging	-5.00
64	FLT66-3PH	0.999	Leading	8.45	0.999	Leading	7.89	0.999	Leading	7.49
65	FLT67-3PH	1.000	Lagging	-4.03	1.000	Lagging	-4.10	1.000	Lagging	-4.97
66	FLT68-3PH	0.999	Lagging	-6.36	1.000	Lagging	-4.31	1.000	Lagging	-4.06
67	FLT69-3PH	1.000	Leading	3.86	0.999	Leading	8.31	0.999	Leading	8.06
68	FLT70-3PH	0.998	Lagging	-13.95	0.995	Lagging	-19.52	0.995	Lagging	-20.63
69	FLT71-3PH	0.999	Lagging	-7.88	1.000	Lagging	-5.17	1.000	Lagging	-3.65
70	FLT72-3PH	0.999	Leading	8.90	0.999	Leading	7.60	0.999	Leading	6.94
78	FLT80-3PH	1.000	Lagging	-5.45	1.000	Lagging	-3.10	1.000	Lagging	-2.66
79	FLT81-3PH	0.996	Lagging	-18.79	0.995	Lagging	-20.51	0.995	Lagging	-20.97
80	FLT82-3PH	0.986	Lagging	-33.670	0.992	Lagging	-26.23	0.993	Lagging	-22.95
81	FLT83-3PH	1.000	Lagging	-4.11	1.000	Lagging	-2.85	1.000	Lagging	-3.23

Table 5-3 (continued)
Power Factor Analysis: GEN-2016-032

Reference Number	Case	16 Winter Peak			17 Summer Peak			25 Summer Peak		
		Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)
86	FLT88-3PH	1.000	Lagging	-6.28	1.000	Lagging	-5.07	1.000	Lagging	-4.98
87	FLT89-3PH	0.999	Lagging	-10.01	0.999	Lagging	-7.33	1.000	Lagging	-5.97
88	FLT90-3PH	0.999	Lagging	-9.59	0.999	Lagging	-6.97	1.000	Lagging	-5.79
89	FLT91-3PH	1.000	Lagging	-6.28	1.000	Lagging	-5.07	1.000	Lagging	-5.07
90	FLT92-3PH	0.999	Lagging	-7.89	1.000	Lagging	-6.26	1.000	Lagging	-6.16
91	FLT93-3PH	0.999	Lagging	-6.42	1.000	Lagging	-5.12	1.000	Lagging	-5.01
97	FLT99-3PH	1.000	Lagging	-5.55	1.000	Lagging	-4.09	1.000	Lagging	-4.00
98	FLT100-3PH	0.990	Lagging	-28.27	0.994	Lagging	-22.55	0.994	Lagging	-21.08
99	FLT101-3PH	1.000	Leading	0.68	1.000	Lagging	-2.54	1.000	Lagging	-4.81
102	FLT104-3PH	0.978	Lagging	-42.48	0.985	Lagging	-34.81	0.987	Lagging	-32.00
103	FLT105-3PH	1.000	Lagging	-1.53	1.000	Lagging	-1.12	1.000	Lagging	-1.49
104	FLT106-3PH	0.999	Lagging	-6.598	1.000	Lagging	-5.48	1.000	Lagging	-5.19
109	FLT111-3PH	1.000	Lagging	-4.71	1.000	Lagging	-3.73	1.000	Lagging	-3.82
110	FLT112-3PH	0.999	Lagging	-8.20	0.999	Lagging	-6.95	0.999	Lagging	-6.71
111	FLT113-3PH	1.000	Lagging	-4.74	1.000	Lagging	-3.77	1.000	Lagging	-3.86
112	FLT114-3PH	0.999	Lagging	-7.98	1.000	Lagging	-6.32	1.000	Lagging	-6.19
113	FLT115-3PH	0.999	Lagging	-6.46	1.000	Lagging	-5.18	1.000	Lagging	-5.11
114	FLT116-3PH	1.000	Lagging	-3.63	1.000	Lagging	-2.96	1.000	Lagging	-3.12
115	FLT117-3PH	1.000	Lagging	-6.32	1.000	Lagging	-5.06	1.000	Lagging	-5.01
123	FLT125-3PH	1.000	Lagging	-5.85	1.000	Lagging	-4.88	1.000	Lagging	-5.11
124	FLT126-3PH	0.999	Lagging	-8.99	0.999	Lagging	-7.75	0.999	Lagging	-8.50
125	FLT127-3PH	0.993	Lagging	-23.08	0.995	Lagging	-19.78	0.999	Lagging	-8.99
126	FLT128-3PH	1.000	Lagging	-6.21	1.000	Lagging	-5.10	1.000	Lagging	-4.95
127	FLT129-3PH	0.999	Lagging	-7.69	1.000	Lagging	-6.01	1.000	Lagging	-5.70
128	FLT130-3PH	0.999	Lagging	-8.81	0.999	Lagging	-6.76	1.000	Lagging	-6.32
129	FLT131-3PH	0.999	Lagging	-6.40	1.000	Lagging	-5.03	1.000	Lagging	-4.91
130	FLT132-3PH	N/A			N/A			1.000	Lagging	-5.55
131	FLT133-3PH	1.000	Lagging	-5.87	1.000	Lagging	-4.84	1.000	Lagging	-4.89
132	FLT134-3PH	0.999	Lagging	-7.60	0.999	Lagging	-7.26	0.999	Lagging	-7.57
140	FLT142-3PH	0.999	Lagging	-6.40	1.000	Lagging	-5.03	1.000	Lagging	-4.91
141	FLT143-3PH	0.999	Lagging	-6.78	1.000	Lagging	-5.46	1.000	Lagging	-5.51
142	FLT144-3PH	0.999	Lagging	-9.05	0.999	Lagging	-7.05	0.999	Lagging	-6.82
143	FLT145-3PH	1.000	Lagging	-6.19	1.000	Lagging	-5.12	1.000	Lagging	-5.27
144	FLT146-3PH	0.999	Lagging	-6.48	1.000	Lagging	-5.16	1.000	Lagging	-5.09
145	FLT147-3PH	1.000	Lagging	-6.28	1.000	Lagging	-4.97	1.000	Lagging	-4.85

Study Generator GEN-2015-056

The Power Factor Analysis shows that GEN-2016-032 has a power factor range of 0.999 leading (absorbing) to 0.978 lagging (supplying) for the 2016 Winter Peak conditions, a power factor range of 0.999 lagging (supplying) to 0.985 lagging (supplying) for the 2017 Summer Peak conditions, a power factor range of 0.999 leading (absorbing) to 0.987 lagging (supplying) for the 2025 Summer Peak conditions.

Table 5-4
Power Factor Analysis: GEN-2016-048

Reference Number	Case	16 Winter Peak			17 Summer Peak			25 Summer Peak		
		Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)
0	Base	0.727	Lagging	-77.82	0.753	Lagging	-72.02	0.737	Lagging	-75.52
1	FLT1-3PH	0.731	Lagging	-76.94	0.753	Lagging	-71.86	0.739	Lagging	-75.01
2	FLT2-3PH	0.726	Lagging	-77.92	0.751	Lagging	-72.40	0.735	Lagging	-75.84
3	FLT3-3PH	0.725	Lagging	-78.18	0.753	Lagging	-71.98	0.736	Lagging	-75.75
4	FLT4-3PH	0.723	Lagging	-78.72	0.749	Lagging	-72.81	0.734	Lagging	-76.23
5	FLT5-3PH	0.758	Lagging	-70.87	0.780	Lagging	-66.08	0.771	Lagging	-68.10
6	FLT6-3PH	0.724	Lagging	-78.44	0.753	Lagging	-71.86	0.738	Lagging	-75.30
7	FLT7-3PH	0.709	Lagging	-81.79	0.745	Lagging	-73.79	0.728	Lagging	-77.57
8	FLT8-3PH	0.725	Lagging	-78.13	0.751	Lagging	-72.47	0.734	Lagging	-76.06
15	FLT17-3PH	0.617	Lagging	-105.02	0.681	Lagging	-88.63	0.673	Lagging	-90.39
16	FLT18-3PH	0.706	Lagging	-82.47	0.744	Lagging	-73.84	0.730	Lagging	-76.97
17	FLT19-3PH	0.713	Lagging	-80.87	0.749	Lagging	-72.92	0.734	Lagging	-76.08
18	FLT20-3PH	0.720	Lagging	-79.33	0.746	Lagging	-73.57	0.732	Lagging	-76.61
19	FLT21-3PH	0.723	Lagging	-78.74	0.750	Lagging	-72.51	0.734	Lagging	-76.16
20	FLT22-3PH	0.713	Lagging	-80.99	0.743	Lagging	-74.18	0.727	Lagging	-77.80
21	FLT23-3PH	0.724	Lagging	-78.51	0.746	Lagging	-73.45	0.730	Lagging	-76.99
31	FLT33-3PH	0.705	Lagging	-82.76	0.720	Lagging	-79.36	0.709	Lagging	-81.99
32	FLT34-3PH	0.640	Lagging	-98.83	0.653	Lagging	-95.45	0.644	Lagging	-97.76
33	FLT35-3PH	0.727	Lagging	-77.82	0.753	Lagging	-72.02	0.737	Lagging	-75.52
34	FLT36-3PH	0.556	Lagging	-123.11	0.573	Lagging	-117.73	0.567	Lagging	-119.72
35	FLT37-3PH	0.642	Lagging	-98.20	0.663	Lagging	-92.97	0.651	Lagging	-95.90
36	FLT38-3PH	0.660	Lagging	-93.587	0.690	Lagging	-86.39	0.685	Lagging	-87.62
37	FLT39-3PH	0.694	Lagging	-85.37	0.723	Lagging	-78.75	0.704	Lagging	-82.95
38	FLT40-3PH	0.694	Lagging	-85.37	0.723	Lagging	-78.75	0.704	Lagging	-82.95
39	FLT41-3PH	0.773	Lagging	-67.56	0.768	Lagging	-68.55	0.748	Lagging	-73.10
48	FLT50-3PH	0.726	Lagging	-78.00	0.752	Lagging	-72.15	0.736	Lagging	-75.64
41	FLT51-3PH	0.724	Lagging	-78.53	0.750	Lagging	-72.68	0.735	Lagging	-75.94
50	FLT52-3PH	0.726	Lagging	-77.92	0.752	Lagging	-72.07	0.737	Lagging	-75.60
51	FLT53-3PH	0.727	Lagging	-77.82	0.753	Lagging	-72.02	0.737	Lagging	-75.52
52	FLT54-3PH	0.720	Lagging	-79.31	0.748	Lagging	-72.94	0.732	Lagging	-76.55
53	FLT55-3PH	0.727	Lagging	-77.85	0.753	Lagging	-72.04	0.737	Lagging	-75.55
54	FLT56-3PH	0.726	Lagging	-77.92	0.753	Lagging	-71.96	0.737	Lagging	-75.43
55	FLT57-3PH	0.726	Lagging	-77.96	0.752	Lagging	-72.10	0.736	Lagging	-75.64
56	FLT58-3PH	0.727	Lagging	-77.82	0.752	Lagging	-72.12	0.736	Lagging	-75.66
57	FLT59-3PH	0.725	Lagging	-78.21	0.752	Lagging	-72.18	0.736	Lagging	-75.74
64	FLT66-3PH	0.719	Lagging	-79.67	0.747	Lagging	-73.34	0.732	Lagging	-76.64
65	FLT67-3PH	0.675	Lagging	-90.01	0.707	Lagging	-82.33	0.695	Lagging	-85.17
66	FLT68-3PH	0.725	Lagging	-78.20	0.752	Lagging	-72.24	0.736	Lagging	-75.66
67	FLT69-3PH	0.705	Lagging	-82.77	0.723	Lagging	-78.68	0.708	Lagging	-82.09
68	FLT70-3PH	0.718	Lagging	-79.90	0.743	Lagging	-74.20	0.727	Lagging	-77.69
69	FLT71-3PH	0.722	Lagging	-78.80	0.750	Lagging	-72.68	0.735	Lagging	-75.94
70	FLT72-3PH	0.718	Lagging	-79.76	0.746	Lagging	-73.40	0.732	Lagging	-76.70
78	FLT80-3PH	0.759	Lagging	-70.56	0.795	Lagging	-62.88	0.782	Lagging	-65.56
79	FLT81-3PH	0.671	Lagging	-91.06	0.665	Lagging	-92.38	0.647	Lagging	-97.08
80	FLT82-3PH	0.582	Lagging	-114.947	0.633	Lagging	-100.61	0.635	Lagging	-100.19
81	FLT83-3PH	0.689	Lagging	-86.61	0.711	Lagging	-81.36	0.690	Lagging	-86.34

Table 5-4 (continued)
Power Factor Analysis: GEN-2016-048

Reference Number	Case	16 Winter Peak			17 Summer Peak			25 Summer Peak		
		Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)
86	**FLT88-3PH**	0.727	Lagging	-77.82	0.753	Lagging	-72.02	0.737	Lagging	-75.52
87	**FLT89-3PH**	0.661	Lagging	-93.42	0.707	Lagging	-82.24	0.721	Lagging	-79.15
88	**FLT90-3PH**	0.668	Lagging	-91.76	0.715	Lagging	-80.45	0.724	Lagging	-78.49
89	**FLT91-3PH**	0.727	Lagging	-77.82	0.753	Lagging	-72.02	0.734	Lagging	-76.11
90	**FLT92-3PH**	0.696	Lagging	-85.04	0.729	Lagging	-77.29	0.711	Lagging	-81.34
91	**FLT93-3PH**	0.723	Lagging	-78.60	0.751	Lagging	-72.40	0.735	Lagging	-75.85
97	**FLT99-3PH**	0.715	Lagging	-80.55	0.751	Lagging	-72.34	0.737	Lagging	-75.53
98	**FLT100-3PH**	0.621	Lagging	-104.02	0.661	Lagging	-93.46	0.655	Lagging	-94.95
99	**FLT101-3PH**	0.735	Lagging	-75.93	0.755	Lagging	-71.51	0.734	Lagging	-76.21
102	**FLT104-3PH**	0.567	Lagging	-119.64	0.610	Lagging	-106.83	0.610	Lagging	-107.05
103	**FLT105-3PH**	0.772	Lagging	-67.73	0.791	Lagging	-63.62	0.771	Lagging	-68.04
104	**FLT106-3PH**	0.726	Lagging	-78.02	0.750	Lagging	-72.50	0.734	Lagging	-76.07
109	**FLT111-3PH**	0.767	Lagging	-68.96	0.777	Lagging	-66.59	0.755	Lagging	-71.51
110	**FLT112-3PH**	0.708	Lagging	-82.19	0.725	Lagging	-78.26	0.710	Lagging	-81.75
111	**FLT113-3PH**	0.767	Lagging	-68.78	0.778	Lagging	-66.47	0.756	Lagging	-71.34
112	**FLT114-3PH**	0.693	Lagging	-85.54	0.728	Lagging	-77.54	0.710	Lagging	-81.71
113	**FLT115-3PH**	0.723	Lagging	-78.66	0.751	Lagging	-72.41	0.734	Lagging	-76.16
114	**FLT116-3PH**	0.770	Lagging	-68.20	0.784	Lagging	-65.13	0.764	Lagging	-69.51
115	**FLT117-3PH**	0.734	Lagging	-76.17	0.760	Lagging	-70.35	0.748	Lagging	-73.15
123	**FLT125-3PH**	0.726	Lagging	-78.04	0.752	Lagging	-72.08	0.735	Lagging	-75.91
124	**FLT126-3PH**	0.705	Lagging	-82.85	0.731	Lagging	-76.80	0.710	Lagging	-81.64
125	**FLT127-3PH**	0.607	Lagging	-107.78	0.643	Lagging	-98.11	0.704	Lagging	-83.09
126	**FLT128-3PH**	0.718	Lagging	-79.89	0.746	Lagging	-73.40	0.730	Lagging	-77.09
127	**FLT129-3PH**	0.710	Lagging	-81.64	0.741	Lagging	-74.54	0.728	Lagging	-77.59
128	**FLT130-3PH**	0.698	Lagging	-84.36	0.732	Lagging	-76.55	0.720	Lagging	-79.37
129	**FLT131-3PH**	0.724	Lagging	-78.49	0.752	Lagging	-72.14	0.737	Lagging	-75.59
130	**FLT132-3PH**	N/A			N/A			0.732	Lagging	-76.66
131	**FLT133-3PH**	0.728	Lagging	-77.48	0.752	Lagging	-72.26	0.730	Lagging	-77.09
132	**FLT134-3PH**	0.711	Lagging	-81.50	0.738	Lagging	-75.24	0.723	Lagging	-78.66
140	**FLT142-3PH**	0.724	Lagging	-78.49	0.752	Lagging	-72.14	0.737	Lagging	-75.59
141	**FLT143-3PH**	0.721	Lagging	-79.17	0.749	Lagging	-72.78	0.733	Lagging	-76.41
142	**FLT144-3PH**	0.697	Lagging	-84.67	0.732	Lagging	-76.66	0.716	Lagging	-80.20
143	**FLT145-3PH**	0.727	Lagging	-77.80	0.752	Lagging	-72.06	0.736	Lagging	-75.73
144	**FLT146-3PH**	0.724	Lagging	-78.33	0.752	Lagging	-72.23	0.736	Lagging	-75.74
145	**FLT147-3PH**	0.726	Lagging	-77.93	0.753	Lagging	-71.94	0.737	Lagging	-75.42

Study Generator GEN-2016-048

The Power Factor Analysis shows that GEN-2016-048 has a power factor range of 0.556 to 0.773 lagging (supplying) for the 2016 Winter Peak conditions, a power factor range of 0.573 to 0.795 lagging (supplying) for the 2017 Summer Peak conditions, a power factor range of 0.567 to 0.782 lagging (supplying) for the 2025 Summer Peak conditions.

Table 5-5
Power Factor Analysis: GEN-2016-060

Reference Number	Case	16 Winter Peak			17 Summer Peak			25 Summer Peak		
		Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)
0	Base	0.982	Lagging	-28.87	1.000	Leading	2.78	1.000	Leading	2.92
1	FLT1-3PH	0.981	Lagging	-29.95	1.000	Leading	2.22	1.000	Leading	2.23
2	FLT2-3PH	0.982	Lagging	-28.93	1.000	Leading	2.77	1.000	Leading	2.84
3	FLT3-3PH	0.982	Lagging	-28.93	1.000	Leading	2.79	1.000	Leading	2.89
4	FLT4-3PH	0.980	Lagging	-30.17	1.000	Leading	1.97	1.000	Leading	2.12
5	FLT5-3PH	0.981	Lagging	-29.70	1.000	Leading	2.67	1.000	Leading	2.56
6	FLT6-3PH	0.981	Lagging	-29.73	1.000	Leading	2.18	1.000	Leading	2.05
7	FLT7-3PH	0.974	Lagging	-34.53	1.000	Lagging	-0.55	1.000	Lagging	-0.33
8	FLT8-3PH	0.981	Lagging	-29.41	1.000	Leading	2.41	1.000	Leading	2.47
15	FLT17-3PH	0.964	Lagging	-41.10	1.000	Lagging	-0.90	1.000	Leading	0.27
16	FLT18-3PH	0.963	Lagging	-41.79	0.999	Lagging	-5.25	1.000	Leading	2.74
17	FLT19-3PH	0.964	Lagging	-40.99	1.000	Lagging	-3.09	1.000	Leading	4.70
18	FLT20-3PH	0.980	Lagging	-30.29	1.000	Leading	1.60	1.000	Leading	2.24
19	FLT21-3PH	0.978	Lagging	-31.87	1.000	Leading	1.64	1.000	Leading	1.33
20	FLT22-3PH	0.975	Lagging	-33.90	1.000	Leading	2.64	1.000	Leading	0.45
21	FLT23-3PH	0.980	Lagging	-30.66	1.000	Leading	1.73	1.000	Leading	1.65
31	FLT33-3PH	0.979	Lagging	-31.04	1.000	Leading	2.31	1.000	Leading	2.02
32	FLT34-3PH	0.964	Lagging	-41.12	1.000	Lagging	-3.98	1.000	Lagging	-3.74
33	FLT35-3PH	0.982	Lagging	-28.87	1.000	Leading	2.78	1.000	Leading	2.92
34	FLT36-3PH	0.929	Lagging	-59.70	0.994	Lagging	-17.04	0.993	Lagging	-17.43
35	FLT37-3PH	0.968	Lagging	-38.51	1.000	Lagging	-2.60	1.000	Leading	3.54
36	FLT38-3PH	0.960	Lagging	-43.702	0.999	Lagging	-7.45	1.000	Leading	1.30
37	FLT39-3PH	0.981	Lagging	-29.38	1.000	Leading	2.48	1.000	Leading	2.61
38	FLT40-3PH	0.981	Lagging	-29.38	1.000	Leading	2.48	1.000	Leading	2.61
39	FLT41-3PH	0.978	Lagging	-31.79	1.000	Leading	1.90	1.000	Leading	2.21
48	FLT50-3PH	0.981	Lagging	-29.69	1.000	Leading	2.19	1.000	Leading	2.31
41	FLT51-3PH	0.975	Lagging	-33.89	1.000	Lagging	-2.26	1.000	Lagging	-2.76
50	FLT52-3PH	0.981	Lagging	-29.89	1.000	Leading	2.00	1.000	Leading	1.91
51	FLT53-3PH	0.982	Lagging	-28.87	1.000	Leading	2.78	1.000	Leading	2.92
52	FLT54-3PH	0.982	Lagging	-28.89	0.999	Leading	4.76	1.000	Leading	2.79
53	FLT55-3PH	0.982	Lagging	-29.12	1.000	Leading	2.55	1.000	Leading	2.63
54	FLT56-3PH	0.979	Lagging	-31.17	1.000	Leading	2.42	1.000	Leading	2.81
55	FLT57-3PH	0.979	Lagging	-30.86	1.000	Leading	0.86	1.000	Leading	0.59
56	FLT58-3PH	0.982	Lagging	-28.87	1.000	Leading	0.81	1.000	Leading	0.54
57	FLT59-3PH	0.975	Lagging	-33.72	1.000	Lagging	-0.58	1.000	Leading	0.46
64	FLT66-3PH	0.981	Lagging	-29.53	1.000	Leading	2.50	1.000	Leading	2.62
65	FLT67-3PH	0.978	Lagging	-32.22	1.000	Leading	1.31	1.000	Leading	1.07
66	FLT68-3PH	0.982	Lagging	-29.01	1.000	Leading	2.73	1.000	Leading	2.88
67	FLT69-3PH	0.982	Lagging	-28.82	1.000	Leading	2.84	1.000	Leading	3.01
68	FLT70-3PH	0.981	Lagging	-29.46	1.000	Leading	2.57	1.000	Leading	2.71
69	FLT71-3PH	0.981	Lagging	-29.27	1.000	Leading	2.52	1.000	Leading	2.61
70	FLT72-3PH	0.981	Lagging	-29.56	1.000	Leading	2.48	1.000	Leading	2.61
78	FLT80-3PH	0.969	Lagging	-37.99	1.000	Lagging	-1.63	1.000	Leading	3.76
79	FLT81-3PH	0.971	Lagging	-36.88	1.000	Lagging	-3.49	1.000	Leading	1.93
80	FLT82-3PH	0.949	Lagging	-49.84	0.997	Lagging	-11.58	1.000	Lagging	-3.75
81	FLT83-3PH	0.981	Lagging	-29.96	1.000	Leading	3.33	1.000	Leading	1.74

Table 5-5 (continued)
Power Factor Analysis: GEN-2016-060

Reference Number	Case	16 Winter Peak			17 Summer Peak			25 Summer Peak		
		Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)
86	**FLT88-3PH**	0.982	Lagging	-28.87	1.000	Leading	2.78	1.000	Leading	2.92
87	**FLT89-3PH**	0.955	Lagging	-46.68	0.996	Lagging	-12.98	1.000	Lagging	-3.04
88	**FLT90-3PH**	0.955	Lagging	-46.24	0.995	Lagging	-14.63	0.999	Lagging	-7.18
89	**FLT91-3PH**	0.982	Lagging	-28.87	1.000	Leading	2.78	1.000	Lagging	-3.23
90	**FLT92-3PH**	0.998	Lagging	-10.43	0.993	Leading	18.32	0.995	Leading	15.26
91	**FLT93-3PH**	0.989	Lagging	-22.53	1.000	Lagging	-2.33	1.000	Lagging	-2.33
97	**FLT99-3PH**	0.971	Lagging	-37.12	1.000	Leading	0.86	1.000	Lagging	-0.70
98	**FLT100-3PH**	0.963	Lagging	-41.68	1.000	Lagging	-2.86	1.000	Leading	2.67
99	**FLT101-3PH**	0.982	Lagging	-28.512	0.999	Leading	4.96	1.000	Leading	3.36
102	**FLT104-3PH**	0.950	Lagging	-49.28	0.999	Lagging	-6.55	1.000	Lagging	-0.83
103	**FLT105-3PH**	0.990	Lagging	-21.83	0.999	Leading	7.71	0.999	Leading	6.82
104	**FLT106-3PH**	0.982	Lagging	-28.70	1.000	Leading	2.92	1.000	Leading	3.05
109	**FLT111-3PH**	0.888	Lagging	-77.43	0.982	Lagging	-28.84	0.990	Lagging	-21.81
110	**FLT112-3PH**	0.973	Lagging	-35.59	0.999	Leading	7.43	0.998	Leading	8.61
111	**FLT113-3PH**	0.893	Lagging	-75.31	0.984	Lagging	-26.74	0.990	Lagging	-20.89
112	**FLT114-3PH**	0.997	Lagging	-11.27	0.994	Leading	16.62	0.994	Leading	16.29
113	**FLT115-3PH**	0.978	Lagging	-31.71	1.000	Leading	1.81	1.000	Leading	0.62
114	**FLT116-3PH**	0.997	Lagging	-11.92	0.996	Leading	13.60	0.997	Leading	12.21
115	**FLT117-3PH**	0.986	Lagging	-25.58	0.999	Leading	6.37	0.999	Leading	5.34
123	**FLT125-3PH**	0.979	Lagging	-30.80	1.000	Leading	2.28	1.000	Leading	1.83
124	**FLT126-3PH**	0.977	Lagging	-32.55	1.000	Lagging	-0.08	1.000	Lagging	-0.14
125	**FLT127-3PH**	0.920	Lagging	-63.89	0.990	Lagging	-21.74	0.999	Lagging	-8.01
126	**FLT128-3PH**	0.968	Lagging	-38.46	1.000	Lagging	-4.22	1.000	Leading	2.50
127	**FLT129-3PH**	0.976	Lagging	-33.26	1.000	Leading	3.19	1.000	Leading	1.53
128	**FLT130-3PH**	0.972	Lagging	-35.83	1.000	Leading	2.56	1.000	Leading	1.05
129	**FLT131-3PH**	0.977	Lagging	-32.44	1.000	Leading	1.80	1.000	Leading	1.82
130	**FLT132-3PH**	N/A			N/A			1.000	Lagging	-3.48
131	**FLT133-3PH**	0.984	Lagging	-27.25	1.000	Leading	4.43	1.000	Leading	4.04
132	**FLT134-3PH**	0.978	Lagging	-31.93	1.000	Leading	1.08	1.000	Leading	1.32
140	**FLT142-3PH**	0.977	Lagging	-32.44	1.000	Leading	1.80	1.000	Leading	1.82
141	**FLT143-3PH**	0.977	Lagging	-32.32	1.000	Leading	2.09	1.000	Leading	2.13
142	**FLT144-3PH**	0.970	Lagging	-37.41	1.000	Leading	2.87	1.000	Leading	0.35
143	**FLT145-3PH**	0.981	Lagging	-29.26	1.000	Leading	3.01	1.000	Leading	3.61
144	**FLT146-3PH**	0.980	Lagging	-30.18	1.000	Leading	2.38	1.000	Leading	2.40
145	**FLT147-3PH**	0.980	Lagging	-29.98	1.000	Leading	2.21	1.000	Leading	1.79

Study Generator GEN-2016-060

The Power Factor Analysis shows that GEN-2016-060 has a power factor range of 0.888 to 0.998 lagging (supplying) for the 2016 Winter Peak conditions, a power factor range of 0.993 leading (absorbing) to 0.982 lagging (supplying) for the 2017 Summer Peak conditions, a power factor range of 0.994 leading (absorbing) to 0.990 lagging (supplying) for the 2025 Summer Peak conditions.

Table 5-6
Power Factor Analysis: GEN-2016-061

Reference Number	Case	16 Winter Peak			17 Summer Peak			25 Summer Peak		
		Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)
0	Base	0.999	Leading	13.49	0.996	Leading	22.04	0.996	Leading	21.21
1	FLT1-3PH	0.999	Leading	12.54	0.996	Leading	21.37	0.997	Leading	20.50
2	FLT2-3PH	0.999	Leading	13.44	0.996	Leading	22.02	0.996	Leading	21.13
3	FLT3-3PH	0.999	Leading	13.43	0.996	Leading	22.06	0.996	Leading	21.17
4	FLT4-3PH	0.999	Leading	13.24	0.996	Leading	21.84	0.996	Leading	21.06
5	FLT5-3PH	0.999	Leading	10.14	0.997	Leading	18.86	0.997	Leading	17.87
6	FLT6-3PH	0.999	Leading	12.28	0.997	Leading	19.76	0.998	Leading	17.68
7	FLT7-3PH	1.000	Leading	0.44	0.999	Leading	11.27	0.999	Leading	11.81
8	FLT8-3PH	0.999	Leading	13.57	0.996	Leading	22.11	0.996	Leading	21.29
15	FLT17-3PH	0.958	Lagging	-75.33	0.994	Lagging	-27.02	0.996	Lagging	-23.07
16	FLT18-3PH	1.000	Lagging	-2.42	0.998	Leading	15.60	0.998	Leading	15.44
17	FLT19-3PH	1.000	Leading	2.10	0.997	Leading	17.89	0.998	Leading	17.61
18	FLT20-3PH	0.999	Leading	10.00	0.997	Leading	18.61	0.997	Leading	18.82
19	FLT21-3PH	0.999	Leading	9.18	0.997	Leading	19.18	0.997	Leading	17.80
20	FLT22-3PH	1.000	Leading	2.54	0.998	Leading	14.52	0.999	Leading	13.21
21	FLT23-3PH	0.999	Leading	11.44	0.997	Leading	18.76	0.997	Leading	17.88
31	FLT33-3PH	1.000	Lagging	-4.27	1.000	Lagging	-2.81	1.000	Lagging	-1.97
32	FLT34-3PH	0.968	Lagging	-64.47	0.972	Lagging	-60.22	0.971	Lagging	-61.94
33	FLT35-3PH	0.999	Leading	13.49	0.996	Leading	22.04	0.996	Leading	21.21
34	FLT36-3PH	0.855	Lagging	-151.98	0.870	Lagging	-141.85	0.867	Lagging	-144.08
35	FLT37-3PH	0.965	Lagging	-68.51	0.975	Lagging	-56.84	0.973	Lagging	-59.93
36	FLT38-3PH	0.999	Leading	12.29	0.991	Leading	34.10	0.994	Leading	28.20
37	FLT39-3PH	0.971	Leading	61.46	0.972	Leading	60.67	0.974	Leading	58.66
38	FLT40-3PH	0.971	Leading	61.46	0.972	Leading	60.67	0.974	Leading	58.66
39	FLT41-3PH	1.000	Leading	4.60	0.997	Leading	19.11	0.997	Leading	19.37
48	FLT50-3PH	0.999	Leading	13.15	0.996	Leading	21.76	0.997	Leading	20.96
41	FLT51-3PH	0.999	Leading	12.21	0.997	Leading	20.50	0.997	Leading	20.30
50	FLT52-3PH	0.999	Leading	13.32	0.996	Leading	21.87	0.997	Leading	20.98
51	FLT53-3PH	0.999	Leading	13.49	0.996	Leading	22.04	0.996	Leading	21.21
52	FLT54-3PH	0.999	Leading	10.37	0.997	Leading	19.82	0.997	Leading	19.20
53	FLT55-3PH	0.999	Leading	13.42	0.996	Leading	21.97	0.996	Leading	21.12
54	FLT56-3PH	0.999	Leading	13.08	0.996	Leading	22.12	0.996	Leading	21.37
55	FLT57-3PH	0.999	Leading	13.21	0.996	Leading	21.80	0.997	Leading	20.87
56	FLT58-3PH	0.999	Leading	13.49	0.996	Leading	21.76	0.997	Leading	20.81
57	FLT59-3PH	0.999	Leading	12.20	0.996	Leading	21.36	0.997	Leading	20.13
64	FLT66-3PH	0.999	Leading	9.82	0.997	Leading	19.23	0.997	Leading	18.61
65	FLT67-3PH	0.999	Lagging	-10.80	1.000	Leading	5.08	1.000	Leading	4.98
66	FLT68-3PH	0.999	Leading	13.45	0.996	Leading	21.72	0.997	Leading	20.69
67	FLT69-3PH	0.998	Leading	15.56	0.995	Leading	24.63	0.996	Leading	23.68
68	FLT70-3PH	0.999	Leading	10.11	0.997	Leading	18.90	0.997	Leading	18.09
69	FLT71-3PH	0.999	Leading	11.68	0.997	Leading	20.55	0.997	Leading	19.84
70	FLT72-3PH	0.999	Leading	9.64	0.997	Leading	19.27	0.997	Leading	18.73
78	FLT80-3PH	0.990	Leading	35.84	0.980	Leading	51.24	0.976	Leading	56.15
79	FLT81-3PH	0.986	Lagging	-42.89	0.968	Lagging	-65.39	0.957	Lagging	-76.09
80	FLT82-3PH	0.986	Lagging	-42.61	1.000	Lagging	-2.16	1.000	Lagging	-2.90
81	FLT83-3PH	0.982	Lagging	-47.57	0.989	Lagging	-37.19	0.990	Lagging	-35.53

Table 5-6 (continued)
Power Factor Analysis: GEN-2016-061

Reference Number	Case	16 Winter Peak			17 Summer Peak			25 Summer Peak		
		Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)
86	FLT88-3PH	0.999	Leading	13.491	0.996	Leading	22.04	0.996	Leading	21.21
87	FLT89-3PH	1.000	Leading	0.31	0.998	Leading	15.68	0.997	Leading	17.82
88	FLT90-3PH	1.000	Leading	2.57	0.998	Leading	17.24	0.997	Leading	18.83
89	FLT91-3PH	0.999	Leading	13.49	0.996	Leading	22.04	0.996	Leading	21.07
90	FLT92-3PH	0.999	Leading	9.37	0.997	Leading	19.37	0.997	Leading	18.83
91	FLT93-3PH	0.999	Leading	12.31	0.996	Leading	21.62	0.997	Leading	20.68
97	FLT99-3PH	0.993	Leading	30.19	0.989	Leading	38.32	0.991	Leading	33.51
98	FLT100-3PH	0.970	Lagging	-63.03	0.983	Lagging	-47.02	0.985	Lagging	-43.19
99	FLT101-3PH	1.000	Leading	3.37	0.997	Leading	20.28	0.995	Leading	24.02
102	FLT104-3PH	0.907	Lagging	-116.20	0.937	Lagging	-93.36	0.950	Lagging	-82.38
103	FLT105-3PH	0.984	Leading	45.57	0.981	Leading	50.08	0.984	Leading	44.75
104	FLT106-3PH	0.998	Leading	14.41	0.996	Leading	23.54	0.996	Leading	23.25
109	FLT111-3PH	0.999	Leading	13.08	0.995	Leading	24.49	0.996	Leading	22.57
110	FLT112-3PH	1.000	Leading	7.57	0.998	Leading	17.30	0.998	Leading	17.20
111	FLT113-3PH	0.999	Leading	13.38	0.995	Leading	24.47	0.996	Leading	22.62
112	FLT114-3PH	0.999	Leading	8.97	0.997	Leading	19.17	0.997	Leading	18.76
113	FLT115-3PH	0.999	Leading	12.72	0.996	Leading	21.67	0.997	Leading	20.70
114	FLT116-3PH	0.995	Leading	25.40	0.993	Leading	30.71	0.993	Leading	29.08
115	FLT117-3PH	0.999	Leading	11.60	0.997	Leading	20.60	0.997	Leading	19.64
123	FLT125-3PH	0.996	Leading	21.83	0.995	Leading	26.22	0.996	Leading	22.49
124	FLT126-3PH	1.000	Lagging	-4.27	1.000	Leading	0.87	1.000	Lagging	-5.90
125	FLT127-3PH	0.920	Lagging	-106.62	0.944	Lagging	-87.66	1.000	Lagging	-4.45
126	FLT128-3PH	0.999	Leading	10.26	0.997	Leading	19.62	0.997	Leading	17.79
127	FLT129-3PH	1.000	Leading	2.65	0.998	Leading	14.93	0.998	Leading	15.70
128	FLT130-3PH	1.000	Lagging	-4.78	0.999	Leading	9.73	0.999	Leading	11.53
129	FLT131-3PH	0.999	Leading	10.88	0.996	Leading	21.47	0.997	Leading	20.84
130	FLT131-3PH	N/A			N/A			0.998	Leading	16.77
131	FLT133-3PH	0.999	Leading	13.58	0.996	Leading	21.33	0.995	Leading	24.91
132	FLT134-3PH	1.000	Leading	2.16	0.999	Leading	11.72	0.999	Leading	11.98
140	FLT142-3PH	0.999	Leading	10.88	0.996	Leading	21.47	0.997	Leading	20.84
141	FLT143-3PH	0.999	Leading	8.01	0.997	Leading	18.40	0.998	Leading	17.14
142	FLT144-3PH	1.000	Lagging	-6.48	0.999	Leading	9.24	0.999	Leading	8.42
143	FLT145-3PH	0.998	Leading	13.79	0.996	Leading	21.68	0.997	Leading	19.79
144	FLT146-3PH	0.999	Leading	11.69	0.996	Leading	21.14	0.997	Leading	20.20
145	FLT147-3PH	0.999	Leading	13.09	0.996	Leading	22.28	0.996	Leading	21.49

Study Generator GEN-2016-061

The Power Factor Analysis shows that GEN-2016-061 has a power factor range of 0.971 leading (absorbing) to 0.855 lagging (supplying) for the 2016 Winter Peak conditions, a power factor range of 0.972 leading (absorbing) to 0.870 lagging (supplying) for the 2017 Summer Peak conditions, a power factor range of 0.974 leading (absorbing) to 0.867 lagging (supplying) for the 2025 Summer Peak conditions.

Table 5-7
Power Factor Analysis: GEN-2016-068

Reference Number	Case	16 Winter Peak			17 Summer Peak			25 Summer Peak		
		Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)
0	Base	0.999	Leading	11.01	0.998	Leading	14.77	0.999	Leading	13.25
1	FLT1-3PH	0.999	Leading	9.36	0.999	Leading	13.55	0.999	Leading	11.97
2	FLT2-3PH	0.999	Leading	10.92	0.998	Leading	14.75	0.999	Leading	13.10
3	FLT3-3PH	0.999	Leading	10.91	0.998	Leading	14.80	0.999	Leading	13.18
4	FLT4-3PH	0.999	Leading	10.79	0.998	Leading	14.52	0.999	Leading	13.06
5	FLT5-3PH	0.999	Leading	7.93	0.999	Leading	10.94	0.999	Leading	9.16
6	FLT6-3PH	0.999	Leading	9.09	0.999	Leading	10.66	1.000	Leading	7.08
7	FLT7-3PH	1.000	Leading	1.52	1.000	Leading	3.42	1.000	Leading	3.06
8	FLT8-3PH	0.999	Leading	11.13	0.998	Leading	14.89	0.999	Leading	13.36
15	FLT17-3PH	0.985	Lagging	-43.38	0.990	Lagging	-36.06	0.992	Lagging	-31.68
16	FLT18-3PH	1.000	Leading	3.25	0.999	Leading	9.20	0.999	Leading	8.53
17	FLT19-3PH	1.000	Leading	2.48	0.999	Leading	10.32	0.999	Leading	9.66
18	FLT20-3PH	0.999	Leading	9.13	0.999	Leading	11.60	0.999	Leading	11.05
19	FLT21-3PH	1.000	Leading	5.91	0.999	Leading	10.68	0.999	Leading	8.62
20	FLT22-3PH	1.000	Leading	0.39	1.000	Leading	5.42	1.000	Leading	3.49
21	FLT23-3PH	0.999	Leading	9.95	0.999	Leading	12.01	0.999	Leading	10.48
31	FLT33-3PH	1.000	Leading	2.14	1.000	Lagging	-7.84	0.999	Lagging	-8.71
32	FLT34-3PH	0.997	Lagging	-18.23	0.973	Lagging	-59.00	0.970	Lagging	-62.74
33	FLT35-3PH	0.999	Leading	11.01	0.998	Leading	14.77	0.999	Leading	13.25
34	FLT36-3PH	0.982	Lagging	-48.25	0.882	Lagging	-133.84	0.874	Lagging	-139.16
35	FLT37-3PH	0.978	Lagging	-53.04	0.959	Lagging	-73.63	0.955	Lagging	-77.35
36	FLT38-3PH	0.953	Lagging	-79.25	0.992	Lagging	-30.80	0.993	Lagging	-30.18
37	FLT39-3PH	1.000	Lagging	-1.34	0.984	Leading	45.26	0.983	Leading	47.10
38	FLT40-3PH	1.000	Lagging	-1.34	0.984	Leading	45.26	0.983	Leading	47.10
39	FLT41-3PH	0.999	Leading	9.26	0.999	Leading	12.81	0.999	Leading	12.06
48	FLT50-3PH	0.999	Leading	10.89	0.998	Leading	14.55	0.999	Leading	13.02
41	FLT51-3PH	0.999	Leading	10.56	0.999	Leading	13.47	0.999	Leading	12.77
50	FLT52-3PH	0.999	Leading	10.91	0.998	Leading	14.63	0.999	Leading	13.00
51	FLT53-3PH	0.999	Leading	11.01	0.998	Leading	14.77	0.999	Leading	13.25
52	FLT54-3PH	0.999	Leading	9.19	0.999	Leading	12.68	0.999	Leading	11.30
53	FLT55-3PH	0.999	Leading	10.95	0.998	Leading	14.70	0.999	Leading	13.14
54	FLT56-3PH	0.999	Leading	10.03	0.998	Leading	14.85	0.999	Leading	13.37
55	FLT57-3PH	0.999	Leading	10.89	0.998	Leading	14.63	0.999	Leading	12.90
56	FLT58-3PH	0.999	Leading	11.01	0.998	Leading	14.57	0.999	Leading	12.84
57	FLT59-3PH	0.999	Leading	10.02	0.998	Leading	14.21	0.999	Leading	12.08
64	FLT66-3PH	1.000	Leading	6.85	0.999	Leading	10.66	0.999	Leading	9.08
65	FLT67-3PH	0.998	Lagging	-15.93	0.999	Lagging	-9.51	0.999	Lagging	-10.36
66	FLT68-3PH	0.999	Leading	11.90	0.998	Leading	14.41	0.999	Leading	12.30
67	FLT69-3PH	0.998	Leading	15.95	0.997	Leading	20.73	0.997	Leading	18.81
68	FLT70-3PH	1.000	Leading	7.43	0.999	Leading	9.72	0.999	Leading	7.94
69	FLT71-3PH	0.999	Leading	9.32	0.999	Leading	13.13	0.999	Leading	11.85
70	FLT72-3PH	1.000	Leading	6.66	0.999	Leading	10.82	0.999	Leading	9.39
78	FLT80-3PH	0.997	Lagging	-19.94	0.991	Leading	34.12	0.988	Leading	39.25
79	FLT81-3PH	0.979	Lagging	-52.36	0.931	Lagging	-98.10	0.916	Lagging	-109.27
80	FLT82-3PH	0.910	Lagging	-114.18	0.968	Lagging	-65.20	0.971	Lagging	-61.67
81	FLT83-3PH	0.975	Leading	57.49	0.976	Leading	56.06	0.977	Leading	54.40

Table 5-7 (continued)
Power Factor Analysis: GEN-2016-068

Reference Number	Case	16 Winter Peak			17 Summer Peak			25 Summer Peak		
		Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)
86	**FLT88-3PH**	0.999	Leading	11.01	0.998	Leading	14.77	0.999	Leading	13.25
87	**FLT89-3PH**	1.000	Lagging	-2.48	1.000	Leading	5.00	1.000	Leading	7.79
88	**FLT90-3PH**	1.000	Lagging	-0.65	1.000	Leading	7.05	0.999	Leading	9.11
89	**FLT91-3PH**	0.999	Leading	11.01	0.998	Leading	14.77	0.999	Leading	13.23
90	**FLT92-3PH**	1.000	Leading	5.37	0.999	Leading	10.23	0.999	Leading	9.20
91	**FLT93-3PH**	0.999	Leading	10.00	0.998	Leading	14.31	0.999	Leading	12.51
97	**FLT99-3PH**	0.991	Leading	34.13	0.989	Leading	37.82	0.992	Leading	32.43
98	**FLT100-3PH**	0.998	Lagging	-16.69	0.977	Lagging	-54.18	0.977	Lagging	-54.60
99	**FLT101-3PH**	1.000	Lagging	-2.47	0.998	Leading	16.09	0.996	Leading	21.41
102	**FLT104-3PH**	0.993	Lagging	-30.53	0.934	Lagging	-95.39	0.941	Lagging	-89.85
103	**FLT105-3PH**	0.983	Leading	46.73	0.977	Leading	54.49	0.983	Leading	47.38
104	**FLT106-3PH**	0.999	Leading	13.09	0.997	Leading	17.97	0.998	Leading	17.35
109	**FLT111-3PH**	0.998	Leading	15.22	0.997	Leading	19.26	0.998	Leading	15.60
110	**FLT112-3PH**	1.000	Leading	4.48	1.000	Leading	7.61	1.000	Leading	6.90
111	**FLT113-3PH**	0.998	Leading	15.43	0.997	Leading	19.24	0.998	Leading	15.69
112	**FLT114-3PH**	1.000	Leading	5.03	0.999	Leading	9.96	0.999	Leading	9.06
113	**FLT115-3PH**	0.999	Leading	10.15	0.998	Leading	14.27	0.999	Leading	12.47
114	**FLT116-3PH**	0.996	Leading	22.17	0.995	Leading	25.46	0.996	Leading	23.25
115	**FLT117-3PH**	1.000	Leading	7.31	0.999	Leading	11.98	0.999	Leading	10.09
123	**FLT125-3PH**	0.995	Leading	24.52	0.996	Leading	21.91	0.998	Leading	16.56
124	**FLT126-3PH**	0.999	Lagging	-13.33	0.997	Lagging	-19.34	0.992	Lagging	-31.70
125	**FLT127-3PH**	0.884	Lagging	-132.55	0.860	Lagging	-148.20	0.994	Lagging	-27.13
126	**FLT128-3PH**	0.997	Leading	19.46	0.998	Leading	15.65	0.998	Leading	14.37
127	**FLT129-3PH**	1.000	Leading	1.27	1.000	Leading	6.05	1.000	Leading	6.53
128	**FLT130-3PH**	1.000	Lagging	-5.08	1.000	Lagging	-0.02	1.000	Leading	1.84
129	**FLT131-3PH**	0.999	Leading	7.97	0.998	Leading	13.80	0.999	Leading	12.71
130	**FLT132-3PH**	N/A			N/A			1.000	Leading	6.77
131	**FLT133-3PH**	0.999	Leading	12.15	0.998	Leading	14.57	0.997	Leading	20.73
132	**FLT134-3PH**	1.000	Lagging	-6.36	1.000	Lagging	-2.27	1.000	Lagging	-2.07
140	**FLT142-3PH**	0.999	Leading	7.97	0.998	Leading	13.80	0.999	Leading	12.71
141	**FLT143-3PH**	1.000	Leading	4.38	0.999	Leading	9.24	1.000	Leading	7.12
142	**FLT144-3PH**	1.000	Lagging	-7.29	1.000	Lagging	-0.14	1.000	Lagging	-2.54
143	**FLT145-3PH**	0.999	Leading	11.57	0.998	Leading	14.12	0.999	Leading	10.86
144	**FLT146-3PH**	0.999	Leading	9.00	0.999	Leading	13.45	0.999	Leading	11.74
145	**FLT147-3PH**	0.999	Leading	10.69	0.998	Leading	15.28	0.999	Leading	13.68

Study Generator GEN-2016-068

The Power Factor Analysis shows that GEN-2016-068 has a power factor range of 0.975 leading (absorbing) to 0.884 lagging (supplying) for the 2016 Winter Peak conditions, a power factor range of 0.976 leading (absorbing) to 0.860 lagging (supplying) for the 2017 Summer Peak conditions, a power factor range of 0.977 leading (absorbing) to 0.874 lagging (supplying) to for the 2025 Summer Peak conditions.

Table 5-8
Power Factor Analysis: GEN-2016-071

Reference Number	Case	16 Winter Peak			17 Summer Peak			25 Summer Peak		
		Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)
0	Base	1.000	Leading	0.27	0.997	Leading	15.59	0.998	Leading	13.87
1	FLT1-3PH	1.000	Lagging	-2.17	0.998	Leading	13.75	0.998	Leading	11.48
2	FLT2-3PH	1.000	Leading	0.19	0.997	Leading	15.52	0.998	Leading	13.68
3	FLT3-3PH	1.000	Leading	0.10	0.997	Leading	15.61	0.998	Leading	13.75
4	FLT4-3PH	1.000	Lagging	-1.88	0.998	Leading	13.99	0.998	Leading	12.14
5	FLT5-3PH	1.000	Lagging	-4.11	0.999	Leading	10.90	0.999	Leading	9.32
6	FLT6-3PH	1.000	Lagging	-0.47	0.997	Leading	15.24	0.998	Leading	13.20
7	FLT7-3PH	1.000	Lagging	-2.33	0.997	Leading	14.63	0.998	Leading	12.11
8	FLT8-3PH	1.000	Lagging	-1.30	0.998	Leading	14.05	0.998	Leading	12.10
15	FLT17-3PH	1.000	Lagging	-4.20	0.996	Leading	17.78	0.998	Leading	13.59
16	FLT18-3PH	1.000	Lagging	-2.41	0.998	Leading	14.12	0.998	Leading	13.54
17	FLT19-3PH	1.000	Lagging	-2.57	0.997	Leading	14.41	0.998	Leading	13.77
18	FLT20-3PH	1.000	Lagging	-0.06	0.997	Leading	15.48	0.998	Leading	13.85
19	FLT21-3PH	1.000	Lagging	-0.53	0.997	Leading	15.51	0.998	Leading	13.57
20	FLT22-3PH	1.000	Lagging	-0.87	0.997	Leading	15.65	0.998	Leading	13.63
21	FLT23-3PH	1.000	Lagging	-0.30	0.997	Leading	15.49	0.998	Leading	13.72
31	FLT33-3PH	1.000	Lagging	-3.92	0.998	Leading	11.96	0.999	Leading	10.46
32	FLT34-3PH	0.998	Lagging	-14.11	1.000	Leading	3.72	1.000	Leading	2.63
33	FLT35-3PH	1.000	Leading	0.27	0.997	Leading	15.59	0.998	Leading	13.87
34	FLT36-3PH	0.989	Lagging	-30.37	0.999	Lagging	-8.49	0.999	Lagging	-9.78
35	FLT37-3PH	1.000	Lagging	-6.20	0.998	Leading	11.84	0.999	Leading	10.15
36	FLT38-3PH	0.999	Lagging	-9.60	0.999	Leading	9.07	0.999	Leading	9.04
37	FLT39-3PH	1.000	Lagging	-0.01	0.997	Leading	15.72	0.998	Leading	14.01
38	FLT40-3PH	1.000	Lagging	-0.01	0.997	Leading	15.72	0.998	Leading	14.01
39	FLT41-3PH	1.000	Lagging	-2.44	0.997	Leading	14.65	0.998	Leading	12.96
48	FLT50-3PH	1.000	Lagging	0.00	0.997	Leading	15.45	0.998	Leading	13.72
41	FLT51-3PH	1.000	Lagging	-1.69	0.997	Leading	14.35	0.998	Leading	13.47
50	FLT52-3PH	1.000	Lagging	-0.20	0.997	Leading	15.36	0.998	Leading	13.52
51	FLT53-3PH	1.000	Leading	0.27	0.997	Leading	15.59	0.998	Leading	13.87
52	FLT54-3PH	1.000	Leading	1.91	0.997	Leading	16.07	0.997	Leading	14.24
53	FLT55-3PH	1.000	Leading	0.16	0.997	Leading	15.53	0.998	Leading	13.78
54	FLT56-3PH	1.000	Lagging	-0.55	0.997	Leading	15.46	0.998	Leading	13.80
55	FLT57-3PH	1.000	Lagging	-0.39	0.997	Leading	15.14	0.998	Leading	13.31
56	FLT58-3PH	1.000	Leading	0.27	0.997	Leading	15.14	0.998	Leading	13.30
57	FLT59-3PH	1.000	Lagging	-1.62	0.997	Leading	14.56	0.998	Leading	12.93
64	FLT66-3PH	1.000	Lagging	-0.31	0.997	Leading	15.25	0.998	Leading	13.54
65	FLT67-3PH	1.000	Lagging	-3.47	0.998	Leading	13.75	0.998	Leading	11.61
66	FLT68-3PH	1.000	Leading	0.18	0.997	Leading	15.54	0.998	Leading	13.82
67	FLT69-3PH	1.000	Leading	1.49	0.997	Leading	15.66	0.998	Leading	13.98
68	FLT70-3PH	1.000	Lagging	-0.21	0.997	Leading	15.33	0.998	Leading	13.62
69	FLT71-3PH	1.000	Lagging	-0.07	0.997	Leading	15.34	0.998	Leading	13.57
70	FLT72-3PH	1.000	Lagging	-0.34	0.997	Leading	15.23	0.998	Leading	13.53
78	FLT80-3PH	1.000	Lagging	-0.81	0.995	Leading	20.85	0.996	Leading	17.99
79	FLT81-3PH	1.000	Lagging	-4.62	0.998	Leading	11.34	0.999	Leading	9.03
80	FLT82-3PH	0.997	Lagging	-16.646	1.000	Leading	5.09	1.000	Leading	4.75
81	FLT83-3PH	1.000	Leading	0.22	0.997	Leading	16.04	0.998	Leading	13.45

Table 5-8 (continued)
Power Factor Analysis: GEN-2016-071

Reference Number	Case	16 Winter Peak			17 Summer Peak			25 Summer Peak		
		Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)
86	**FLT88-3PH**	1.000	Leading	0.272	0.997	Leading	15.59	0.998	Leading	13.87
87	**FLT89-3PH**	0.993	Lagging	-24.18	0.999	Leading	8.20	0.998	Leading	13.91
88	**FLT90-3PH**	0.994	Lagging	-21.39	0.999	Leading	9.86	0.998	Leading	13.23
89	**FLT91-3PH**	1.000	Leading	0.27	0.997	Leading	15.59	0.998	Leading	12.30
90	**FLT92-3PH**	0.999	Lagging	-8.59	0.999	Leading	10.14	0.999	Leading	7.03
91	**FLT93-3PH**	1.000	Lagging	-2.08	0.998	Leading	13.83	0.998	Leading	11.26
97	**FLT99-3PH**	1.000	Lagging	-6.25	0.998	Leading	11.98	0.998	Leading	11.62
98	**FLT100-3PH**	0.999	Lagging	-9.89	0.999	Leading	10.07	0.999	Leading	9.12
99	**FLT101-3PH**	1.000	Leading	2.29	0.996	Leading	18.86	0.997	Leading	14.70
102	**FLT104-3PH**	0.997	Lagging	-14.85	1.000	Leading	5.85	1.000	Leading	5.29
103	**FLT105-3PH**	1.000	Leading	5.33	0.995	Leading	20.36	0.997	Leading	16.02
104	**FLT106-3PH**	1.000	Leading	1.498	0.997	Leading	15.55	0.998	Leading	13.81
109	**FLT111-3PH**	0.968	Lagging	-52.24	0.997	Lagging	-16.74	0.998	Lagging	-12.94
110	**FLT112-3PH**	0.986	Leading	34.42	0.989	Leading	29.76	0.993	Leading	24.18
111	**FLT113-3PH**	0.969	Lagging	-51.21	0.997	Lagging	-16.25	0.998	Lagging	-12.60
112	**FLT114-3PH**	0.999	Lagging	-9.51	0.999	Leading	9.88	1.000	Leading	2.29
113	**FLT115-3PH**	1.000	Lagging	-0.19	0.997	Leading	15.89	0.998	Leading	12.13
114	**FLT116-3PH**	0.997	Leading	14.34	0.994	Leading	21.58	0.995	Leading	19.78
115	**FLT117-3PH**	1.000	Leading	4.86	0.995	Leading	20.37	0.995	Leading	20.13
123	**FLT125-3PH**	1.000	Lagging	-1.46	0.997	Leading	14.66	0.998	Leading	12.74
124	**FLT126-3PH**	1.000	Lagging	-4.00	0.998	Leading	11.98	0.999	Leading	7.96
125	**FLT127-3PH**	0.989	Lagging	-30.37	0.999	Lagging	-8.85	0.999	Leading	9.91
126	**FLT128-3PH**	1.000	Lagging	-0.94	0.997	Leading	14.19	0.998	Leading	13.92
127	**FLT129-3PH**	1.000	Lagging	-0.98	0.997	Leading	15.44	0.998	Leading	13.76
128	**FLT130-3PH**	1.000	Lagging	-1.81	0.997	Leading	15.43	0.998	Leading	13.89
129	**FLT131-3PH**	1.000	Lagging	-1.05	0.997	Leading	15.25	0.998	Leading	13.47
130	**FLT132-3PH**	N/A			N/A			0.999	Leading	8.42
131	**FLT133-3PH**	1.000	Lagging	-0.32	0.997	Leading	14.34	0.999	Leading	7.69
132	**FLT134-3PH**	1.000	Lagging	-2.73	0.998	Leading	13.82	0.998	Leading	12.61
140	**FLT142-3PH**	1.000	Lagging	-1.05	0.997	Leading	15.25	0.998	Leading	13.47
141	**FLT143-3PH**	1.000	Lagging	-0.77	0.997	Leading	15.51	0.998	Leading	13.91
142	**FLT144-3PH**	1.000	Lagging	-2.30	0.997	Leading	15.68	0.998	Leading	13.89
143	**FLT145-3PH**	1.000	Leading	0.10	0.997	Leading	15.75	0.997	Leading	14.33
144	**FLT146-3PH**	1.000	Lagging	-0.16	0.997	Leading	15.50	0.998	Leading	13.73
145	**FLT147-3PH**	1.000	Lagging	-0.57	0.997	Leading	14.96	0.998	Leading	13.29

Study Generator GEN-2016-071

The Power Factor Analysis shows that GEN-2016-071 has a power factor range of 0.986 leading (absorbing) to 0.968 lagging (supplying) for the 2016 Winter Peak conditions, a power factor range of 0.989 leading (absorbing) to 0.997 lagging (supplying) for the 2017 Summer Peak conditions, a power factor range of 0.993 leading (absorbing) to 0.998 lagging (supplying) to for the 2025 Summer Peak conditions.

Table 5-9
Power Factor Analysis: GEN-2016-073

Reference Number	Case	16 Winter Peak			17 Summer Peak			25 Summer Peak		
		Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)
0	Base	0.991	Lagging	-29.58	0.999	Leading	9.69	0.999	Leading	11.85
1	FLT1-3PH	0.991	Lagging	-30.25	0.999	Leading	9.37	0.999	Leading	11.56
2	FLT2-3PH	0.991	Lagging	-29.62	0.999	Leading	9.70	0.999	Leading	11.81
3	FLT3-3PH	0.991	Lagging	-29.61	0.999	Leading	9.70	0.999	Leading	11.84
4	FLT4-3PH	0.991	Lagging	-30.01	0.999	Leading	9.55	0.999	Leading	11.67
5	FLT5-3PH	0.991	Lagging	-30.22	0.999	Leading	9.34	0.999	Leading	11.53
6	FLT6-3PH	0.991	Lagging	-29.78	0.999	Leading	9.58	0.999	Leading	11.52
7	FLT7-3PH	0.987	Lagging	-35.15	1.000	Leading	6.56	0.999	Leading	9.12
8	FLT8-3PH	0.991	Lagging	-29.72	0.999	Leading	9.64	0.999	Leading	11.77
15	FLT17-3PH	0.833	Lagging	-146.38	0.966	Lagging	-59.16	0.973	Lagging	-52.18
16	FLT18-3PH	0.969	Lagging	-56.10	1.000	Lagging	-2.18	1.000	Lagging	-0.25
17	FLT19-3PH	0.964	Lagging	-60.45	1.000	Lagging	-6.40	1.000	Lagging	-4.06
18	FLT20-3PH	0.989	Lagging	-32.47	0.999	Leading	7.42	0.999	Leading	10.04
19	FLT21-3PH	0.980	Lagging	-44.88	1.000	Lagging	-2.09	1.000	Leading	0.21
20	FLT22-3PH	0.971	Lagging	-54.60	0.999	Lagging	-7.26	1.000	Lagging	-5.51
21	FLT23-3PH	0.989	Lagging	-32.88	0.999	Leading	8.55	0.999	Leading	10.22
31	FLT33-3PH	0.991	Lagging	-29.02	0.999	Leading	10.57	0.998	Leading	15.27
32	FLT34-3PH	0.983	Lagging	-40.67	1.000	Leading	3.60	0.998	Leading	12.50
33	FLT35-3PH	0.991	Lagging	-29.58	0.999	Leading	9.69	0.999	Leading	11.85
34	FLT36-3PH	0.959	Lagging	-64.91	0.998	Lagging	-13.72	1.000	Leading	0.01
35	FLT37-3PH	0.979	Lagging	-46.16	1.000	Lagging	-1.22	1.000	Leading	0.52
36	FLT38-3PH	0.952	Lagging	-70.77	0.998	Lagging	-14.86	0.999	Lagging	-8.62
37	FLT39-3PH	0.990	Lagging	-30.59	0.999	Leading	9.34	0.998	Leading	12.15
38	FLT40-3PH	0.990	Lagging	-30.59	0.999	Leading	9.34	0.998	Leading	12.15
39	FLT41-3PH	0.990	Lagging	-30.57	0.999	Leading	9.58	0.999	Leading	11.77
48	FLT50-3PH	0.991	Lagging	-29.42	0.999	Leading	9.82	0.999	Leading	11.93
41	FLT51-3PH	0.991	Lagging	-29.18	0.999	Leading	9.37	0.998	Leading	12.82
50	FLT52-3PH	0.991	Lagging	-29.77	0.999	Leading	9.36	0.999	Leading	11.44
51	FLT53-3PH	0.991	Lagging	-29.58	0.999	Leading	9.69	0.999	Leading	11.85
52	FLT54-3PH	0.990	Lagging	-30.69	0.999	Leading	9.77	0.999	Leading	11.01
53	FLT55-3PH	0.991	Lagging	-29.76	0.999	Leading	9.53	0.999	Leading	11.65
54	FLT56-3PH	0.989	Lagging	-33.43	0.999	Leading	9.79	0.998	Leading	12.57
55	FLT57-3PH	0.991	Lagging	-29.79	0.999	Leading	9.79	0.999	Leading	12.00
56	FLT58-3PH	0.991	Lagging	-29.58	0.999	Leading	9.67	0.999	Leading	11.86
57	FLT59-3PH	0.989	Lagging	-32.38	0.999	Leading	8.98	0.999	Leading	9.11
64	FLT66-3PH	0.990	Lagging	-30.82	0.999	Leading	8.99	0.999	Leading	11.26
65	FLT67-3PH	0.987	Lagging	-35.61	1.000	Leading	5.96	0.999	Leading	8.28
66	FLT68-3PH	0.991	Lagging	-29.85	0.999	Leading	9.56	0.999	Leading	11.76
67	FLT69-3PH	0.991	Lagging	-29.70	0.999	Leading	9.65	0.999	Leading	11.97
68	FLT70-3PH	0.990	Lagging	-30.55	0.999	Leading	9.19	0.999	Leading	11.43
69	FLT71-3PH	0.991	Lagging	-30.09	0.999	Leading	9.30	0.999	Leading	11.33
70	FLT72-3PH	0.990	Lagging	-30.88	0.999	Leading	8.95	0.999	Leading	11.24
78	FLT80-3PH	0.931	Lagging	-86.09	0.996	Lagging	-19.71	0.994	Lagging	-23.52
79	FLT81-3PH	0.981	Lagging	-43.64	1.000	Lagging	-3.83	1.000	Lagging	-3.81
80	FLT82-3PH	0.930	Lagging	-87.09	0.994	Lagging	-24.88	0.997	Lagging	-17.47
81	FLT83-3PH	0.992	Lagging	-27.22	0.998	Leading	12.62	0.998	Leading	13.36

Table 5-9 (continued)
Power Factor Analysis: GEN-2016-073

Reference Number	Case	16 Winter Peak			17 Summer Peak			25 Summer Peak		
		Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)
86	**FLT88-3PH**	0.991	Lagging	-29.58	0.999	Leading	9.69	0.999	Leading	11.85
87	**FLT89-3PH**	0.989	Lagging	-33.39	1.000	Leading	5.30	0.999	Leading	8.44
88	**FLT90-3PH**	0.990	Lagging	-31.11	0.999	Leading	7.17	0.999	Leading	9.90
89	**FLT91-3PH**	0.991	Lagging	-29.58	0.999	Leading	9.69	0.999	Leading	12.03
90	**FLT92-3PH**	0.991	Lagging	-29.29	0.999	Leading	8.83	0.998	Leading	12.32
91	**FLT93-3PH**	0.990	Lagging	-31.99	0.999	Leading	8.96	0.999	Leading	10.85
97	**FLT99-3PH**	0.953	Lagging	-69.69	0.995	Lagging	-21.32	1.000	Lagging	-6.34
98	**FLT100-3PH**	0.963	Lagging	-61.37	0.998	Lagging	-12.81	0.999	Lagging	-8.88
99	**FLT101-3PH**	0.990	Lagging	-31.914	0.999	Leading	7.53	0.999	Leading	10.08
102	**FLT104-3PH**	0.940	Lagging	-79.79	0.993	Lagging	-26.60	0.996	Lagging	-19.95
103	**FLT105-3PH**	0.999	Lagging	-9.45	0.994	Leading	24.18	0.994	Leading	23.68
104	**FLT106-3PH**	0.991	Lagging	-29.61	0.999	Leading	9.56	0.999	Leading	11.75
109	**FLT111-3PH**	0.983	Lagging	-40.72	0.999	Leading	9.83	0.999	Leading	10.29
110	**FLT112-3PH**	0.987	Lagging	-36.21	1.000	Leading	6.42	0.999	Leading	10.90
111	**FLT113-3PH**	0.984	Lagging	-39.72	0.999	Leading	9.82	0.999	Leading	10.43
112	**FLT114-3PH**	0.991	Lagging	-29.55	0.999	Leading	8.62	0.998	Leading	12.38
113	**FLT115-3PH**	0.990	Lagging	-30.85	0.999	Leading	9.32	0.999	Leading	11.40
114	**FLT116-3PH**	0.996	Lagging	-20.78	0.998	Leading	13.82	0.997	Leading	16.47
115	**FLT117-3PH**	0.990	Lagging	-30.63	0.999	Leading	8.71	0.999	Leading	11.23
123	**FLT125-3PH**	0.985	Lagging	-37.97	1.000	Leading	4.69	0.999	Leading	10.90
124	**FLT126-3PH**	0.996	Lagging	-18.97	0.995	Leading	20.98	0.994	Leading	23.93
125	**FLT127-3PH**	0.977	Lagging	-48.21	1.000	Leading	5.23	0.999	Leading	9.64
126	**FLT128-3PH**	0.999	Leading	9.03	0.992	Leading	28.45	0.983	Leading	41.20
127	**FLT129-3PH**	0.976	Lagging	-49.42	0.999	Lagging	-8.56	1.000	Lagging	-4.54
128	**FLT130-3PH**	0.966	Lagging	-58.97	0.998	Lagging	-14.87	0.999	Lagging	-10.01
129	**FLT131-3PH**	0.996	Lagging	-18.87	0.997	Leading	16.07	0.997	Leading	15.88
130	**FLT132-3PH**	N/A			N/A			1.000	Leading	0.69
131	**FLT133-3PH**	0.990	Lagging	-30.59	0.999	Leading	7.59	0.999	Leading	11.84
132	**FLT134-3PH**	0.988	Lagging	-35.04	1.000	Leading	5.26	0.999	Leading	8.00
140	**FLT142-3PH**	0.996	Lagging	-18.87	0.997	Leading	16.07	0.997	Leading	15.88
141	**FLT143-3PH**	0.965	Lagging	-59.74	0.997	Lagging	-18.14	0.998	Lagging	-14.01
142	**FLT144-3PH**	0.960	Lagging	-63.83	1.000	Lagging	-1.04	0.998	Lagging	-12.52
143	**FLT145-3PH**	0.990	Lagging	-30.82	0.999	Leading	10.73	0.998	Leading	15.13
144	**FLT146-3PH**	0.985	Lagging	-38.25	1.000	Leading	1.48	1.000	Leading	3.41
145	**FLT147-3PH**	0.988	Lagging	-34.17	0.999	Leading	7.36	0.999	Leading	11.40

Study Generator GEN-2016-073

The Power Factor Analysis shows that GEN-2016-073 has a power factor range of 0.999 leading (absorbing) to 0.833 lagging (supplying) for the 2016 Winter Peak conditions, a power factor range of 0.992 leading (absorbing) to 0.966 lagging (supplying) for the 2017 Summer Peak conditions, a power factor range of 0.983 leading (absorbing) to 0.973 lagging (supplying) to for the 2025 Summer Peak conditions.

SECTION 6: LOW/NO WIND/IRRADIANCE ANALYSIS

The objective of this task was to determine the impact of low wind or no wind conditions/solar irradiance on wind farms and solar farms, respectively. The 2016 Winter Peak, 2017 Summer Peak, and 2025 Summer Peak power flows provided by SPP were examined for this analysis.

6.1 Approach

Low/no wind and low/no solar irradiance conditions were examined for all renewable interconnections. Generators were disabled (independently), but the collector systems remained in-service. In order to maintain generation and load balance in the SPP area, the generation was scaled after disabling the respective generator. The amount of reactive power injected into the transmission network was recorded at the respective point of interconnection. This reactive power comes from the capacitance of the project's transmission lines and collector cables. A shunt reactor was added at the high side bus to bring the Mvar flow into the POI down to approximately zero.

6.2 Low/No Wind/Irradiance Analysis Results

The reactance needed to bring the Mvar flow into the point of interconnect to zero Mvar was recorded for each season for renewable interconnections. Refer to Table 6-1 for the results of this analysis. The table lists the generators examined and the amount of reactive power needed for zero Mvar flow into the POI for each season.

Table 6-1
Low/No Wind/Irradiance Analysis Results

Request	Size (MW)	Point of Interconnection	Reactor Size (Mvar)		
			16WP	17SP	25SP
GEN-2016-022	151.8	Ranch Road 345 kV	15.9	15.9	15.9
GEN-2016-031	201.3	Ranch Road 345 kV	9.7	9.7	9.7
GEN-2016-032	200	Tap on Marshall to Cottonwood 138 kV	14.6	14.6	14.6
GEN-2016-048	74	Sooner 138 kV	0.8	0.8	0.8
GEN-2016-060	25.3	Belle Plain 138 kV	11.5	11.5	11.5
GEN-2016-061	250.7	Tap on Woodring to Sooner 345 kV	11.7	11.7	11.7
GEN-2016-068	250	Woodring 345 kV	34.7	34.7	34.7
GEN-2016-071	200.1	Chilocco 138 kV	8.4	8.4	8.4
GEN-2016-073	220	Tap on Thistle to Wichita 345 kV	8.4	8.4	8.4

SECTION 7: CONCLUSIONS

Summary of Stability Analysis

The Stability Analysis determined that there were contingencies across all seasons that resulted in system/voltage instability, generation tripping offline, and poor post-fault voltage recovery when all generation interconnection requests were at 100% output.

To mitigate the system/voltage instability, voltage violations, generation tripping offline, and poor post-fault steady-state voltages, the following control actions were provided by SPP and implemented in each season:

- Dispatch of shunt capacitors at TIMBJCT2 and UDALL_2 after the prior outage for FLT98-PO to prevent post-fault steady-state voltages below 0.9 p.u. in the vicinity of TCROCK in the 2016 Winter Peak (16WP) case.
- Reduction of generation at GEN-2016-071 by 110 MW in 2016 Winter Peak (16WP) and by 75 MW in 2017 Summer Peak (17SP) and 2025 Summer Peak (25 SP) cases following prior outage of Middleton Tap to Peckham Tap 345 kV line for FLT122-PO and FLT123-PO to mitigate instability and generator tripping.

After implementing the above control actions, the contingency analysis was re-simulated for all contingencies. With the upgrades, the Stability Analysis determined that there was no wind turbine tripping or system instability observed as a result of interconnecting all study projects at 100% output.

Summary of the Short Circuit Analysis

The short circuit analysis was performed on the 2017 Summer Peak and 2025 Summer Peak power flows for all study projects. Refer to Table 7-1 and Table 7-2 for a list of maximum fault currents observed for each study project for the 17SP and 25SP cases, respectively.

Table 7-1
2017SP: List of Maximum Fault Currents Observed for Each Study Project

Study Project	Fault Current at POI (kA)	Maximum Fault Current (kA)	Fault Location	Bus Voltage (kV)
GEN-2016-009	15.66	31.90	SOONER 4	138
GEN-2016-022	14.21	43.19	NORTWST4	138
GEN-2016-031	14.21	43.19	NORTWST4	138
GEN-2016-032	3.38	43.19	NORTWST4	138
GEN-2016-048	31.9	43.19	NORTWST4	138
GEN-2016-060	8.99	31.43	ROSEHIL4	138
GEN-2016-061	16.69	43.19	NORTWST4	138
GEN-2016-068	18.99	43.19	NORTWST4	138
GEN-2016-071	9.02	11.66	KILDARE4	138
GEN-2016-073	20.8	37.73	EVANS N4	138

Table 7-2
2025SP: List of Maximum Fault Currents Observed for Each Study Project

Study Project	Fault Current at POI (kA)	Maximum Fault Current (kA)	Fault Location	Bus Voltage (kV)
GEN-2016-009	18.54	32.33	SOONER 4	138
GEN-2016-022	14.24	43.56	NORTWST4	138
GEN-2016-031	14.24	43.56	NORTWST4	138
GEN-2016-032	3.38	43.56	NORTWST4	138
GEN-2016-048	31.9	43.43	NORTWST4	138
GEN-2016-060	10.45	42.82	EVANS N4	138
GEN-2016-061	16.82	43.56	NORTWST4	138
GEN-2016-068	19.31	43.56	NORTWST4	138
GEN-2016-071	9.26	22.35	VIOLA 4	138
GEN-2016-073	21.33	42.82	EVANS N4	138

Summary of Power Factor Analysis

The upgrades identified in the Stability Analysis were implemented in the power flow cases and utilized for the Power Factor Analysis. Refer to Table 7-3 for the power factor range observed for each study project.

Table 7-3
Summary of Results for the Power Factory Analysis

Generator	Power Factor Range for each study generator[1]					
	16WP		17SP		25SP	
GEN-2016-022	-0.959	Unity	-0.984	0.998	-0.983	0.998
GEN-2016-031	-0.976	Unity	-0.991	0.999	-0.990	0.999
GEN-2016-032	-0.978	0.999	-0.985	0.999	-0.987	0.999
GEN-2016-048	-0.556	-0.773	-0.573	-0.795	-0.567	-0.782
GEN-2016-060	-0.888	-0.998	-0.982	0.993	-0.990	0.994
GEN-2016-061	-0.855	0.971	-0.870	0.972	-0.867	0.974
GEN-2016-068	-0.884	0.975	-0.860	0.976	-0.874	0.977
GEN-2016-071	-0.968	0.986	-0.997	0.989	-0.998	0.993
GEN-2016-073	-0.833	0.999	-0.966	0.992	-0.973	0.983

[1]Lagging power factors are negative and leading power factors are positive

Summary of the Low/No Wind Analysis

The amount of reactive power injected into the transmission network was recorded at the point of interconnection for each wind and solar powered interconnection request for each season.

11.14.8 J9: GROUP 9 DYNAMIC STABILITY ANALYSIS REPORT

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Southwest Power Pool, Inc. (SPP)

DISIS-2016-001-1 (Group 09)
Definitive Impact Study

Final Report

REP-0149
Revision #00

December 2017

Submitted By:
Mitsubishi Electric Power Products, Inc. (MEPPI)
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Title: **DISIS-2016-001-1 (Group 09) Definitive Impact Study: Final Report REP-0149**
Date: December 2017

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EXECUTIVE SUMMARY

SPP requested a Definitive Interconnection System Impact Study (DISIS). The DISIS required a Stability Analysis, Short-circuit Analysis, Power Factor Analysis, and Low Wind/No Wind Analysis detailing the impacts of the interconnecting projects as shown in Table ES-1.

Table ES-1
Interconnection Projects Evaluated

Request	Size (MW)	Generator Model (Gen Bus Number)	Point of Interconnection
GEN-2015-089	200	GE 2.0 MW Wind (563232)	Utica 230 kV (652526)
GEN-2016-021	300	Vestas V110 VCSS 2.0MW Wind (587153)	Hoskins 345kV (640226)
GEN-2016-023	150.5	GE 2.0MW and 1.79MW Wind (587093, 587095)	Tap Sidney (659426) - Laramie River (659131) 345kV (560075)
GEN-2016-029	150.5	GE 2.0MW and 1.79MW Wind (587193,587195)	Tap Sidney (659426) - Laramie River (659131) 345kV (560075)
GEN-2016-043	230	Vestas V136 3.6MW/Vestas V136 3.45MW Wind (587283, 587286)	Hoskins 345kV (640226)
GEN-2016-050	250.7	GE 2.3MW Wind (587353)	Axtell (640065)-Post Rock (530583) 345 kV (560082)
GEN-2016-075	50	Vestas V110 VCSS 2.0MW Wind	Tap Ft. Thompson-Hope County 345 kV (Grand Prarie, 652532)

SUMMARY OF STABILITY ANALYSIS

The Stability Analysis determined there were multiple contingencies that resulted in system/voltage instability, generation tripping offline, and poor post-fault voltage recovery when all generation interconnection requests were at 100% output.

To mitigate the system/voltage instability and low post-fault steady-state voltages, the following upgrades were provided by SPP and implemented in all seasons:

- Keystone to Banner County (G16-034 Tap) 345 kV circuit #1
- SPP R Plan (16WP and 17SP only)
    - Cherry County/Thedford 345/115/13.8 kV transformer
    - Gentleman to Cherry County 345 kV circuit #1
    - Holt County to Cherry County 345 kV circuit #1
- Gentleman to Keystone 345 kV circuit #2

After discussion with SPP, it was determined that for the prior outage contingencies, FLT103-PO, FLT104-PO, FLT105-PO and FLT106-PO, a total of 500 MW of generation curtailment is required to mitigate the observed violations. G07170718WU2 (200MW) and GEN-2015-023 units 1 and 2 (each 150 MW) should be taken out of service in order to decrease the generation around Cherry County 345 kV.

After implementing the above upgrades, the contingency analysis was re-simulated for all contingencies. With the upgrades, the Stability Analysis determined that there was no generation tripping or system instability observed as a result of interconnecting all study projects at 100% output.

High GGS Sensitivity Scenario

The High GGS Scenario Stability Analysis determined there were multiple contingencies that resulted in system/voltage instability, generation tripping offline, and poor post-fault voltage recovery when all generation interconnection requests were at 100% output.

To mitigate the voltage instability and low post-fault steady-state voltages, the following upgrades were provided by SPP and implemented in all seasons:

- Keystone to Banner County (G16-034 Tap) 345 kV circuit #1
- SPP R Plan (16WP and 17SP only)
    - Cherry County/Thedford 345/115/13.8 kV transformer
    - Gentleman to Cherry County 345 kV circuit #1
    - Holt County to Cherry County 345 kV circuit #1
- Gentleman to Keystone 345 kV circuit #2

- 10 Mvar capacitor bank at Atwood 115 kV (25SP only)

It was determined that for a three phase fault in the Sidney area, the shunt capacitor near Sidney 230 kV should be taken out of service to mitigate the overvoltage violation for FLT42-3PH. For the prior outage contingencies, FLT103-PO, FLT104-PO, FLT105-PO and FLT106-PO, a total of 500 MW of generation curtailment is required to mitigate the observed violations. G07170718WU2 (200MW) and GEN-2015-023 units 1 and 2 (each 150 MW) should be taken out of service in order to decrease the generation around Cherry County 345 kV.

FLT67-PO and FLT68-PO for the 2025 Summer Peak case was observed to have voltages below 0.9 p.u. at the pre and post contingent level. The observed violation was mitigated by a capacitor bank addition, switching off shunt reactors, and generation curtailment (capacitor bank addition identified by SPP in steady-state analysis). The following mitigation is required for FLT67-PO and FLT68-PO:

- Addition of a 10 Mvar capacitor bank at Atwood 115 kV (531364)
- Switching off the following shunt reactors:
  - Setab 345 kV (531465)
  - Mingo 13.8 kV (531452)
  - Red Willow 13.8 kV (640327)
  - 100 MW of generation curtailment (decrease GEN-2016-050 from 250.7 MW to 150.7 MW)

After implementing the above upgrades, the contingency analysis was re-simulated for all contingencies. With the upgrades, the Stability Analysis determined that there was no generation tripping or system instability observed as a result of interconnecting all study projects at 100% output.

SUMMARY OF THE SHORT-CIRCUIT ANALYSIS

The Short-Circuit Analysis was performed on the 2017 Summer Peak and 2025 Summer Peak power flows for all study projects. Refer to Table ES-2 for a list of maximum fault currents observed for each study project for the 2017 Summer Peak case. Refer to Table ES-3 for a list of maximum fault currents observed for each study project for the 2025 Summer Peak case.

Table ES-2
List of Maximum Fault Currents Observed for Each Study Project for the 2017 Summer Peak Case

Study Project	POI Name	Fault Current at POI (kA)	Maximum Fault Current (kA)	Fault Location	Bus Voltage (kV)
GEN-2015-089	Utica 230kV (652526)	7.88	34.60	SPLT RK7	115
GEN-2016-021	Hoskins 345kV (640226)	11.56	41.67	S1206 5	161
GEN-2016-023	Tap Sidney (659426) - Laramie River (659131) 345kV (587090)	6.06	18.93	GENTLMN4	230
GEN-2016-029	Tap Sidney (659426) - Laramie River (659131) 345kV (587090)	6.06	18.93	GENTLMN4	230
GEN-2016-043	Hoskins 345kV (640226)	11.56	41.67	S1206 5	161
GEN-2016-050	Axtell (640065)-Post Rock (530583) 345 kV (560082)	7.87	31.77	SHELDON7	115
GEN-2016-075	Tap Ft. Thompson-Hope County 345 kV (Grand Prarie, 652532)	6.19	19.99	FTTHOMP4	230

Table ES-3
List of Maximum Fault Currents Observed for Each Study Project for the 2025 Summer Peak Case

Study Project	POI Name	Fault Current at POI (kA)	Maximum Fault Current (kA)	Fault Location	Bus Voltage (kV)
GEN-2015-089	Utica 230kV (652526)	7.90	35.24	SPLT RK7	115
GEN-2016-021	Hoskins 345kV (640226)	11.63	43.10	S1209 5	161
GEN-2016-023	Tap Sidney (659426) - Laramie River (659131) 345kV (587090)	6.06	18.97	GENTLMN4	230
GEN-2016-029	Tap Sidney (659426) - Laramie River (659131) 345kV (587090)	6.06	18.97	GENTLMN4	230
GEN-2016-043	Hoskins 345kV (640226)	11.63	43.10	S1209 5	161
GEN-2016-050	Axtell (640065)-Post Rock (530583) 345 kV (560082)	7.87	32.77	SHELDON7	115
GEN-2016-075	Tap Ft. Thompson-Hope County 345 kV (Grand Prarie, 652532)	6.20	20.10	FTTHOMP4	230

SUMMARY OF POWER FACTOR ANALYSIS

The upgrades identified in the Stability Analysis were implemented in the power flow cases and utilized for the Power Factor Analysis. Refer to Table ES-4 for the power factor analysis results for each study generator. The table lists the range of power factor required for each study project.

Table ES-4
Power Factor Analysis Summary for Study Projects

Study Project	Power Factor Range for Each Study Project[1]					
	16WP		17SP		25SP	
GEN-2015-089	-0.994	0.989	-0.996	0.992	-0.996	0.992
GEN-2016-021	-0.998	0.995	-0.995	0.998	-0.996	0.998
GEN-2016-023	-0.941	0.984	-0.918	0.990	-0.905	0.956
GEN-2016-029	-0.941	0.984	-0.918	0.990	-0.905	0.956
GEN-2016-043	-0.998	0.995	-0.995	0.998	-0.996	0.998
GEN-2016-050	-0.985	0.944	-0.982	0.954	-0.982	0.953
GEN-2016-075	-0.936	0.950	-0.990	0.997	-0.990	0.999

[1]Lagging power factors are negative and leading power factors are positive

SUMMARY OF LOW WIND/NO WIND ANALYSIS

The amount of reactive power injected into the transmission network was recorded at the high side of the transformer near the point of interconnection for all study projects for each season.

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SECTION 1: OBJECTIVES

The objective of this report is to provide Southwest Power Pool, Inc. (SPP) with the deliverables for the DISIS-2016-001 (Group 09) Definitive Impact Study. SPP requested an Interconnection System Impact Study for seven (7) generation interconnections for 2016 Winter Peak, 2017 Summer Peak, and 2025 Summer Peak, which requires a Stability Analysis, Short-circuit Analysis, Power Factor Analysis, Low Wind/No Wind Analysis, and an Impact Study Report.

SECTION 2: BACKGROUND

The Siemens Power Technologies International PSS/E power system simulation program Version 32.2.0 was used for this study. SPP provided the stability database cases for 2016 Winter Peak, 2017 Summer Peak, and 2025 Summer Peak conditions and a list of contingencies to be examined. The model includes the study projects shown in Table 2-1 and the previously queued projects listed in Table 2-2. Refer to Appendix A for the steady-state and dynamic model data for the study projects. A power flow one-line diagram for each generation interconnection project is shown in Figures 2-1 through 2-5. Note that the one-line diagrams represent the 2016 Winter Peak case.

The Stability Analysis determined the impacts of the new interconnecting projects on the stability and voltage recovery of the nearby system and the ability of the interconnecting projects to meet FERC Order 661A. If problems with stability or voltage recovery are identified, the need for reactive compensation or system upgrades will be investigated. Three-phase faults and single line-to-ground faults will be examined as listed in Table 2-3. Note that all contingencies listed were examined for the Cluster Scenario.

A Short-circuit Analysis was performed on the 2017 Summer Peak and 2025 Summer Peak study years for each study generator. The study was performed five buses out from the study generator's point of interconnection (POI) and results were documented.

The Power Factor Analysis determined the power factor at the high side of the transformer near the POI for the wind or solar interconnection projects for pre-contingency and post-contingency conditions. The N-1, three phase contingencies listed in Table 2-3 were used in the Power Factor analysis.

The Low Wind/No Wind Analysis was completed for all wind interconnections. This analysis determined if reactive support is needed to have an Mvar flow of approximately zero at the POI.

Table 2-1
Interconnection Projects Evaluated

Request	Size (MW)	Generator Model (Gen Bus Number)	Point of Interconnection
GEN-2015-089	200	GE 2.0 MW Wind (563232)	Utica 230 kV (652526)
GEN-2016-021	300	Vestas V110 VCSS 2.0MW Wind (587153)	Hoskins 345kV (640226)
GEN-2016-023	150.5	GE 2.0MW and 1.79MW Wind (587093, 587095)	Tap Sidney (659426) - Laramie River (659131) 345kV (560075)
GEN-2016-029	150.5	GE 2.0MW and 1.79MW Wind (587193,587195)	Tap Sidney (659426) - Laramie River (659131) 345kV (560075)
GEN-2016-043	230	Vestas V136 3.6MW/Vestas V136 3.45MW Wind (587283, 587286)	Hoskins 345kV (640226)
GEN-2016-050	250.7	GE 2.3MW Wind (587353)	Axtell (640065)-Post Rock (530583) 345 kV (560082)
GEN-2016-075	50	Vestas V110 VCSS 2.0MW Wind	Tap Ft. Thompson-Hope County 345 kV (Grand Prarie, 652532)

Table 2-2
Previously Queued Nearby Interconnection Projects Included

Request	Size (MW)	Generator Model (Gen Bus Number)	Point of Interconnection
GEN-2003-021N	75	WT12A1,WT12T1,WT1G1 (640026)	Tap on the Ainsworth – Calamus 115kV line (640050)
GEN-2004-023N	75	EXAC2,GENROU,IEEEG1 (640028)	Columbus 115kV (640119)
GEN-2006-020N	42	Vestas V90 VCUS 1.8 & 3.0 MW (640421,579441)	Bloomfield 115kV (640084)
GEN-2006-037N1	75	GE 1.7MW (640449)	Broken Bow 115kV (640089)
GEN-2006-038N005	79.5	GE 1.6MW (640428)	Broken Bow 115kV (640089)
GEN-2006-038N019	79.5	GE 1.5MW (640431)	Petersburg 115kV (640444)
GEN-2006-044N	40.5	GE 1.5MW (645062)	Petersburg 115kV (640444)
GEN-2007-011N08	81	Vestas V90 VCRS 3.0MW (640418)	Bloomfield 115kV (640084)
GEN-2008-086N02/GEN-2014-032	211.22	GE 100m 1.79MW (645063 and 645064)	Meadow Grove 230kV (GEN-2008-086N02 POI) (640540)
GEN-2008-119O	60	GE 1.5MW (645061)	S1399 161kV (646399)
GEN-2008-123N	89.7	GE 2.3MW (572054)	Tap Pauline (640313) – Guide (640206) POI (Rosemont 115 kV, 560134)
GEN-2007-017IS/018IS	400	Vestas V110 VCSS 2.0MW (652353, 579456)	Tap Ft. Thompson-Hope County 345 kV (Grand Prarie, 652532)
GEN-2009-040	73.8	Vestas V100 VCSS 2.0MW (532904)	Marshall 115kV (533303)
GEN-2010-041	10.5	GE 1.5MW (580071)	S1399 161kV (646399)
GEN-2010-051	200	GE 100m 1.7MW (580014, 580017, 580020)	Tap on the Twin Church – Hoskins 230kV line (560347)

Request	Size (MW)	Generator Model (Gen Bus Number)	Point of Interconnection
GEN-2011-018 (replaced by GEN-2013-008)	73.6	GE 100m 1.7MW (640555)	Steele County 115kV (640426)
GEN-2011-027	120	GE 1.85MW (580022, 580021, 580023)	Tap Twin Church-Hoskins 230kV (560347)
GEN-2011-056	3.6 MW increase (Pgen=21.6MW)	ESAC8B,GENESAL,PIDGOV (640013)	Jeffrey 115kV (640238)
GEN-2011-056A	3.6 MW increase (Pgen=21.6MW)	ESAC8B,GENESAL,PIDGOV (640014)	Johnson 1 115kV (640240)
GEN-2011-056B	4.5 MW increase (Pgen=23.5MW)	ESAC8B,GENESAL,PIDGOV (640015)	Johnson 2 115kV (640242)
GEN-2012-021	4.8 MW	GENSAE,AC8B,GGOV1 IEEEVC (650010)	84th & Bluff 115kV (650275)
GEN-2013-002	50.6	Siemens 2.3MW VS (583703)	Tap Sheldon - SW7&Bennet - Folsom/Pleasant Hill 115kV (560746)
GEN-2013-008	1.2MW increase to GEN-2011-018 (Pgen=74.8MW)	GE 100m 1.7MW (640555)	Steele City (640426) 115kV
GEN-2013-019	73.6	Siemens 2.3MW VS (583703)	Tap Sheldon - SW7&Bennet - Folsom/Pleasant Hill 115kV (560746)
GEN-2013-032	204.0	GE 97.4m 1.7MW (583783)	Neligh 115kV (640293)
GEN-2014-004	3.96	GE 97.4m 1.79MW (640555)	Steele City 115kV (GEN-2011-018 POI) (640426)
GEN-2014-013	73.5	GE 1.79MW (583833)	Meadow Grove 230kV (GEN-2008-086N02 POI) (640540)
GEN-2014-031	35.8	GE 1.79MW (583836)	Meadow Grove 230kV (GEN-2008-086N02 POI) (640540)

Request	Size (MW)	Generator Model (Gen Bus Number)	Point of Interconnection
GEN-2014-039	73.39	Vestas V110 VCSS 2.0MW Vestas V110 VCSS 1.905MW (584093)	Friend 115kV (640174)
GEN-2015-007	160.0	GE 116m 2.0MW (wind; 584513)	Hoskins 345kV (640226)
GEN-2015-023	300.8	GE 100m 1.79MW (wind; 584653, 584656)	Holt County 345kV (640510)
GEN-2015-053	50	GE 1.79 MW (wind; 584913)	Antelope 115kV (640521)
GEN-2015-076	158.4	Vestas 3.3-117 3.3 MW (wind; 585133, 585136)	Belden 115kV (640080)
GEN-2015-087	66	Vestas V100 2.0 MW (wind; 585233)	Tap on Fairbury(640169) to Hebron (640218) 115kV
GEN-2015-088	300	Vestas V100 2.0 MW (wind; 585243)	Tap on Moore (640277) to Pauline (640312) 345kV

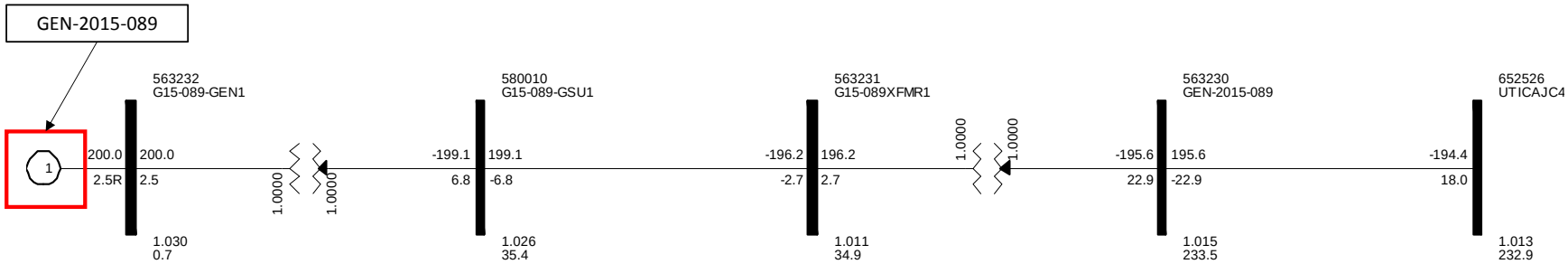

Figure 2-1. Power flow one-line diagram for interconnection project at the Utica 230kV POI (GEN-2015-089).

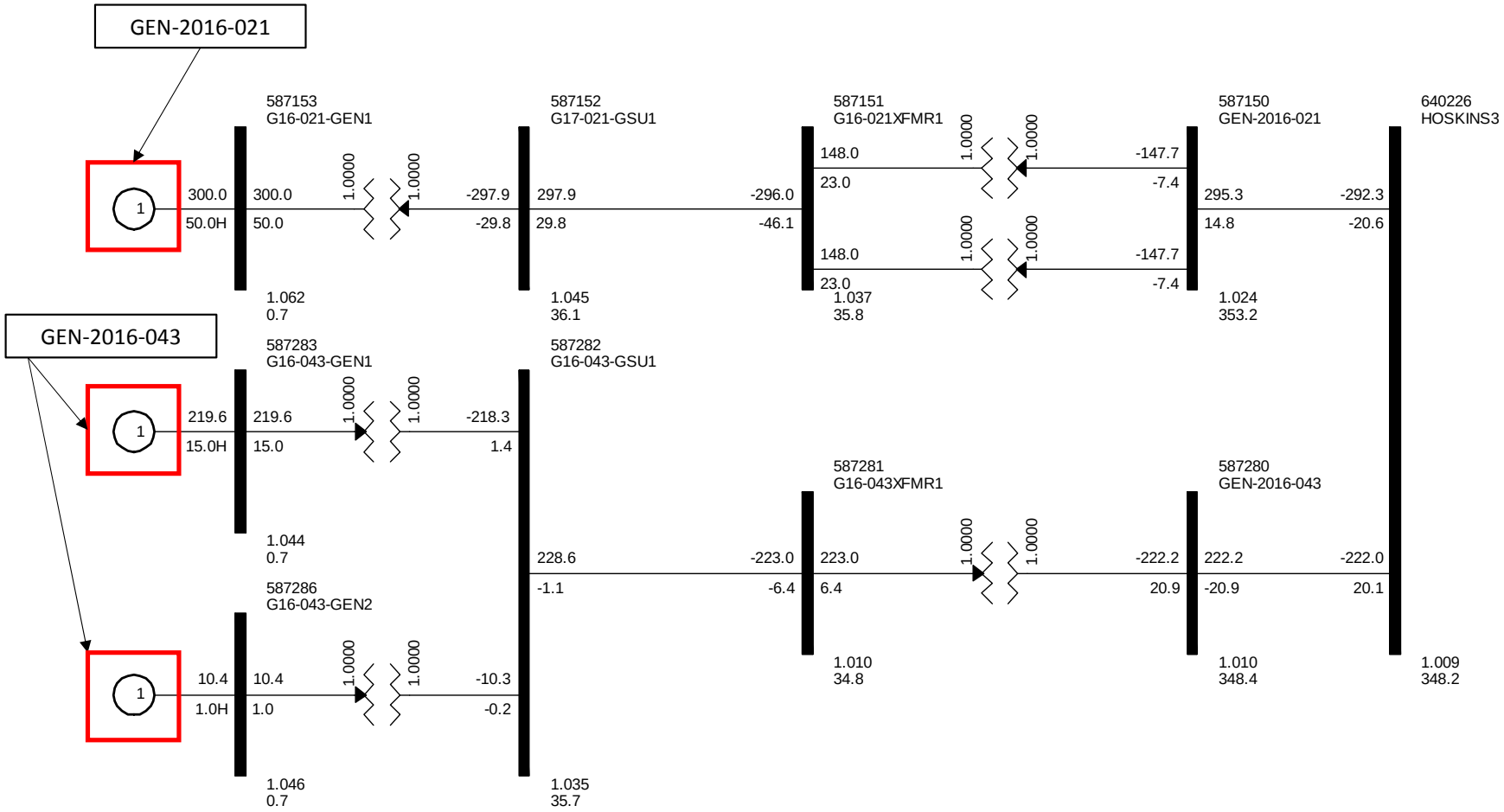

Figure 2-2. Power flow one-line diagram for interconnection project at the Hoskins 345kV POI (GEN-2016-021 and GEN-2016-043).

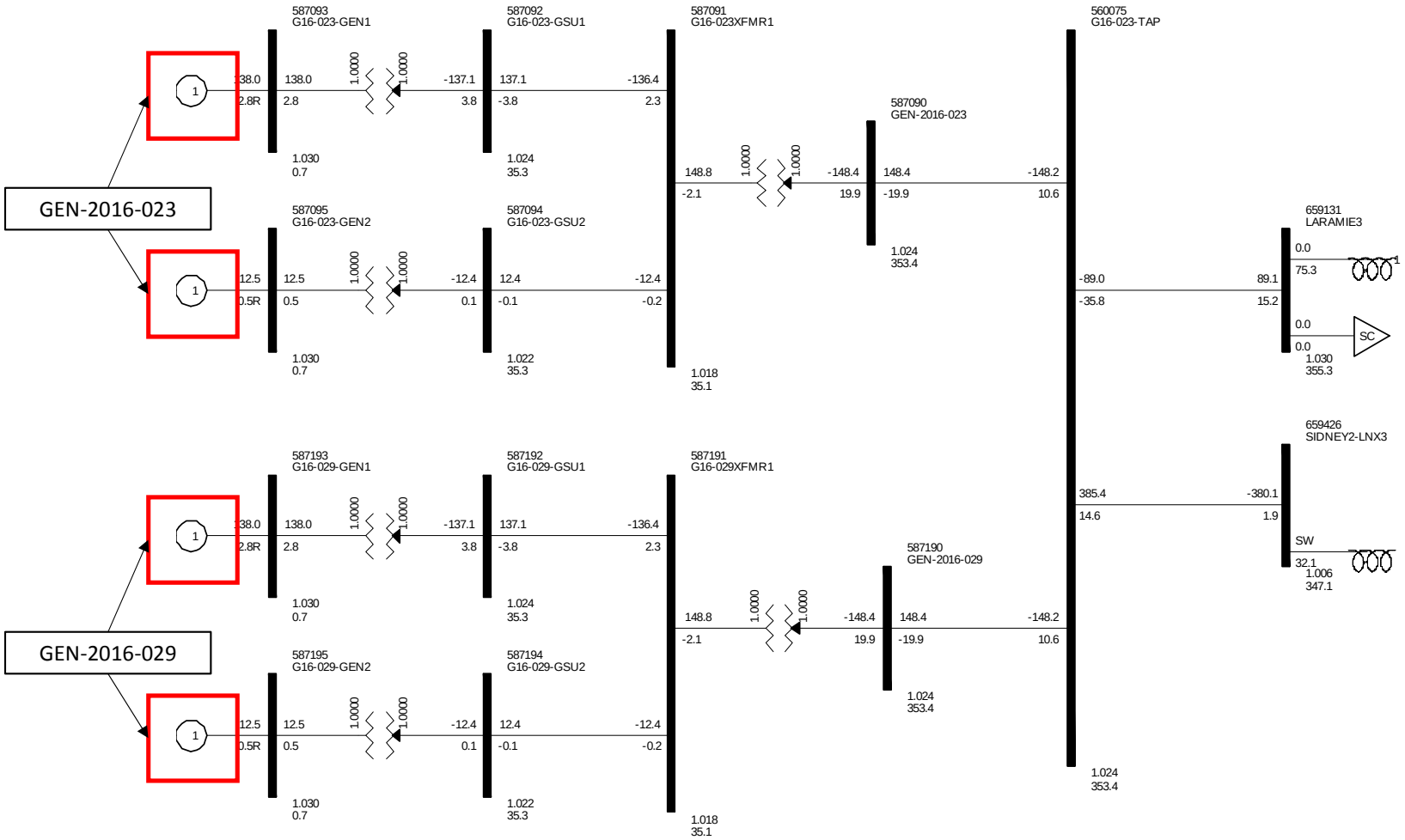

Figure 2-3. Power flow one-line diagram for interconnection project at the Tap Sidney – Laramie River 345kV POI (GEN-2016-023, GEN-2016-023 and GEN-2016-029).

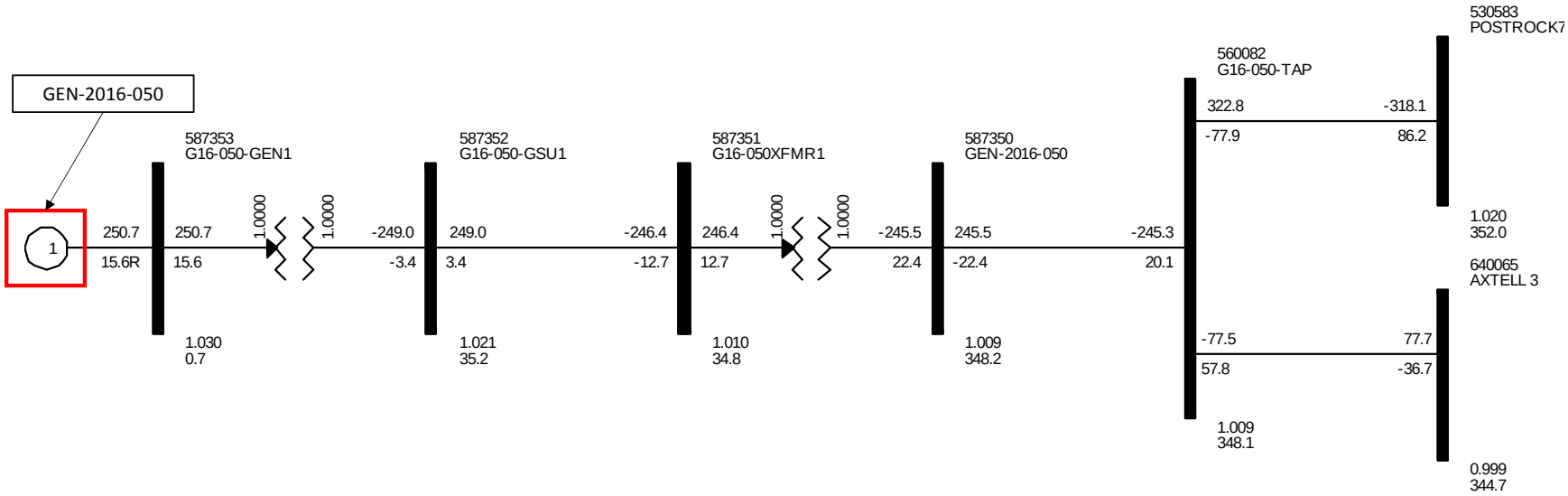

Figure 2-4. Power flow one-line diagram for interconnection project at the Axtell – Post Rock 345kV POI (GEN-2016-050).

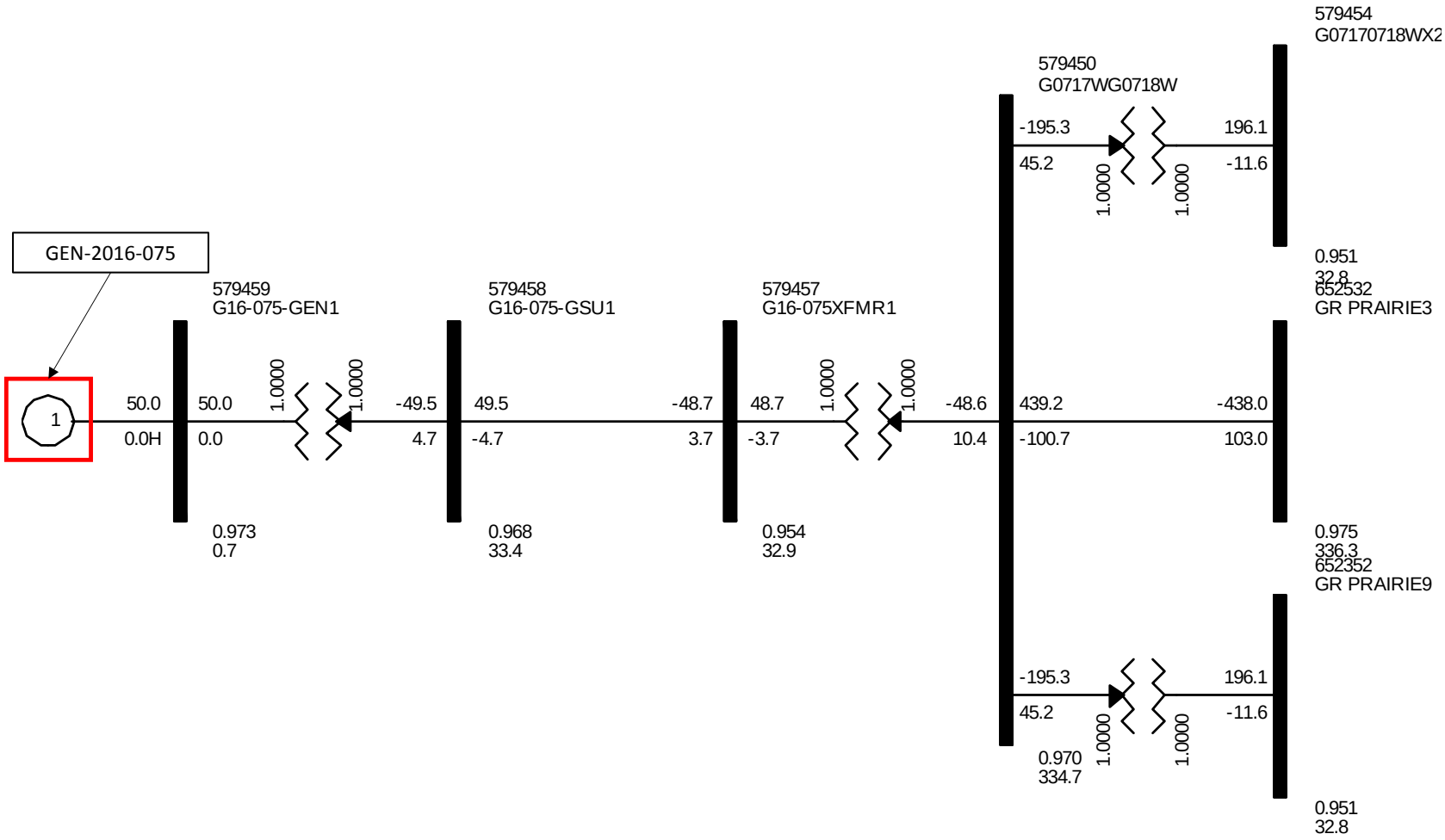

Figure 2-5. Power flow one-line diagram for interconnection project at the Tap Ft. Thompson – Hope County 345kV POI (GEN-2016-075).

Table 2-3
Case List with Contingency Description

	Cont. Name	Description
1	FLT01-3PH	3 phase fault on the Hoskins (640226) to Antelope (640520) 345kV line circuit 1, near Hoskins. a. Apply fault at the Hoskins 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
2	FLT02-3PH	3 phase fault on the Hoskins (640226) to Shell Creek (640342) 345kV line circuit 1, near Hoskins. a. Apply fault at the Hoskins 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
3	FLT03-3PH	3 phase fault on the Hoskins (640226) to Raun (635200) 345kV line circuit 1, near Hoskins. a. Apply fault at the Hoskins 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
4	FLT04-3PH	3 phase fault on the Hoskins 345/230/13.8kV (640226/640227/643082) transformer, near Hoskins. a. Apply fault at the Hoskins 345kV bus. b. Clear fault after 5 cycles by tripping the faulted transformer.
5	FLT05-3PH	3 phase fault on the Hoskins 345/115/13.8kV (640226/640228/640231) transformer, near Hoskins. a. Apply fault at the Hoskins 345kV bus. b. Clear fault after 5 cycles by tripping the faulted transformer.
6	FLT06-3PH	3 phase fault on the Raun (635200) to Sioux City (652564) 345kV line circuit 1, near Raun. a. Apply fault at the Raun 345kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
7	FLT07-3PH	3 phase fault on the Raun (635200) to Lehigh (636010) 345kV line circuit 1, near Raun. a. Apply fault at the Raun 345kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
8	FLT08-3PH	3 phase fault on the Raun (635200) to S3451 (645451) 345kV line circuit 1, near Raun. a. Apply fault at the Raun 345kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
9	FLT09-3PH	3 phase fault on the Raun (635200) to Highland (635400) 345kV line circuit 1, near Raun. a. Apply fault at the Raun 345kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
10	FLT10-3PH	3 phase fault on the Raun 345/161kV (635200/635201) transformer, near Raun. a. Apply fault at the Raun 345kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
11	FLT11-3PH	3 phase fault on the Raun (635200) to Highland (635400) 345kV line circuit 1, near Raun. a. Apply fault at the Raun 345kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
12	FLT12-3PH	3 phase fault on the Shell Creek (640342) to Columbus (640125) 345kV line circuit 1, near Shell Creek. a. Apply fault at the Shell Creek 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.

	Cont. Name	Description
13	FLT13-3PH	3 phase fault on the Shell Creek 345/230/13.8kV (640342/640343/643136) transformer, near Shell Creek. a. Apply fault at the Shell Creek 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
14	FLT14-3PH	3 phase fault on the Antelope 345/115/13.8kV (640520/640521/640524) transformer, near Antelope. a. Apply fault at the Antelope 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
15	FLT15-3PH	3 phase fault on the Hoskins 230/115/13.8kV (640227/640228/643083) transformer, near Hoskins. a. Apply fault at the Hoskins 345kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
16	FLT16-3PH	3 phase fault on the Hoskins (640227) to G10-051-Tap (560347) 230kV line circuit 1, near Hoskins. a. Apply fault at the Hoskins 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
17	FLT17-3PH	3 phase fault on the Hoskins (640228) to Norfolk (640298) 115kV line circuit 1, near Hoskins. a. Apply fault at the Hoskins 115kV bus. b. Clear fault after 6.5 cycles by tripping the faulted line.
18	FLT18-3PH	3 phase fault on the Hoskins (640228) to Belden (640080) 115kV line circuit 1, near Hoskins. a. Apply fault at the Hoskins 115kV bus. b. Clear fault after 6.5 cycles by tripping the faulted line.
19	FLT19-3PH	3 phase fault on the Hoskins (640228) to Norfolk North (640296) 115kV line circuit 1, near Hoskins. a. Apply fault at the Hoskins 115kV bus. b. Clear fault after 6.5 cycles by tripping the faulted line.
20	FLT20-3PH	3 phase fault on the Hoskins (640228) to Stanton West (640363) 115kV line circuit 1, near Hoskins. a. Apply fault at the Hoskins 115kV bus. b. Clear fault after 6.5 cycles by tripping the faulted line.
21	FLT21-SB	**Hoskins 345 kV Stuck Breaker Scenario 1** a. Apply fault at the Hoskins 345kV bus. b. Clear fault after 16 cycles and trip the following elements c. Hoskins (640226) – Shell Creek (640342) 345kV d. Hoskins (640226) – Raun (635200) 345kV
22	FLT22-SB	**Hoskins 345 kV Stuck Breaker Scenario 2** a. Apply fault at the Hoskins 345kV bus. b. Clear fault after 16 cycles and trip the following elements c. Hoskins (640226) – Shell Creek (640342) 345kV d. Hoskins (640226) – Antelope (640520) 345kV
23	FLT23-SB	**Hoskins 345 kV Stuck Breaker Scenario 3** a. Apply fault at the Hoskins 345kV bus. b. Clear fault after 16 cycles and trip the following elements c. Hoskins 345/230/13.8kV (640226/640227/643082) transformer d. Hoskins 345/115/13.8kV (640226/640228/640231) transformer

	Cont. Name	Description
24	FLT24-PO	**Prior Outage of Hoskins 345 kV (640226) to Raun 345 kV (635200) CKT 1;** 3 phase fault on Hoskins 345kV (640226) to Antelope 345kV (640520), near Hoskins. a. Apply fault at the Hoskins 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
25	FLT25-PO	**Prior Outage of Hoskins 345 kV (640226) to Raun 345 kV (635200) CKT 1;** 3 phase fault on Hoskins 345kV (640226) to Shell Creek 345kV (640342), near Hoskins. a. Apply fault at the Hoskins 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
26	FLT25-PO	**Prior Outage of Hoskins 345 kV (640226) to Raun 345 kV (635200) CKT 1;** 3 phase fault on Hoskins 345/115/13.8kV (640226/640228/640298) transformer, near Hoskins. a. Apply fault at the Hoskins 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
27	FLT27-PO	**Prior Outage of Hoskins 345 kV (640226) to Antelope 345 kV (640520) CKT 1;** 3 phase fault on Hoskins 345kV (640226) to Raun 345kV (635200), near Hoskins. a. Apply fault at the Hoskins 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
28	FLT28-PO	**Prior Outage of Hoskins 345 kV (640226) to Antelope 345 kV (640520) CKT 1;** 3 phase fault on Hoskins 345kV (640226) to Shell Creek 345kV (640342), near Hoskins. a. Apply fault at the Hoskins 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
29	FLT29-PO	**Prior Outage of Hoskins 345 kV (640226) to Antelope 345 kV (640520) CKT 1;** 3 phase fault on Hoskins 345/115/13.8kV (640226/640228/640298) transformer, near Hoskins. a. Apply fault at the Hoskins 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
30	FLT30-PO	**Prior Outage of Hoskins 345/230/13.8 kV (640226/640227/643082) Transformer;** 3 phase fault on Hoskins 345kV (640226) to Antelope 345kV (640520), near Hoskins. a. Apply fault at the Hoskins 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
31	FLT31-PO	**Prior Outage of Hoskins 345/230/13.8 kV (640226/640227/643082) Transformer;** 3 phase fault on Hoskins 345kV (640226) to Shell Creek 345kV (640342), near Hoskins. a. Apply fault at the Hoskins 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
32	FLT32-PO	**Prior Outage of Hoskins 345/230/13.8 kV (640226/640227/643082) Transformer;** 3 phase fault on Hoskins 345kV (640226) to Raun 345kV (635200), near Hoskins. a. Apply fault at the Hoskins 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
33	FLT33-3PH	3 phase fault on the G16-023-Tap (560075) to Banner_Co (560090) 345kV line circuit 1, near G16-023-Tap. a. Apply fault at the G16-023-Tap 345kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
35	FLT35-3PH	3 phase fault on the G16-023-Tap (560075) to Laramie (659131) 345kV line circuit 1, near G16-023-Tap. a. Apply fault at the G16-023-Tap 345kV bus. b. Clear fault after 6 cycles by tripping the faulted line.

	Cont. Name	Description
36	FLT36-3PH	3 phase fault on the Laramie (659131) to Stegall (659135) 345kV line circuit 1, near Laramie. a. Apply fault at the Laramie 345kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
37	FLT37-3PH	3 phase fault on the Sidney (659133) to Sidney2-LNX (659426) 345kV line circuit 1, near Sidney. a. Apply fault at the Sidney 345kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
38	FLT38-3PH	3 phase fault on the Sidney (659133) to Sidney1-LNX (659425) 345kV line circuit 1, near Sidney. a. Apply fault at the Sidney 345kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
39	FLT39-3PH	3 phase fault on the Sidney 345/230/13.8kV (659133/659210/659168) Transformer, near Sidney. a. Apply fault at the Sidney 345kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
40	FLT40-3PH	3 phase fault on the Ogalala 230/115/13.8kV (640302/640304/643115) Transformer circuit 1, near Ogalala 230 kV. a. Apply fault at the Ogalala 230 kV bus. b. Clear fault after 5 cycles and trip the faulted transformer.
41	FLT41-3PH	3 phase fault on the Ogalala (640302) to Gentleman (640184) 230 kV line circuit 1, near Ogalala. a. Apply fault at the Ogalala 230kV bus. b. Clear fault after 5 cycles and trip the faulted line and remove fault.
42	FLT42-3PH	3 phase fault on the Sidney (659134) to Sidney West (652584) 230kV line circuit 1, near Sidney. a. Apply fault at the Sidney 230 kV bus. b. Clear fault after 5 cycles, trip the faulted line, and remove the fault. c. Block the DC tie at SIDNEY 4.
43	FLT43-SB	**Sidney 230 kV Stuck Breaker Scenario 1** a. Apply single phase fault at the Sidney (659134) 230kV bus. b. Wait 16 cycles and remove fault. c. Trip Sidney (659134) to Sidney Xfmr (659210) 230kV line circuit 1. d. Trip Sidney (659134) to Ogalala (640302) 230kV line circuit 1. e. Block the DC tie at SIDNEY 4 f. Drop shunt at SIDNEY 4
44	FLT44-SB	**Sidney 230 kV Stuck Breaker Scenario** a. Apply single phase fault at the Sidney (659134) 230 kV bus. b. Wait 16 cycles and remove fault. c. Trip Sidney (659134) to Sidney Xfmr (659210) 230 kV line circuit 1. d. Trip Sidney (659134) 230 kV / (652572) 115 kV / (659803) 13.8 kV transformer circuit 1. e. Block the DC tie at SIDNEY 4 f. Drop shunt at SIDNEY 4
45	FLT45-SB	**Sidney 345 kV Stuck Breaker Scenario 1** a. Apply single phase fault at the Sidney2-LNX (659426) 345kV bus. b. Wait 16 cycles and remove fault. c. Trip Sidney2-LNX (659426) to G16-023-Tap (560075) 345kV line circuit 1. d. Trip Sidney2-LNX3 (659426) to Sidney (659133) 345kV line circuit 1

	Cont. Name	Description
46	FLT46-SB	**Stegall 345 kV Stuck Breaker Scenario 1** a. Apply single phase fault at the Stegall (659135) 345kV bus. b. Wait 16 cycles and remove fault. c. Trip Stegall (659135) to Laramie (659131) 345kV line circuit 1. d. Trip Stegall (659135) to Sidney (659133) 345kV line circuit 1
47	FLT47-SB	**Keystone 345 kV Stuck Breaker 3310** a. Apply single phase fault at the Keystone (640252) 345kV bus on the Keystone to Sidney (659133) ckt1 345kV line. b. Run 16 cycles, remove fault. c. Trip line from Keystone (640252) to Sidney (659133) 345kV. d. Trip line from Keystone (640252) to Gentleman (640183) 345kV.
48	FLT48-SB	**Keystone 345 kV Stuck Breaker 3312** a. Apply single phase fault at the Keystone (640252) 345kV bus on the Keystone to Sidney (659133) ckt1 345kV line. b. Run 16 cycles, remove fault. c. Trip line from Keystone (640252) to Sidney (659133) 345kV. d. Trip line from Keystone (640252) to Gentleman (640183) 345kV.
49	FLT49-SB	**Keystone 345 kV Stuck Breaker 3304** a. Apply single phase fault at the Keystone (640252) 345kV bus on the Keystone to Gentleman (640183) ckt1 345kV line. b. Run 16 cycles, remove fault. c. Trip line from Keystone (640252) to Gentleman (640183) 345kV. d. Disconnect three winding transformer at bus 640252/640253/640254.
50	FLT50-PO	**Prior outage on the Sidney (659134) – Sidney Xfmr (659210) 230 kV line circuit 1** 3 phase fault on the Sidney (659133) to Stegall (659135) 345kV line circuit 1, near Sydney. a. Apply fault at the Sidney 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 16 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
51	FLT51-PO	**Prior outage on the Sidney (659134) – Sidney Xfmr (659210) 230 kV line circuit 1** 3 phase fault on the Sidney (659133) to Sidney2-LNX (659426) 345kV line circuit 1, near Sydney. a. Apply fault at the Sidney 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 16 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
52	FLT52-3PH	3 phase fault on the G16-050-Tap (560082) to Axtell (640065) 345kV line circuit 1, near G16-050-Tap. a. Apply fault at the G16-050-Tap 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
53	FLT53-3PH	3 phase fault on the G16-050-Tap (560082) to Post Rock (530583) 345kV line circuit 1, near G16-050-Tap. a. Apply fault at the G16-050-Tap 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
54	FLT54-3PH	3 phase fault on the Axtell (640065) to Sweetwater (640374) 345kV line circuit 1, near Axtell. a. Apply fault at the Axtell 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.

	Cont. Name	Description
55	FLT55-3PH	3 phase fault on the Axtell (640065) to Pauline (640312) 345kV line circuit 1, near Axtell. a. Apply fault at the Axtell 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
56	FLT56-3PH	3 phase fault on the Axtell 345/115/13.8kV (640065/640066/640067) Transformer, near Axtell. a. Apply fault at the Axtell 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
57	FLT57-3PH	3 phase fault on the Post Rock (530583) to G13-010-Tap (562334) 345kV line circuit 1, near Post Rock. a. Apply fault at the Post Rock 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
58	FLT58-3PH	3 phase fault on the Post Rock 345/230/13.8kV (530583530584/530673) Transformer, near Post Rock. a. Apply fault at the Post Rock 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
59	FLT59-SB	**Axtell 345 kV Stuck Breaker Scenario 1** a. Apply fault at the Axtell 345kV bus. b. Clear fault after 16 cycles and trip the following elements c. Axtell (640065) – G16-050-Tap (560082) 345kV d. Axtell (640065) – Pauline (640312) 345kV
60	FLT60-SB	**Axtell 345 kV Stuck Breaker Scenario 2** a. Apply fault at the Axtell 345kV bus. b. Clear fault after 16 cycles and trip the following elements c. Axtell (640065) – G16-050-Tap (560082) 345kV d. Axtell (640065) – Sweetwater (640374) 345kV
61	FLT61-SB	**Axtell 345 kV Stuck Breaker Scenario 3** a. Apply fault at the Axtell 345kV bus. b. Clear fault after 16 cycles and trip the following elements c. Axtell (640065) – Pauline (640312) 345kV d. Axtell (640065) – Sweetwater (640374) 345kV
62	FLT62-SB	**Post Rock 345 kV Stuck Breaker Scenario 1** a. Apply fault at the Post Rock 345kV bus. b. Clear fault after 16 cycles and trip the following elements c. Post Rock (530583) – G16-050-Tap (560082) 345kV d. Post Rock (530583) – G13-010-Tap (562334) 345kV
63	FLT63-SB	**Post Rock 345 kV Stuck Breaker Scenario 2** a. Apply fault at the Post Rock 345kV bus. b. Clear fault after 16 cycles and trip the following elements c. Post Rock (530583) – G16-050-Tap (560082) 345kV d. Post Rock 345/230/13.8kV (530583/530584/530673) Transformer
64	FLT64-SB	**Post Rock 345 kV Stuck Breaker Scenario 3** a. Apply fault at the Post Rock 345kV bus. b. Clear fault after 16 cycles and trip the following elements c. Post Rock (530583) – G13-010-Tap (562334) 345kV d. Post Rock 345/230/13.8kV (530583/530584/530673) Transformer

	Cont. Name	Description
65	FLT65-PO	**Prior Outage of G16-050-Tap 345 kV (560082) to Axtell 345 kV (640065) CKT 1;** 3 phase fault on Post Rock 345kV (530583) to G13-010-Tap 345kV (562334), near Post Rock. a. Apply fault at the Post Rock 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
66	FLT66-PO	**Prior Outage of G16-050-Tap 345 kV (560082) to Axtell 345 kV (640065) CKT 1;** 3 phase fault on Post Rock 345/230/13.8kV (530583/530584/530673) Transformer, near Post Rock. a. Apply fault at the Post Rock 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
67	FLT67-PO	**Prior Outage of G16-050-Tap 345 kV (560082) to Post Rock 345 kV (530583) CKT 1;** 3 phase fault on Axtell 345kV (640065) to Sweetwater 345kV (640374), near Axtell. a. Apply fault at the Axtell 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
68	FLT68-PO	**Prior Outage of G16-050-Tap 345 kV (560082) to Post Rock 345 kV (530583) CKT 1;** 3 phase fault on Axtell 345kV (640065) to Pauline 345kV (640312), near Axtell. a. Apply fault at the Axtell 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
69	FLT69-PO	**Prior Outage of G16-050-Tap 345 kV (560082) to Post Rock 345 kV (530583) CKT 1;** 3 phase fault on Axtell 345/115/13.8kV (640065/640066/640067) Transformer, near Axtell. a. Apply fault at the Axtell 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line.
95	FLT95-3PH	3 phase fault on the Grand Prairie (652532) to GRPRAR1-LNX3 (652832) 345kV line circuit 1, near Grand Prairie. a. Apply fault at the Grand Prairie 345kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
96	FLT96-3PH	3 phase fault on the Grand Prairie (652532) to GRPRAR2-LNX3 (652833) 345kV line circuit 1, near Grand Prairie. a. Apply fault at the Grand Prairie 345kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
97	FLT97-3PH	3 phase fault on the Holt County (640510) to Grand Island (652871) 345kV line circuit 1, near Holt County. a. Apply fault at the Holt County 345kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
98	FLT98-3PH (25SP)	3 phase fault on the Holt County (640510) to Thedford (640500) 345kV line circuit 1, near Holt County. a. Apply fault at the Holt County 345kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
99	FLT99-3PH	3 phase fault on the Ft Thompson (652506) to FTTHOM1-LNX3 (652806) 345kV line circuit 1, near Ft Thompson. a. Apply fault at the Ft Thompson 345kV bus. b. Clear fault after 6 cycles by tripping the faulted line.

	Cont. Name	Description
100	FLT100-3PH	3 phase fault on the Ft Thompson 345/230/14.8kV (652506/652507/652273) transformer, near Ft Thompson. a. Apply fault at the Ft Thompson 345kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
101	FLT101-SB	**Grand Prairie 345 kV Stuck Breaker Scenario 1** a. Apply fault at the GRPRAR1-LNX3 345kV bus. b. Clear fault after 16 cycles and trip the following elements c. GRPRAR1-LNX3 (652832) – Grand Prairie (652532) 345kV d. GRPRAR1-LNX3 (652832) – Holt County (640510) 345kV
102	FLT102-SB	**Grand Prairie 345 kV Stuck Breaker Scenario 2** a. Apply fault at the GRPRAR2-LNX3 345kV bus. b. Clear fault after 16 cycles and trip the following elements c. GRPRAR2-LNX3 (652833) – Grand Prairie (652532) 345kV d. GRPRAR2-LNX3 (652833) – FTTHOM2-LNX3 (652807) 345kV
103	FLT103-PO	**Prior Outage of Grand Prairie 345 kV (652532) to GRPRAR1-LNX3 345 kV (652832) CKT 1;** 3 phase fault on the Ft Thompson (652506) to FTTHOM1-LNX3 (652806) 345kV line circuit 1, near Ft Thompson. a. Apply fault at the Ft Thompson 345kV bus. b. Clear fault after 6.5 cycles by tripping the faulted line.
104	FLT104-PO	**Prior Outage of Grand Prairie 345 kV (652532) to GRPRAR1-LNX3 345 kV (652832) CKT 1;** 3 phase fault on the Ft Thompson 345/230/14.8kV (652506/652507/652273) transformer, near Ft Thompson. a. Apply fault at the Ft Thompson 345kV bus. b. Clear fault after 6.5 cycles by tripping the faulted line.
105	FLT105-PO	**Prior Outage of Grand Prairie 345 kV (652532) to GRPRAR2-LNX3 345 kV (652833) CKT 1;** 3 phase fault on the Holt County (640510) to Grand Island (652871) 345kV line circuit 1, near Holt County. a. Apply fault at the Holt County 345kV bus. b. Clear fault after 6.5 cycles by tripping the faulted line.
106	FLT106-PO (25SP)	**Prior Outage of Grand Prairie 345 kV (652532) to GRPRAR2-LNX3 345 kV (652833) CKT 1;** 3 phase fault on the Holt County (640510) to Thedford (640500) 345kV line circuit 1, near Holt County. a. Apply fault at the Holt County 345kV bus. b. Clear fault after 6.5 cycles by tripping the faulted line.

SECTION 3: STABILITY ANALYSIS

The objective of the Stability Analysis was to determine the impacts of the generator interconnections on the stability and voltage recovery on the SPP transmission system. If problems with stability or voltage recovery were identified, the need for reactive compensation or system upgrades was investigated.

3.1 Approach

SPP provided MEPPI with the following three power flow cases:

- MDWG15-16WP_DIS16011_G09
- MDWG15-17SP_DIS16011_G09
- MDWG15-25SP_DIS16011_G09

Each case was examined prior to the Stability Analysis to ensure the case contained the proposed study projects and any previously queued projects listed in Tables 2-1 and 2-2 respectively. There was no suspect power flow data in the study area. The dynamic datasets were also verified and stable initial system conditions (i.e., “flat lines”) were achieved. Three-phase and single phase-to-ground faults listed in Table 2-3 were examined. Single-phase fault impedances were calculated for each season to result in a voltage of approximately 60% of the pre-fault voltage. Refer to Table 3-1 for a list of the calculated single-phase fault impedances. Refer to Tables 3-2 through 3-11 for the calculated single-phase fault impedances for the Stand Alone scenarios.

Table 3-1
Calculated Single-Phase Fault Impedances for Cluster Scenario

[1]Ref. No.	Cont. Name	Single-Phase Fault Impedance (MVA)		
		2016 Winter	2017 Summer	2025 Summer
1	FLT21-SB	-4601.6	-4601.6	-4601.6
2	FLT22-SB	-4601.6	-4601.6	-4601.6
3	FLT23-SB	-4601.6	-4601.6	-4601.6
4	FLT43-SB	-1312.5	-1312.5	-1312.5
5	FLT44-SB	-1312.5	-1312.5	-1312.5
6	FLT45-SB	-2000.0	-1812.5	-1812.5
7	FLT46-SB	-1750.0	-1750.0	-1750.0
8	FLT47-SB	-3011.7	-3011.7	-3156.3
10	FLT49-SB	-3011.7	-3011.7	-3156.3
11	FLT59-SB	-3445.3	-3445.3	-3445.3
12	FLT60-SB	-3445.3	-3445.3	-3445.3
13	FLT61-SB	-3445.3	-3445.3	-3445.3
14	FLT62-SB	-3445.3	-3445.3	-3445.3
15	FLT63-SB	-3445.3	-3445.3	-3445.3
16	FLT64-SB	-3445.3	-3445.3	-3445.3
17	FLT101-SB	-2101.6	-2101.6	-2406.3
18	FLT102-SB	-2101.6	-2101.6	-2406.3

(1) Refer to Table 2-3 for a description of the contingency scenario

Bus voltages, machine rotor angles, and previously queued generation in the study area were monitored in addition to bus voltages and machine rotor angles in the following areas:

- 640 NPPD
- 645 OPPD
- 650 LES
- 652 WAPA
- 600 XEL
- 608 MP
- 613 SMMPA
- 615 GRE
- 620 OTP
- 661 MDU

Requested and previously queued generation outside the above study area was also monitored.

The results of the analysis determined if reactive compensation or system upgrades were required to obtain acceptable system performance. If additional reactive compensation was

required, the size, type, and location were determined. The proposed reactive reinforcements would ensure the wind or solar farm meets FERC Order 661A low voltage requirements and return the wind or solar farm to its pre-disturbance operating voltage. If the results indicated the need for fast responding reactive support, dynamic support such as an SVC or STATCOM was investigated. If tripping of the prior queued projects was observed during the stability analysis (for under/over voltage or under/over frequency) the simulations were re-ran with the prior queued project's voltage and frequency tripping disabled.

3.2 Cluster Scenario Stability Analysis Results

The Stability Analysis determined there were multiple contingencies that resulted in system/voltage instability, generation tripping offline, and poor post-fault voltage recovery when all generation interconnection requests were at 100% output.

Refer to Table 3-2 for a summary of the Stability Analysis results for the contingencies listed in Table 2-3. Table 3-2 is a summary of the stability results for the 2016 Winter Peak, 2017 Summer Peak, and 2025 Summer Peak conditions and states whether the system remained stable or generation tripped offline, if acceptable voltage recovery was observed after the fault was cleared, and if the voltage recovered to above 0.9 p.u. and below 1.1 p.u. post fault steady-state conditions. Voltage recovery criteria includes ensuring that the transient voltage recovery is between 0.7 p.u. within 2.5 seconds after the fault is cleared and 1.2 p.u. at any point after the fault is cleared and ending in a steady-state voltage (for N-1 contingencies) at the pre-contingent level or at least above 0.9 p.u. and below 1.1. p.u.

Refer to Appendix B, Appendix C, and Appendix D for a complete set of plots for all contingencies for 2016 Winter Peak, 2017 Summer Peak, and 2025 Summer Peak conditions, respectively.

Table 3-2
Stability Analysis Summary of Results for 2016 Winter, 2017 Summer, and 2025 Summer Peak Conditions

[1]Ref. No.	Cont. Name	2016 Winter Peak				2017 Summer Peak				2025 Summer Peak			
		Voltage Recovery		Post Fault Steady-State Voltage	System Stability	Voltage Recovery		Post Fault Steady-State Voltage	System Stability	Voltage Recovery		Post Fault Steady-State Voltage	System Stability
		Less than 0.70 p.u.	Greater than 1.2 p.u.			Less than 0.70 p.u.	Greater than 1.2 p.u.			Less than 0.70 p.u.	Greater than 1.2 p.u.		
1	FLT01-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
2	FLT02-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
3	FLT03-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
4	FLT04-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
5	FLT05-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
6	FLT06-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
7	FLT07-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
8	FLT08-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
9	FLT09-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
10	FLT10-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
11	FLT11-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
12	FLT12-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
13	FLT13-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
14	FLT14-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
15	FLT15-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
16	FLT16-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
17	FLT17-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
18	FLT18-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
19	FLT19-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
20	FLT20-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
21	FLT21-1PH_SB	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
22	FLT22-1PH_SB	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
23	FLT23-1PH_SB	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
24	FLT24-3PH-PO	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
25	FLT25-3PH-PO	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
26	FLT26-3PH-PO	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
27	FLT27-3PH-PO	No	Yes	V > 1.1 p.u.	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
28	FLT28-3PH-PO	No	Yes	V > 1.1 p.u.	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
29	FLT29-3PH-PO	No	Yes	V > 1.1 p.u.	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
30	FLT30-3PH-PO	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
31	FLT31-3PH-PO	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
32	FLT32-3PH-PO	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
33	FLT33-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
34	FLT35-3PH	Yes	Yes	Compliant	Stable	Yes	Yes	Compliant	Stable	No	No	Compliant	Stable
35	FLT36-3PH	No	No	Compliant	Stable	Yes	Yes	Non-compliant	Unstable	Yes	Yes	Non-compliant	Unstable
36	FLT37-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	Yes	No	Compliant	Stable
37	FLT38-3PH	No	No	Compliant	Stable	Yes	No	Compliant	Stable	Yes	No	Compliant	Stable
38	FLT39-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
39	FLT40-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
40	FLT41-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
41	FLT42-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
42	FLT43-3PH_SB	No	Yes	V > 1.1 p.u.	Unstable	Yes	Yes	Non-compliant	Unstable	Yes	Yes	Non-compliant	Unstable
43	FLT44-3PH_SB	No	Yes	V > 1.1 p.u.	Unstable	No	No	Compliant	Stable	No	No	Compliant	Stable
44	FLT45-3PH_SB	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
45	FLT46-3PH_SB	No	No	Compliant	Stable	No	No	V < 0.9 p.u.	Stable	No	No	V < 0.9 p.u.	Stable
46	FLT47-3PH_SB	No	No	V < 0.9 p.u.	Unstable	No	No	V < 0.9 p.u.	Stable	No	No	V < 0.9 p.u.	Stable
47	FLT48-3PH_SB	No	No	V < 0.9 p.u.	Unstable	No	No	V < 0.9 p.u.	Stable	No	No	V < 0.9 p.u.	Stable
48	FLT49-3PH_SB	No	No	Compliant	Stable	No	No	V < 0.9 p.u.	Stable	No	No	V < 0.9 p.u.	Stable
49	FLT50-3PH_SB	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
50	FLT51-3PH_SB	No	Yes	Compliant	Stable	Yes	Yes	Non-compliant	Unstable	Yes	Yes	Non-compliant	Unstable
51	FLT52-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
52	FLT53-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
53	FLT54-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
54	FLT55-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
55	FLT56-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
56	FLT57-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
57	FLT58-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
58	FLT59-3PH_SB	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
59	FLT60-1PH_SB	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
60	FLT61-1PH_SB	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable

(1) Refer to Table 2-3 for a description of the contingency scenario

Table 3-2 (Continued)
Cluster Scenario: Stability Analysis Summary of Results for 2016 Winter, 2017 Summer, and 2025 Summer Peak Conditions

[1]Ref. No.	Cont. Name	2016 Winter Peak				2017 Summer Peak				2025 Summer Peak			
		Voltage Recovery		Post Fault Steady-State Voltage	System Stability	Voltage Recovery		Post Fault Steady-State Voltage	System Stability	Voltage Recovery		Post Fault Steady-State Voltage	System Stability
		Less than 0.70 p.u.	Greater than 1.2 p.u.			Less than 0.70 p.u.	Greater than 1.2 p.u.			Less than 0.70 p.u.	Greater than 1.2 p.u.		
61	FLT62-1PH_SB	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
62	FLT63-1PH_SB	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
63	FLT64-1PH_SB	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
64	FLT65-3PH-PO	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
65	FLT66-3PH-PO	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
66	FLT67-3PH-PO	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
67	FLT68-3PH-PO	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
68	FLT69-3PH-PO	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
69	FLT95-3PH	No	No	V < 0.9 p.u.	Unstable	No	No	V < 0.9 p.u.	Unstable	No	No	V < 0.9 p.u.	Unstable
70	FLT96-3PH	No	No	V < 0.9 p.u.	Unstable	No	No	Compliant	Unstable	No	No	Compliant	Stable
71	FLT97-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
72	FLT98-3PH									No	No	Compliant	Stable
73	FLT99-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
74	FLT100-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
75	FLT101-1PH_SB	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
76	FLT102-1PH_SB	No	No	Compliant	Unstable	No	No	Compliant	Stable	No	No	Compliant	Stable
77	FLT103-3PH-PO	No	No	Compliant	Unstable	No	No	Compliant	Unstable	No	No	Compliant	Unstable
78	FLT104-3PH-PO	No	No	Compliant	Unstable	No	No	Compliant	Stable	No	No	Compliant	Unstable
79	FLT105-3PH-PO	Yes	Yes	Non-compliant	Unstable	Yes	Yes	Non-compliant	Unstable	No	No	V < 0.9 p.u.	Unstable
80	FLT106-3PH-PO									No	No	Compliant	Unstable

(1) Refer to Table 2-3 for a description of the contingency scenario

To mitigate the system/voltage instability and low post-fault steady-state voltages, the following upgrades were provided by SPP and implemented in all seasons:

- Keystone to Banner County (G16-034 Tap) 345 kV circuit #1
- SPP R Plan (16WP and 17SP only)
  - Cherry County/Thedford 345/115/13.8 kV transformer
  - Gentleman to Cherry County 345 kV circuit #1
  - Holt County to Cherry County 345 kV circuit #1
- Gentleman to Keystone 345 kV circuit #2

Note that after the above upgrades were implemented for the following faults, the post-fault steady-state voltage violations are not a concern because the bus in violation is at the end of a radial line segment and not serving load:

- FLT27-PO: Prior outage of Hoskins to Antelope 345 kV followed by a 3PH fault resulting in the loss of Hoskins to Raun 345 kV (16WP)
- FLT28-PO: Prior outage of Hoskins to Antelope 345 kV followed by a 3PH fault resulting in the loss of Hoskins to Shell Creek 345 kV (16WP)
- FLT29-PO: Prior outage of Hoskins to Antelope 345 kV followed by a 3PH fault resulting in the loss of Hoskins 345/115/13.8 kV transformer (16WP)

Refer to Figure 3-1 for a one-line diagram of the post-fault topology near Antelope 345 kV. It can be observed that both buses are at the end of a radial segment and do not serve load, therefore, are not a cause for concern.

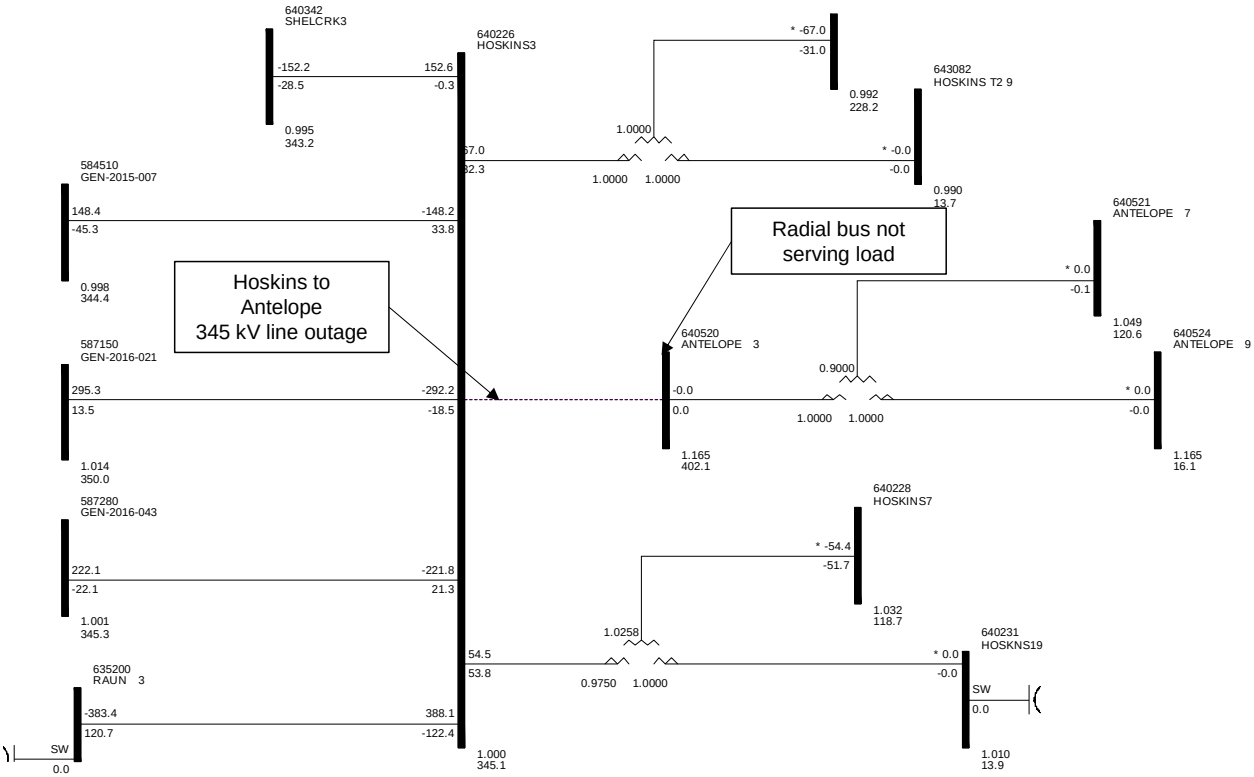

Figure 3-1: One-line diagram of post-fault steady-state topology for FLT27-PO, FLT28-PO and FLT29-PO.

It was observed that for FLT103-PO, FLT104-PO, FLT105-PO, and FLT106-PO which involved a prior outage of Grand Prairie to Grand Prairie-LNX3 345 kV line, resulted in voltage instability at Holt County 345 kV (640510). In addition to the upgrades provided by SPP, a total of 500 MW of generation curtailment is necessary to mitigate the observed violations for the prior outage contingencies. G07170718WU2 (200MW) and GEN-2015-023 units 1 and 2 (each 150 MW) should be taken out of service in order to decrease the generation around Cherry County 345 kV. Refer to Figures 3-2 and 3-3 for representative plot of the bus voltage at Holt County 345 kV kV for FLT105, a prior outage of Grand Prairie to Grand Prairie-LNX3 345 kV line followed by a 3PH fault on the Holt County to Grand Island 345 kV line for the 2017 Summer Peak and 2025 Summer Peak cases with and without mitigation.

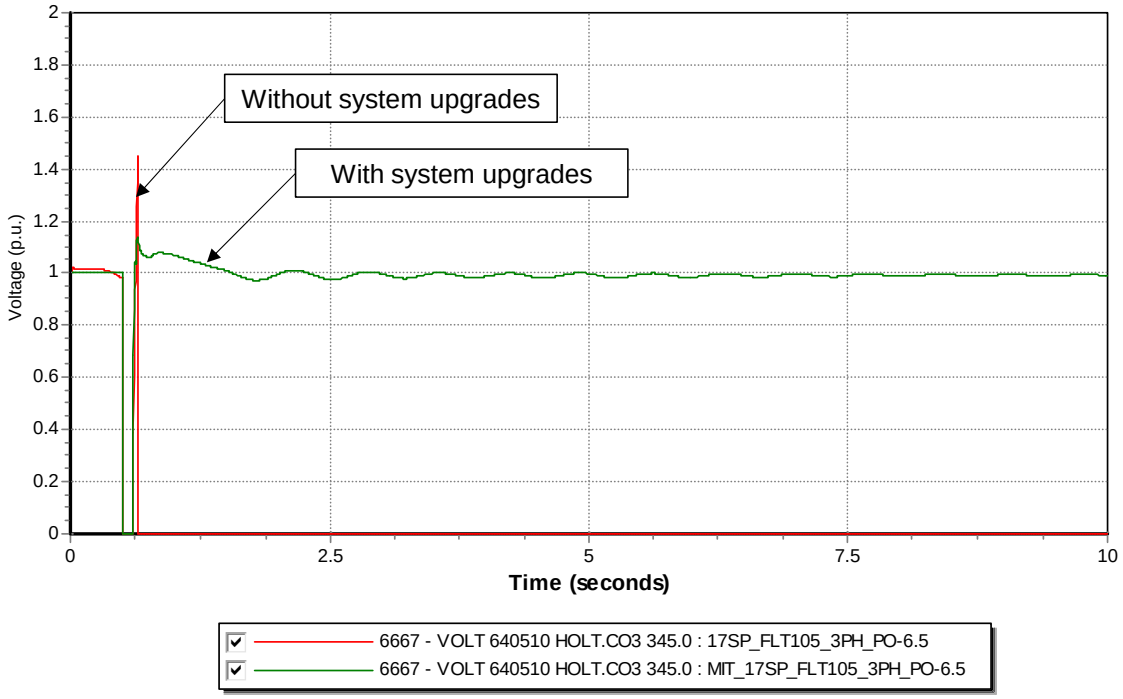

Figure 3-2. Plot of the voltage at Holt County 345 kV for FLT105-PO for 2017 Summer Peak case with and without mitigation.

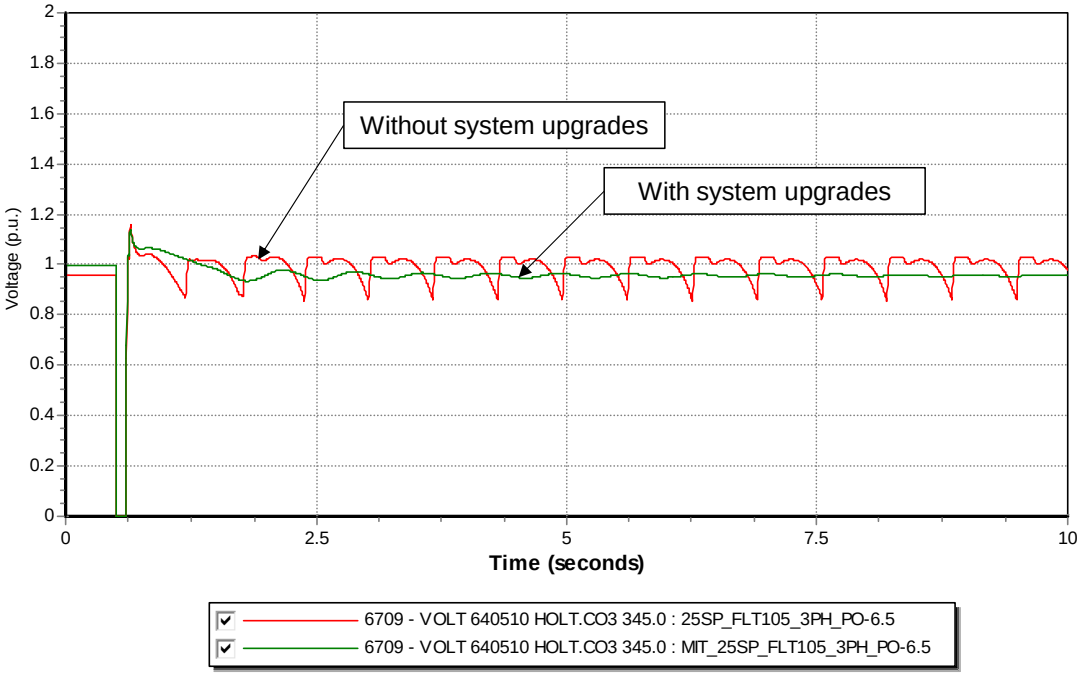

Figure 3-3. Plot of the voltage at Holt County 345 kV for FLT105-PO for 2025 Summer Peak case with and without mitigation.

After implementing the above upgrades, the contingency analysis was re-simulated for all contingencies. With the upgrades, the Stability Analysis determined that there was no generation tripping or system instability observed as a result of interconnecting all study projects at 100% output.

3.3 High GGS Sensitivity Stability Analysis Results

The High GGS Scenario Stability Analysis determined there were multiple contingencies that resulted in system/voltage instability, generation tripping offline, and poor post-fault voltage recovery when all generation interconnection requests were at 100% output.

Refer to Table 3-3 for a summary of the Stability Analysis results for the contingencies listed in Table 2-3. Table 3-3 is a summary of the stability results for the 2016 Winter Peak, 2017 Summer Peak, and 2025 Summer Peak High GGS conditions and states whether the system remained stable or generation tripped offline, if acceptable voltage recovery was observed after the fault was cleared, and if the voltage recovered to above 0.9 p.u. and below 1.1 p.u. post fault steady-state conditions. Voltage recovery criteria includes ensuring that the transient voltage recovery is between 0.7 p.u. within 2.5 seconds after the fault is cleared and 1.2 p.u. at any point after the fault is cleared and ending in a steady-state voltage (for N-1 contingencies) at the pre-contingent level or at least above 0.9 p.u. and below 1.1. p.u.

Refer to Appendix E, Appendix F, and Appendix G for a complete set of plots for all contingencies for 2016 Winter Peak, 2017 Summer Peak, and 2025 Summer Peak High GGS conditions, respectively.

Table 3-3
High GGS: Stability Analysis Summary of Results for 2016 Winter, 2017 Summer, and 2025 Summer Peak Conditions

[1]Ref. No.	Cont. Name	2016 Winter Peak				2017 Summer Peak				2025 Summer Peak			
		Voltage Recovery		Post Fault Steady-State Voltage	System Stability	Voltage Recovery		Post Fault Steady-State Voltage	System Stability	Voltage Recovery		Post Fault Steady-State Voltage	System Stability
		Less than 0.70 p.u.	Greater than 1.2 p.u.			Less than 0.70 p.u.	Greater than 1.2 p.u.			Less than 0.70 p.u.	Greater than 1.2 p.u.		
1	FLT01-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
2	FLT02-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
3	FLT03-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
4	FLT04-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
5	FLT05-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
6	FLT06-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
7	FLT07-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
8	FLT08-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
9	FLT09-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
10	FLT10-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
11	FLT11-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
12	FLT12-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
13	FLT13-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
14	FLT14-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
15	FLT15-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
16	FLT16-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
17	FLT17-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
18	FLT18-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
19	FLT19-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
20	FLT20-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
21	FLT21-1PH_SB	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
22	FLT22-1PH_SB	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
23	FLT23-1PH_SB	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
24	FLT24-3PH-PO	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
25	FLT25-3PH-PO	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
26	FLT26-3PH-PO	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
27	FLT27-3PH-PO	No	Yes	V > 1.1 p.u.	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
28	FLT28-3PH-PO	No	Yes	V > 1.1 p.u.	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
29	FLT29-3PH-PO	No	Yes	V > 1.1 p.u.	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
30	FLT30-3PH-PO	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
31	FLT31-3PH-PO	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
32	FLT32-3PH-PO	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
33	FLT33-3PH	Yes	No	V < 0.9 p.u.	Stable	No	No	V < 0.9 p.u.	Stable	No	No	V < 0.9 p.u.	Stable
34	FLT35-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
35	FLT36-3PH	Yes	Yes	Non-compliant	Unstable	Yes	Yes	Non-compliant	Unstable	Yes	Yes	Non-compliant	Unstable
36	FLT37-3PH	Yes	Yes	Non-compliant	Unstable	Yes	Yes	Non-compliant	Unstable	Yes	Yes	Non-compliant	Unstable
37	FLT38-3PH	Yes	Yes	Non-compliant	Unstable	Yes	Yes	Non-compliant	Unstable	Yes	Yes	Non-compliant	Unstable
38	FLT39-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
39	FLT40-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
40	FLT41-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
41	FLT42-3PH	No	No	V > 1.1 p.u.	Stable	No	No	V > 1.1 p.u.	Stable	No	No	V > 1.1 p.u.	Stable
42	FLT43-3PH_SB	No	No	Compliant	Stable	Yes	Yes	Non-compliant	Unstable	No	No	Compliant	Stable
43	FLT44-3PH_SB	No	Yes	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
44	FLT45-3PH_SB	No	No	V < 0.9 p.u.	Stable	No	No	V < 0.9 p.u.	Stable	No	No	V < 0.9 p.u.	Stable
45	FLT46-3PH_SB	No	Yes	Compliant	Stable	No	No	V < 0.9 p.u.	Stable	No	No	V < 0.9 p.u.	Stable
46	FLT47-3PH_SB	Yes	Yes	Non-compliant	Unstable	No	No	V < 0.9 p.u.	Stable	No	No	V < 0.9 p.u.	Stable
47	FLT48-3PH_SB	Yes	Yes	Non-compliant	Unstable	No	No	V < 0.9 p.u.	Stable	No	No	V < 0.9 p.u.	Stable
48	FLT49-3PH_SB	Yes	No	V < 0.9 p.u.	Unstable	No	No	V < 0.9 p.u.	Stable	No	No	V < 0.9 p.u.	Stable
49	FLT50-3PH_SB	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
50	FLT51-3PH_SB	Yes	Yes	Non-compliant	Unstable	Yes	Yes	Non-compliant	Unstable	Yes	Yes	Non-compliant	Unstable
51	FLT52-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
52	FLT53-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
53	FLT54-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
54	FLT55-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
55	FLT56-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
56	FLT57-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
57	FLT58-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
58	FLT59-3PH_SB	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
59	FLT60-1PH_SB	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
60	FLT61-1PH_SB	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable

(1) Refer to Table 2-3 for a description of the contingency scenario

Table 3-3 (Continued)
High GGS: Stability Analysis Summary of Results for 2016 Winter, 2017 Summer, and 2025 Summer Peak Conditions

[1]Ref. No.	Cont. Name	2016 Winter Peak				2017 Summer Peak				2025 Summer Peak			
		Voltage Recovery		Post Fault Steady-State Voltage	System Stability	Voltage Recovery		Post Fault Steady-State Voltage	System Stability	Voltage Recovery		Post Fault Steady-State Voltage	System Stability
		Less than 0.70 p.u.	Greater than 1.2 p.u.			Less than 0.70 p.u.	Greater than 1.2 p.u.			Less than 0.70 p.u.	Greater than 1.2 p.u.		
61	FLT62-1PH_SB	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
62	FLT63-1PH_SB	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
63	FLT64-1PH_SB	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
64	FLT65-3PH-PO	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
65	FLT66-3PH-PO	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
66	FLT67-3PH-PO	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	V < 0.9 p.u.	Stable
67	FLT68-3PH-PO	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	V < 0.9 p.u.	Stable
68	FLT69-3PH-PO	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
69	FLT95-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
70	FLT96-3PH	No	No	Compliant	Stable	No	No	Compliant	Unstable	No	No	Compliant	Stable
71	FLT97-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
72	FLT98-3PH									No	No	Compliant	Stable
73	FLT99-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
74	FLT100-3PH	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
75	FLT101-1PH_SB	No	No	Compliant	Stable	No	No	Compliant	Stable	No	No	Compliant	Stable
76	FLT102-1PH_SB	No	No	Compliant	Stable	No	No	Compliant	Unstable	No	No	Compliant	Stable
77	FLT103-3PH-PO	No	No	V < 0.9 p.u.	Unstable	No	No	V < 0.9 p.u.	Unstable	No	No	V < 0.9 p.u.	Unstable
78	FLT104-3PH-PO	No	No	V < 0.9 p.u.	Unstable	No	No	V < 0.9 p.u.	Unstable	No	No	V < 0.9 p.u.	Unstable
79	FLT105-3PH-PO	Yes	Yes	Non-compliant	Unstable	Yes	Yes	Non-compliant	Unstable	No	No	V < 0.9 p.u.	Unstable
80	FLT106-3PH-PO									No	No	V < 0.9 p.u.	Unstable

(1) Refer to Table 2-3 for a description of the contingency scenario

To mitigate the voltage instability and low post-fault steady-state voltages, the following upgrades were provided by SPP and implemented in all seasons:

- Keystone to Banner County (G16-034 Tap) 345 kV circuit #1
- SPP R Plan (16WP and 17SP only)
  - Cherry County/Thedford 345/115/13.8 kV transformer
  - Gentleman to Cherry County 345 kV circuit #1
  - Holt County to Cherry County 345 kV circuit #1
- Gentleman to Keystone 345 kV circuit #2
- 10 Mvar capacitor bank at Atwood 115 kV (25SP only)

As observed in the 2016 Winter Peak Cluster Scenario, the post-fault steady-state voltage violations for prior outage contingencies, FLT27-PO, FLT28-PO and FLT29-PO, are not a concern because the bus in violation is at the end of a radial line segment and not serving load.

It was observed that FLT37-3PH, which is a 3PH fault resulting in the loss of the Sidney to Sidney-LNX 345 kV line, resulted in voltage instability at the Sidney 345 kV bus for all seasonal peak conditions. After implementing the upgrades provided by SPP, the observed voltage violation was mitigated. Refer to Figure 3-4 for a representative plot of the bus voltage at Sidney 345 kV for 2017 Summer Peak case with and without mitigation.

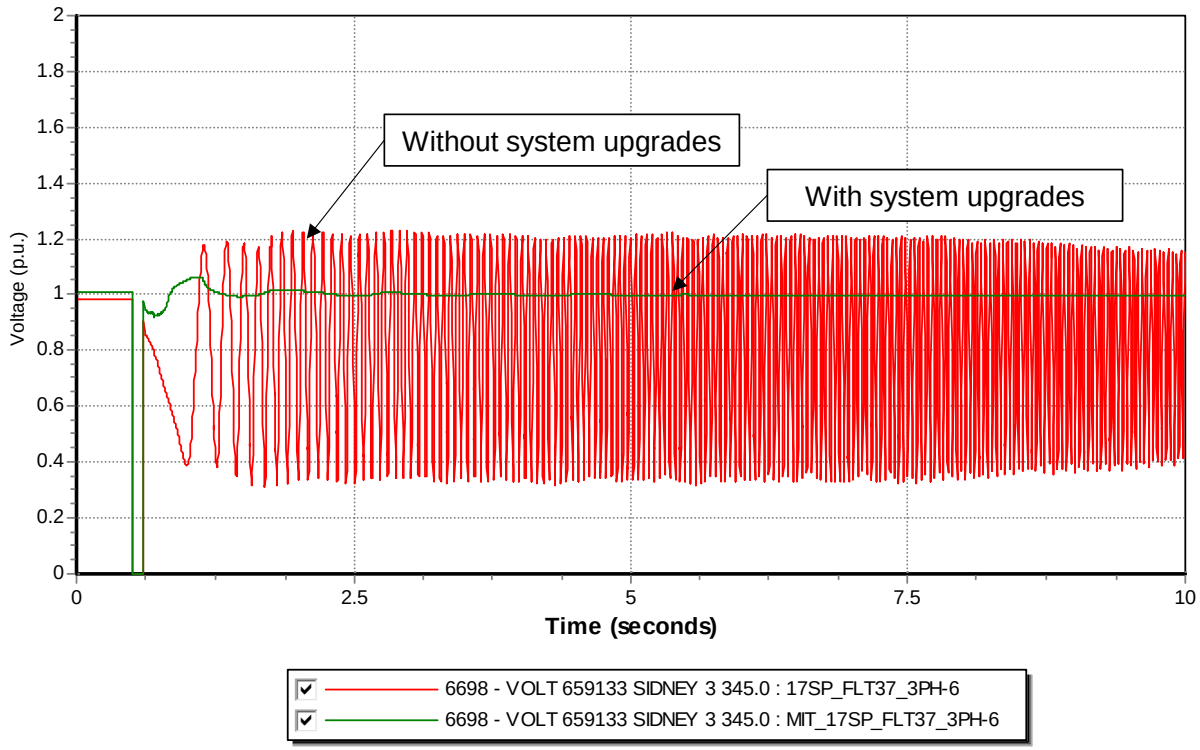

Figure 3-4. Plot of the voltage at Sidney 345 kV for FLT37-3PH for 2017 Summer Peak case with and without mitigation.

Overvoltage was observed for FLT42-3PH, which is a 3PH fault resulting in the loss of the Sidney to Sidney West 230 kV line. In addition to the upgrades provided by SPP, it was determined that in order to eliminate this violation, the shunt capacitor near Sidney 230 kV should be taken out of service. Refer to Figure 3-5 for a representative plot of the bus voltage at Sidney 230 kV for 2016 Winter Peak case with and without mitigation.

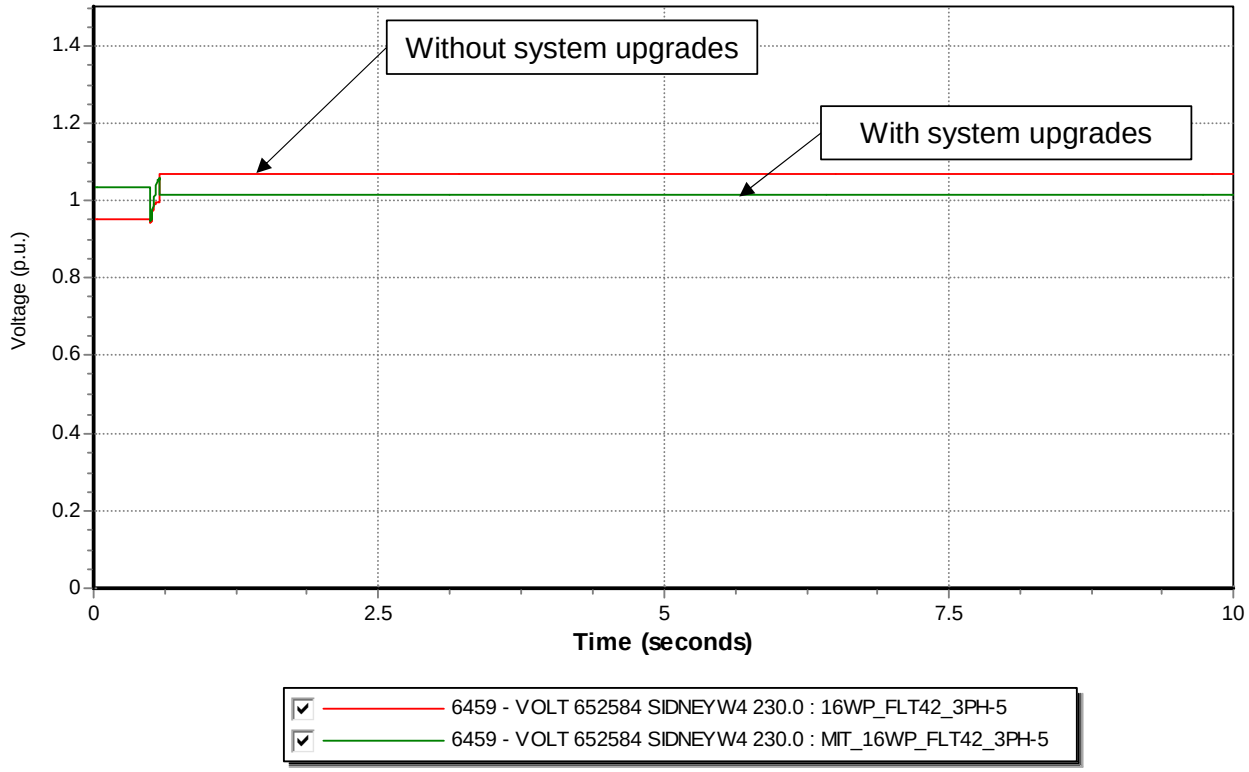

Figure 3-5. Plot of the voltage at Sidney 230 kV for FLT42-3PH for 2016 Winter Peak case with and without mitigation.

FLT67-PO and FLT68-PO for the 2025 Summer Peak case was observed to have voltages below 0.9 p.u. at the pre and post contingent level. The observed violation was mitigated by the addition of a 10 Mvar capacitor bank at Atwood 115 kV (531364) and taking the shunt reactors at Setab 345 kV (531465), Mingo 13.8 kV (531452) and Red Willow 13.8 kV (640327) out of service. FLT67-PO and FLT68-PO also required 100 MW of generation curtailment, decreasing the output of GEN-2016-050 from 250.7 MW to 150.7 MW. Refer to Figure 3-6 and 3-7 for a representative plot of the bus voltage at Red Willow 345 kV for 2025 Summer Peak case with and without mitigation.

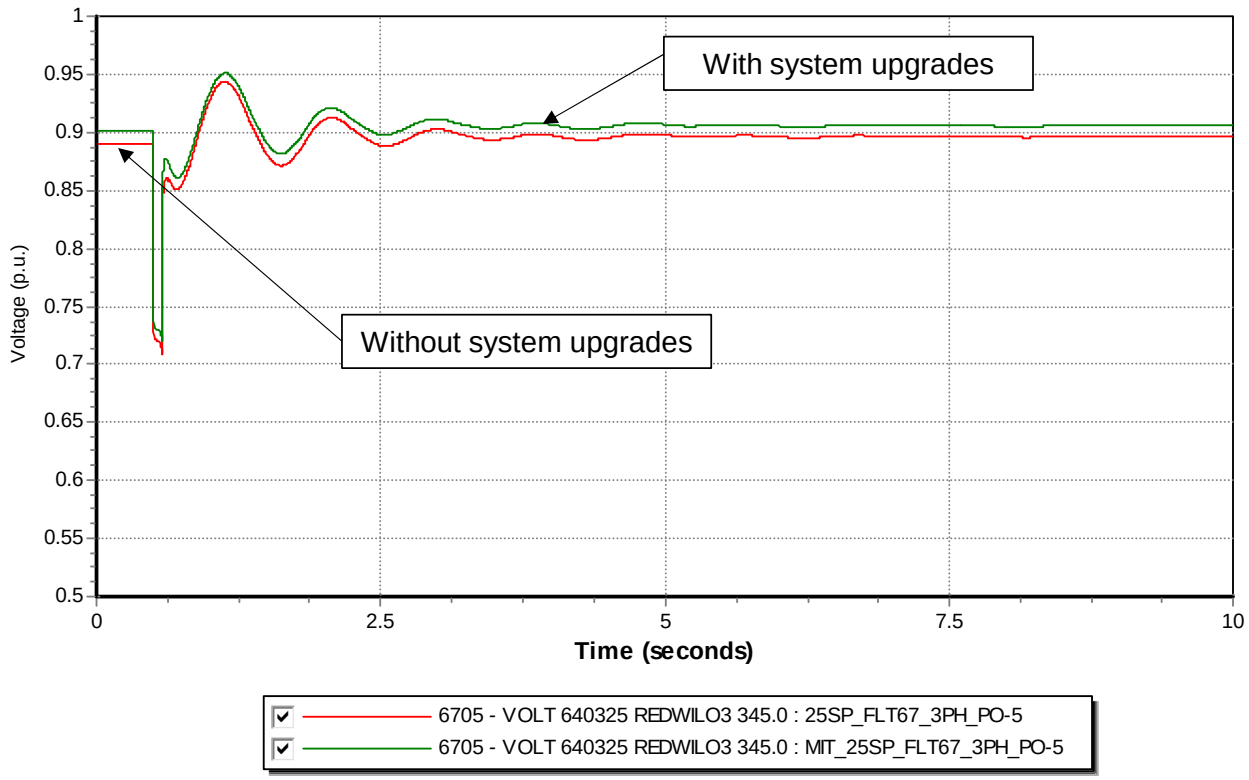

Figure 3-6. Plot of the low voltages observed for FLT67-PO for 2025 Summer Peak case.

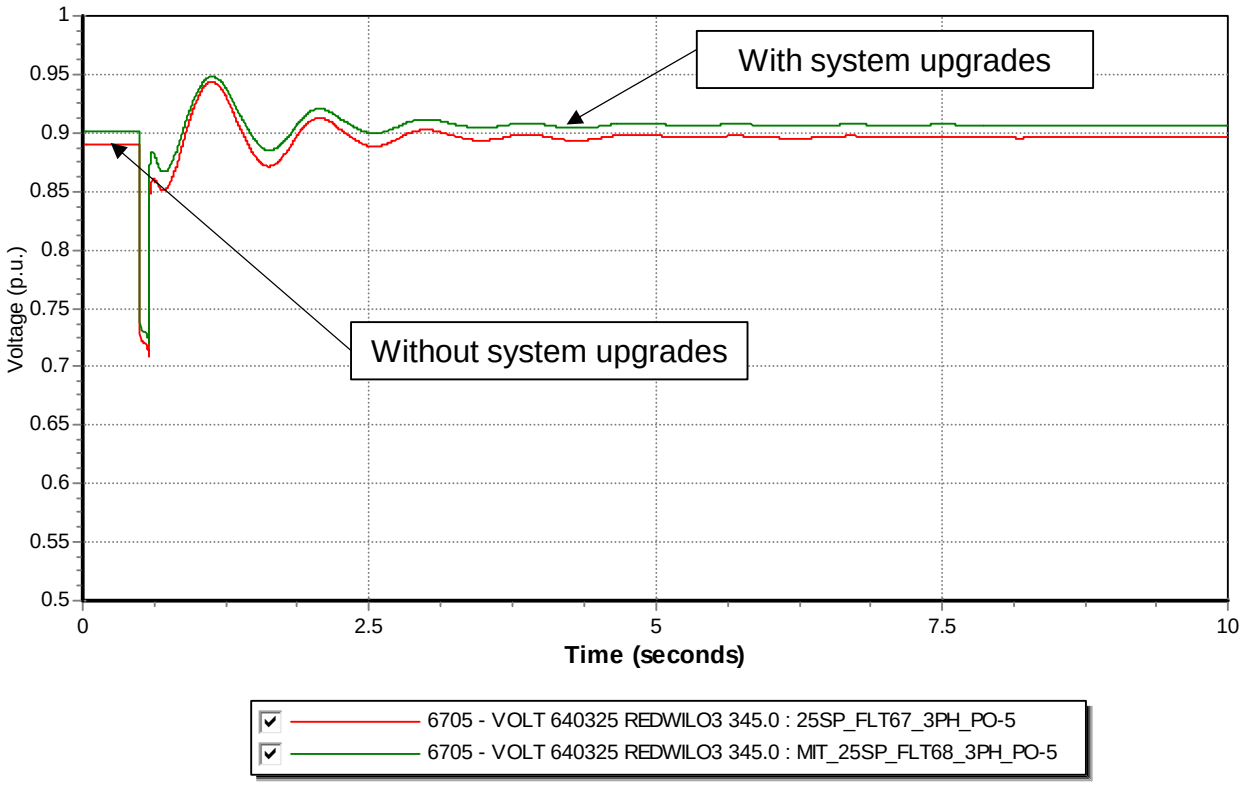

Figure 3-7. Plot of the low voltages observed for FLT68-PO for 2025 Summer Peak case.

As with the Cluster Scenario, for prior outage contingencies, FLT103-PO, FLT104-PO. FLT105-PO and FLT106-PO, a total of 500 MW of generation curtailment is required to mitigate the observed violations for the prior outage contingencies. G07170718WU2 (200MW) and GEN-2015-023 units 1 and 2 (each 150 MW) should be taken out of service in order to decrease the generation around Cherry County 345 kV. After implementing these changes, observed voltage violations were mitigated.

After implementing the above upgrades, the contingency analysis was re-simulated for all contingencies. With the upgrades, the Stability Analysis determined that there was no generation tripping or system instability observed as a result of interconnecting all study projects at 100% output.

SECTION 4: SHORT-CIRCUIT ANALYSIS

The objective of this task is to quantify the three-phase to ground fault currents for the 2017 and 2025 Summer Peak season for each interconnecting generator.

4.1 Approach

The Short-Circuit analysis will assess breaker adequacy and fault duties for the generator interconnection bus and five buses away from the point of interconnection. MEPPI will assume no outages to find maximum short-circuit currents that flow through the breaker. The Automatic Sequencing Fault Calculation (ASCC) function in PSS/E was utilized to perform this task. FLAT conditions were applied to pre-fault conditions and the following adjustments were utilized:

- All synchronous and asynchronous machine P and Q output was set to zero
- All transformer tap ratios were set to 1.0 p.u. and all phase shift angles were set to zero
- All generator reactance's were fixed to the subtransient reactance
- All line charging was set to zero
- All shunts were set to zero
- All loads were set to zero
- All pre-fault bus voltages were set to 1.0 p.u. and a phase shift angle of zero

4.2 Short-Circuit Results: 2017 Summer Peak

The maximum fault current for each bus is provided for the 2017 Summer Peak conditions. The following tables show the short circuit results for the study generators for the 2017 Summer Peak condition:

- Table 4-1: Short-circuit Analysis for GEN-2015-089
- Table 4-2: Short-circuit Analysis for GEN-2016-021 and GEN-2016-043
- Table 4-3: Short-circuit Analysis for GEN-2016-023 and GEN-2016-029
- Table 4-4: Short-circuit Analysis for GEN-2016-050
- Table 4-5: Short-circuit Analysis for GEN-2016-075

Table 4-1
Short-Circuit Analysis for Study Project GEN-2015-089

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
659120	BRDLAND3	345	4.01
652864	SIOUXCY-LNX3	345	14.57
652833	GRPRAR2-LNX3	345	6.19
652807	FTTHOM2-LNX3	345	9.51
652806	FTTHOM1-LNX3	345	9.51
652564	SIOUXCY3	345	14.57
652529	WATERTN3	345	9.46
652506	FTTHOMP3	345	9.51
645451	S3451 3	345	19.56
640342	SHELCRK3	345	9.96
640226	HOSKINS3	345	11.56
636010	LEHIGH 3	345	10.43
635400	HIGHLND 3	345	10.76
635200	RAUN 3	345	23.70
601006	SPLT RK3	345	13.41
560074	G16-017-TAP	345	6.73
659900	EAGLE 4	230	7.10
659295	SDPRAIRWND 4	230	5.69
659205	BRDLAND4	230	9.78
659122	STORLA 4	230	6.09
652821	SULLYBT-LNX3	230	6.28
652630	WATERTNCAP 4	230	13.48
652614	CARPENTER 4	230	6.81
652607	WESSINGTON 4	230	6.86
652606	LETCHER4	230	4.69
652588	CLEVELD4	230	4.75
652582	APPLEDORN 4	230	7.05
652578	PAHOJA 4	230	7.22
652567	DENISON4	230	4.49
652565	SIOUXCY4	230	19.18
652541	BIGBND24	230	11.96
652540	BIGBND14	230	12.13
652536	RASMUSN4	230	6.58
652530	WATERTN4	230	13.48
652526	UTICAJC4	230	7.88
652523	SIOUXFL4	230	12.72
652521	SULLYBT4	230	6.28
652519	OAHE 4	230	13.72
652516	LAKPLAT4	230	5.73
652514	HURON 4	230	10.77
652513	HANLON 4	230	5.99
652509	FTRANDL4	230	11.17
652507	FTTHOMP4	230	19.99
652503	BLAIR 4	230	9.05
652488	PHILTAP4	230	3.80
652486	PHILIP 4	230	3.21
652484	NUNDRWD4	230	3.53
652398	VFODNES4	230	6.97
648506	PR BRZ 4	230	4.07
640540	MEADOWGROVE4	230	5.37
640386	TWIN CH4	230	8.50
640343	SHELCRK4	230	10.46
640227	HOSKINS4	230	9.63
640200	GR ISLD4	230	16.14
640133	COLMBUS4	230	10.99
640131	COLMB.W4	230	9.44
640126	E.COL. 4	230	9.38
602004	SPLT RK4	230	12.29
583830	G14013G01431	230	4.07
580011	G10-051&1127	230	6.24
563230	GEN-2015-089	230	5.38
560347	G10-051-TAP	230	7.01
656570	WISDOM5	161	8.75
652603	EXIRA 5	161	6.74
652566	SIOUXCY5	161	20.31
652563	SPENCER5	161	8.59
652561	DENISON5	161	5.62
635260	LEMARST5	161	9.71
635226	LEEDS 5	161	15.83
635225	MORNSD 5	161	10.30
635223	PLYMOTH5	161	19.89
635201	RAUN 5	161	27.67
602005	SPLT RK5	161	8.00
952509	G12_009IS	115	6.60
660026	NAPA JCT7	115	8.79
660018	B_H WIND 7	115	3.48
660009	BTAP WP7	115	14.84
660008	MITCLNW7	115	5.50
660007	MENNOJT7	115	6.70
660006	YKNTJCT7	115	9.53
660005	TRIPP 7	115	4.17
660004	MITCHEL7	115	5.88
660003	HURONWP7	115	10.10
659292	KEYSTN PS237	115	2.61
659259	SXF CHANCLR7	115	4.51
659258	SXF HARSBRG7	115	3.69
659257	SXF SHINDLR7	115	2.99
659256	SXF 57TH ST7	115	2.89
659251	SXF CORSON 7	115	10.97
659250	SXF WBRANDN7	115	13.15
659198	LETCHR PS227	115	2.61
659123	STORLA 7	115	6.71
659121	SPIRITM7	115	6.54
652626	UTICAJC7	115	9.07
652609	LETCHER7	115	6.04
652600	ASH TAP	115	6.93
652591	HANLON 7	115	5.52
652535	REDFELD7	115	4.10
652531	WATERTN7	115	12.42
652528	WOONSKT7	115	5.33
652525	TYNDALL7	115	3.94
652524	SIOUXFL7	115	25.22
652520	OAHE 7	115	8.50
652518	MTVERN 7	115	4.39
652517	MANNING7	115	5.21
652515	HURON 7	115	15.29
652511	GAVINS 7	115	10.65
652510	FTRANDL7	115	13.23
652505	FLANDRU7	115	4.07
652502	BERSFRD7	115	3.92
652501	ARMOUR 7	115	4.26
652494	WINNER 7	115	1.88
652491	IRVSIMM7	115	6.67
652478	GREGORY7	115	2.18
652476	EAGLEBT7	115	1.99
652475	BONESTL7	115	3.59
652474	AURORA 7	115	4.39
652463	WH SWAN7	115	12.88
652397	VFODNES7	115	6.30
652031	KPS21-GY7	115	1.45
640424	S.SIOUXCITY7	115	7.29
640387	TWIN CH7	115	10.41
640349	SPENCER7	115	4.67
640305	ONEILL 7	115	4.00
640212	HARTGTN7	115	5.81
640165	EMMET 7	115	3.04
640163	EMERSON7	115	5.52
640136	COLMBUS7	115	18.42
640134	KELLY 7	115	17.14
640127	COLMB.E7	115	20.38
640113	CLRWATR7	115	5.25
640084	BLMFLD 7	115	6.25
640080	BELDEN 7	115	6.85
603274	RENNER 7	115	11.47
603265	PROSE CAP7	115	32.98
603228	SPLITRK CAP7	115	34.09
603225	FALLS 7	115	15.22
603200	ANSON 7	115	30.79
603149	ANSON4	115	33.13
603017	WSX FLS7	115	14.62
603016	SPLT RK7	115	34.60
603013	PIPESTN7	115	9.17
603012	LAWRENC7	115	28.11
603011	MINEHAH7	115	12.79
603009	GRANT 7	115	3.92
659980	K135CONCORD8	69	6.75
659971	K301HINTON 8	69	10.16
659953	K412HINTONM8	69	11.13
659946	K216LIBERTY8	69	7.44
659942	K217HAWARDE8	69	7.57
659921	J15SXCNTR8	69	6.63
659912	J6BOYER8	69	9.63
659907	J1CENTR8	69	8.18
659901	EAGLE 8	69	13.72
659281	HYDE 8	69	3.40
659196	CARPENTER 8	69	3.22
658031	DENSOUMAIN8	69	6.68
658030	DENISONWEST8	69	6.51
656267	MANNINGTAP 8	69	4.38
652583	DENISON8	69	11.36
652580	SPENCR 8	69	11.48
652574	SIOUXCY8	69	17.88
652399	VFODNES8	69	4.23
652287	RASMUSN8	69	3.23
652286	TYNDALL8	69	2.58

Table 4-1 (Cont.)
Short-Circuit Analysis for Study Project GEN-2015-089

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
652285	SULLYBT8	69	2.42
652284	HURON 8	69	3.68
652279	HANLON28	69	5.29
652278	HANLON18	69	5.29
652277	LAKPLAT8	69	4.13
652276	FTTHOMP8	69	4.43
652254	BERSFRD8	69	3.23

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
652252	MTVERNN8	69	2.99
652251	MTVERNS8	69	3.10
652249	ARMOUR 8	69	2.49
652245	CLEVELD8	69	4.25
652235	SIOUXFL8	69	3.91
652229	FLANDRU8	69	3.06
640388	TWIN CH8	69	7.80

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
640306	ONEILL 8	69	4.18
635391	IRETONT8	69	5.79
635385	HUDSON 8	69	5.98
635224	PLYMOTH8	69	21.11
605191	LAWRENC8	69	15.09

Table 4-2
Short-Circuit Analysis for Study Projects GEN-2016-021 and GEN-2016-043

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
560062	G15-088-TAP	345	10.66
584510	GEN-2015-007	345	7.61
587150	GEN-2016-021	345	4.49
587280	GEN-2016-043	345	10.41
601006	SPLT RK3	345	13.41
601029	LKFLDXL3	345	13.45
601034	NOBLES 3	345	10.40
631138	LAKEFLD3	345	14.86
631193	HUNTLEY3	345	6.21
635000	CBLUFFS3	345	29.33
635014	POTTCO 3	345	22.09
635017	ATCHSNT3	345	15.22
635200	RAUN 3	345	23.70
635368	OBRIEN 3	345	10.87
635369	KOSSUTH 3	345	6.49
635400	HIGHLND 3	345	10.76
635589	ECLIPSE3	345	8.21
635590	FALLOW 3	345	9.79
635600	GRIMES 3	345	19.42
635630	BOONVIL3	345	16.51
635635	MADISON3	345	15.24
635680	BONDRNT3	345	18.32
635700	SYCAMOR3	345	19.18
636000	WEBSTER3	345	9.58
636010	LEHIGH 3	345	10.43
640125	COLMB.E3	345	9.81
640139	COOPER 3	345	25.04
640226	HOSKINS3	345	11.56
640271	MCCOOL 3	345	10.10
640277	MOORE 3	345	20.98
640342	SHELCRK3	345	9.96
640520	ANTELOPE 3	345	6.14
645451	S3451 3	345	19.56
645454	S3454 3	345	24.30
645455	S3455 3	345	28.24
645456	S3456 3	345	30.96
645458	S3458 3	345	27.96
645459	S3459 3	345	21.88
645740	S3740 3	345	17.61
650114	NW68HOLDRG3	345	16.41
650185	WAGENER 3	345	19.70
650189	103&ROKEBY3	345	19.66
652537	WHITE 3	345	14.21
652564	SIOUXCY3	345	14.57
652864	SIOUXCY-LNX3	345	14.57
560347	G10-051-TAP	230	7.01
580011	G10-051&1127	230	6.24
640126	E.COL. 4	230	9.38
640131	COLMB.W4	230	9.44
640133	COLMBUS4	230	10.99
640200	GR ISLD4	230	16.14
640227	HOSKINS4	230	9.63
640343	SHELCRK4	230	10.46
640386	TWIN CH4	230	8.50
640540	MEADOWGROVE4	230	5.37
648506	PR BRZ 4	230	4.07
652507	FTTHOMP4	230	19.99
652509	FTRANDL4	230	11.17
652516	LAKPLAT4	230	5.73
652526	UTICAJC4	230	7.88
652536	RASMUSN4	230	6.58
652565	SIOUXCY4	230	19.18
652567	DENISON4	230	4.49
652578	PAHOJA 4	230	7.22
659900	EAGLE 4	230	7.10
631041	LAKEFLD5	161	19.33
635201	RAUN 5	161	27.67
635202	NEAL 4 5	161	19.07
635203	NEAL N 5	161	26.15
635220	INTCHG 5	161	14.97
635221	KELLOGG5	161	17.31
635223	PLYMOTH5	161	19.89
635225	MORNSD 5	161	10.30
635226	LEEDS 5	161	15.83
635228	AIRPORT 5	161	17.23
635230	LIBERTY5	161	25.44
635235	SALIX 5	161	16.37
635300	MONONA 5	161	5.39
635330	CRWFRD 5	161	4.82
635601	GRIMES 5	161	24.41
635602	142ST 5	161	21.40
635605	GRNGRTP5	161	26.32
635608	LINWELD5	161	22.06
635631	BOONVIL5	161	20.60
635701	SYCAMOR5	161	32.31
636001	WEBSTER5	161	16.06
636020	FT.DODG5	161	10.06
636025	HAYES 5	161	10.28
636050	WRIGHT 5	161	9.50
640377	TEKAMAH5	161	8.75
645100	FC1A 5	161	27.12
646206	S1206 5	161	41.67
646209	S1209 5	161	37.56
646226	S1226 5	161	22.18
646231	S1231 5	161	37.65
646237	S1237 5	161	16.86
646249	S1249 5	161	21.64
646250	S1250 5	161	33.17
646251	S1251 5	161	29.34
646252	S1252 5	161	18.70
646254	S1254 5	161	26.59
646255	S1255 5	161	40.78
646281	S1281 5	161	24.11
646297	S1297 5	161	18.01
646298	S1298 5	161	26.79
646305	S1305 5	161	25.59
646341	S1341 5	161	24.98
652561	DENISON5	161	5.62
652563	SPENCER5	161	8.59
652566	SIOUXCY5	161	20.31
656353	HOPE5	161	8.59
579444	G06-044N-HV1	115	5.69
583780	GEN-2013-032	115	10.94
584910	GEN-2015-053	115	13.08
585130	GEN-2015-076	115	3.88
603016	SPLT RK7	115	34.60
640070	BANCRFT7	115	5.23
640072	BATTLCR7	115	7.14
640078	BEEMER 7	115	4.52
640080	BELDEN 7	115	6.85
640084	BLMFLD 7	115	6.25
640113	CLRWATR7	115	5.25
640115	CO.LINE7	115	6.91
640119	COL.COG7	115	18.47
640122	COL.DRY7	115	15.84
640124	COL.SE 7	115	16.05
640127	COLMB.E7	115	20.38
640134	KELLY 7	115	17.14
640136	COLMBUS7	115	18.42
640149	CREITON7	115	4.89
640151	CRESTON7	115	6.12
640157	DAVIDCY7	115	5.42
640163	EMERSON7	115	5.52
640181	GENOA 7	115	5.06
640212	HARTGTN7	115	5.81
640228	HOSKINS7	115	17.39
640263	MADISON7	115	6.29
640278	SHELDON7	115	31.77
640293	NELIGH 7	115	10.20
640296	NORFK.N7	115	12.91
640298	NORFOLK7	115	12.21
640300	OAKLAND7	115	7.59
640305	ONEILL 7	115	4.00
640316	PAWNEEL7	115	11.39
640318	PETRSBG7	115	6.45
640336	SCHUYLR7	115	5.77
640345	SILVRCK7	115	4.67
640357	STANTON7	115	5.21
640363	STNTN.N7	115	7.06
640378	TEKAMAH7	115	8.10
640387	TWIN CH7	115	10.41
640400	W.POINT7	115	5.16
640402	WAHOO 7	115	4.80
640424	S.SIOUXCITY7	115	7.29
640444	PETERSBRG.N7	115	6.46
640521	ANTELOPE 7	115	13.27
650210	NW70FAIRFD7	115	21.12
650214	NW68HOLDRG7	115	25.21
650216	SW27&F 7	115	21.83
650285	WAGENER 7	115	31.05
650290	ROKEBY 7	115	24.77
652510	FTRANDL7	115	13.23
652511	GAVINS 7	115	10.65
659121	SPIRITM7	115	6.54
660006	YKNTJCT7	115	9.53

Table 4-2 (Cont.)
Short-Circuit Analysis for Study Projects GEN-2016-021 and GEN-2016-043

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
635204	NEAL 8	69	10.10
635222	KELLOGG8	69	17.93
635227	SBRIDGE T8	69	8.84
635236	SALIX 8	69	13.60
635301	MONONA 8	69	4.55
640073	BATTLCR8	69	4.02
640081	BELDEN 8	69	3.87
640085	BLMFLD 8	69	2.63

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
640150	CREITON8	69	3.38
640164	EMERSONG	69	3.84
640213	HARTGTN8	69	3.66
640294	NELIGH 8	69	6.05
640388	TWIN CH8	69	7.80
640425	S.SIOUXCITY8	69	4.55
647909	S909 8	69	25.90
652287	RASMUSN8	69	3.23

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
652574	SIOUXCY8	69	17.88
652583	DENISON8	69	11.36
656369	WEBSTER8	69	8.67
659901	EAGLE 8	69	13.72

Table 4-3
Short-Circuit Analysis for Study Projects GEN-2016-023 and GEN-2016-029

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
531451	MINGO 7	345	6.51
560075	G16-023-TAP	345	7.10
560090	BANNER_CO	345	6.26
587090	GEN-2016-023	345	6.06
587190	GEN-2016-029	345	6.06
640065	AXTELL 3	345	9.73
640183	GENTLMN3	345	15.82
640252	KEYSTON3	345	11.14
640325	REDWILO3	345	6.13
640374	SWEET W3	345	9.93
640500	CHERRYC3	345	5.62
640510	HOLT.CO3	345	6.88
652571	GR ISLD3	345	11.71
659131	LARAMIE3	345	7.87
659133	SIDNEY 3	345	6.64
659135	STEGALL3	345	5.19
659425	SIDNEY1-LNX3	345	6.64
659426	SIDNEY2-LNX3	345	6.64
640184	GENTLMN4	230	18.93
640286	N.PLATT4	230	12.97
640302	OGALALA4	230	7.88
640396	VICTRYH4	230	3.81
652573	STEGALL4	230	5.44
652873	STEGALL-LNX3	230	5.44
659134	SIDNEY 4	230	6.49
659170	STEGALDC	230	6.02
659206	STGXFMR4	230	5.72
659210	SIDXFMR4	230	7.02
640253	KEYSTON7	115	15.20
640255	KINGSLY7	115	9.38
640304	OGALALANPPD7	115	14.74
640326	REDWILO7	115	10.36
640338	SCOTBLF7	115	6.00
640381	THEDFRD7	115	8.85
640397	VICTRYH7	115	6.14
640530	STEGALL7	115	8.18
659800	GRANTNB7	115	6.43
659801	OGALALA7	115	14.74
659821	GERINGT7	115	5.47

Table 4-4
Short-Circuit Analysis for Study Project GEN-2016-050

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
530583	POSTROCK7	345	9.03
531451	MINGO 7	345	6.51
531469	SPERVIL7	345	15.44
531501	BUCKNER7	345	10.41
539803	IRONWOOD7	345	14.93
560002	IRONWOOD7	345	14.92
560062	G15-088-TAP	345	10.66
560081	G16-049-TAP	345	9.60
560082	G16-050-TAP	345	7.87
560090	BANNER_CO	345	6.26
562334	G13-010-TAP	345	9.25
583600	GEN-2013-010	345	9.25
585240	GEN-2015-088	345	10.27
587340	GEN-2016-049	345	8.78
587350	GEN-2016-050	345	7.21
640065	AXTELL 3	345	9.73
640139	COOPER 3	345	25.04
640183	GENTLMN3	345	15.82
640252	KEYSTON3	345	11.14
640271	MCCOOL 3	345	10.10
640277	MOORE 3	345	20.98
640312	PAULINE3	345	8.06
640325	REDWILO3	345	6.13
640374	SWEET W3	345	9.93
640500	CHERRYC3	345	5.62
640510	HOLT.CO3	345	6.88
650114	NW68HOLDRG3	345	16.41
650189	103&ROKEBY3	345	19.66
652571	GR ISLD3	345	11.71
652871	GR ISLD-LNX3	345	11.71
659425	SIDNEY1-LNX3	345	6.64
530558	KNOLL 6	230	11.60
530582	S HAYS6	230	9.01
530584	POSTROCK6	230	11.82
530592	SMOKYHL6	230	6.99
530593	SMKYP1 6	230	6.08
530599	SMKYP2 6	230	6.50
530680	HEIZER 6	230	8.32
532871	CIRCLE 6	230	8.69
532873	SUMMIT 6	230	13.17
539679	GRTBEND6	230	8.37
539695	SPEARVL6	230	13.37
575010	GEN-2009-008	230	4.64
579470	GEN-2008-092	230	8.39
640131	COLMB.W4	230	9.44
640184	GENTLMN4	230	18.93
640200	GR ISLD4	230	16.14
640214	HASTING4	230	7.18
640286	N.PLATT4	230	12.97
640302	OGALALA4	230	7.88
640330	RIVERDL4	230	7.01
530551	SALINE 3	115	5.04
530552	GORHAM 3	115	3.18
530553	S HAYS 3	115	8.87
530561	KNOLL 3	115	11.66
530581	N HAYS3	115	10.20
530605	REDLIN 3	115	3.76
530676	GMEC 3	115	11.13
530677	OGALATP3	115	2.66
530695	CHETOLAH3	115	8.97
539678	GRTBEND3	115	12.54
539759	SPRVL 3	115	12.08
560134	ROSEMONT	115	6.56
572051	GEN2008-123N	115	5.24
640066	AXTELL 7	115	14.00
640103	CANADAY7	115	13.65
640161	ELMCRK 7	115	6.00
640194	GOSPER 7	115	4.38
640201	GR ISLD7	115	21.19
640206	GUIDE R7	115	4.48
640215	HASTING7	115	18.55
640222	HILDRTH7	115	4.35
640224	HOLDREG7	115	6.32
640242	JOHN.2 7	115	12.53
640244	JOHN.LK7	115	8.75
640248	KEAR.NE7	115	9.08
640250	KEARNEY7	115	11.58
640253	KEYSTON7	115	15.20
640261	LOWELL 7	115	8.13
640272	MCCOOL 7	115	13.53
640275	MINDEN 7	115	7.23
640278	SHELDON7	115	31.77
640310	ORLEANS7	115	2.57
640313	PAULINE7	115	15.87
640321	PROSSER7	115	6.80
640326	REDWILO7	115	10.36
640331	RIVERDL7	115	11.60
640381	THEDFRD7	115	8.85
640383	TOWER 7	115	8.81
640407	WESTMIN7	115	7.96
641087	EGYCNTR7	115	17.51
641088	HASTCTY7	115	18.55
640262	LOWELL 8	69	4.04
640311	ORLEANS8	69	2.69
640314	PAULINE8	69	5.06
640448	HOLDREGE 8	69	3.71

Table 4-5
Short-Circuit Analysis for Study Project GEN-2016-075

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
560074	G16-017-TAP	345	6.73
579450	G0717WG0718W	345	5.35
584650	GEN-2015-023	345	6.35
640183	GENTLMN3	345	15.82
640252	KEYSTON3	345	11.14
640271	MCCOOL 3	345	10.10
640325	REDWILO3	345	6.13
640374	SWEET W3	345	9.93
640500	CHERRYC3	345	5.62
640510	HOLT.CO3	345	6.88
652506	FTTHOMP3	345	9.51
652532	GR PRAIRIE3	345	6.19
652571	GR ISLD3	345	11.71
652806	FTTHOM1-LNX3	345	9.51
652807	FTTHOM2-LNX3	345	9.51
652832	GRPRAR1-LNX3	345	6.19
652833	GRPRAR2-LNX3	345	6.19
652871	GR ISLD-LNX3	345	11.71
640184	GENTLMN4	230	18.93
640200	GR ISLD4	230	16.14
652507	FTTHOMP4	230	19.99
652509	FTRANDL4	230	11.17
652514	HURON 4	230	10.77
652516	LAKPLAT4	230	5.73
652519	OAHE 4	230	13.72
652540	BIGBND14	230	12.13
652541	BIGBND24	230	11.96
652606	LETCHER4	230	4.69
652607	WESSINGTON 4	230	6.86
640096	CALAMS 7	115	3.44
640359	STAPLETON 7	115	4.25
640381	THEDFRD7	115	8.85
652276	FTTHOMP8	69	4.43

4.3 Short-Circuit Results: 2025 Summer Peak

The maximum fault current for each bus is provided for the 2025 Summer Peak conditions. The following tables show the short circuit results for the study generators for the 2025 Summer Peak condition:

- Table 4-6: Short-circuit Analysis for GEN-2015-089
- Table 4-7: Short-circuit Analysis for GEN-2016-021 and GEN-2016-043
- Table 4-8: Short-circuit Analysis for GEN-2016-023 and GEN-2016-029
- Table 4-9: Short-circuit Analysis for GEN-2016-050
- Table 4-10: Short-circuit Analysis for GEN-2016-075

Table 4-6
Short-Circuit Analysis for Study Project GEN-2015-089

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
659120	BRDLAND3	345	4.01
652864	SIOUXCY-LNX3	345	14.57
652833	GRPRAR2-LNX3	345	6.19
652807	FTTHOM2-LNX3	345	9.51
652806	FTTHOM1-LNX3	345	9.51
652564	SIOUXCY3	345	14.57
652529	WATERTN3	345	9.46
652506	FTTHOMP3	345	9.51
645451	S3451 3	345	19.56
640342	SHELCRK3	345	9.96
640226	HOSKINS3	345	11.56
636010	LEHIGH 3	345	10.43
635400	HIGHLND 3	345	10.76
635200	RAUN 3	345	23.70
601006	SPLT RK3	345	13.41
560074	G16-017-TAP	345	6.73
659900	EAGLE 4	230	7.10
659295	SDPRAIRWND 4	230	5.69
659205	BRDLAND4	230	9.78
659122	STORLA 4	230	6.09
652821	SULLYBT-LNX3	230	6.28
652630	WATERTNCAP 4	230	13.48
652614	CARPENTER 4	230	6.81
652607	WESSINGTON 4	230	6.86
652606	LETCHER4	230	4.69
652588	CLEVELD4	230	4.75
652582	APPLEDORN 4	230	7.05
652578	PAHOJA 4	230	7.22
652567	DENISON4	230	4.49
652565	SIOUXCY4	230	19.18
652541	BIGBND24	230	11.96
652540	BIGBND14	230	12.13
652536	RASMUSN4	230	6.58
652530	WATERTN4	230	13.48
652526	UTICAJC4	230	7.88
652523	SIOUXFL4	230	12.72
560074	G16-017-TAP	345	6.75
601006	SPLT RK3	345	13.86
635200	RAUN 3	345	24.22
635400	HIGHLND 3	345	11.33
636010	LEHIGH 3	345	11.53
640226	HOSKINS3	345	11.63
640342	SHELCRK3	345	10.01
645451	S3451 3	345	20.12
652506	FTTHOMP3	345	9.58
652529	WATERTN3	345	10.17
652564	SIOUXCY3	345	14.76
652806	FTTHOM1-LNX3	345	9.58
652807	FTTHOM2-LNX3	345	9.58
652833	GRPRAR2-LNX3	345	6.20
652864	SIOUXCY-LNX3	345	14.76
659120	BRDLAND3	345	4.05
560347	G10-051-TAP	230	7.03
563230	GEN-2015-089	230	5.38
580011	G10-051&1127	230	6.26
583830	G14013G01431	230	4.07
602004	SPLT RK4	230	12.46
640126	E.COL. 4	230	9.41
640131	COLMB.W4	230	9.47
640133	COLMBUS4	230	11.03
640200	GR ISLD4	230	16.17
640227	HOSKINS4	230	9.68
640343	SHELCRK4	230	10.49
640386	TWIN CH4	230	8.53
640540	MEADOWGROVE4	230	5.38
648506	PR BRZ 4	230	4.07
652398	VFODNES4	230	7.01
652484	NUNDRWD4	230	3.54
652486	PHILIP 4	230	3.23
652488	PHILTAP4	230	3.82
652503	BLAIR 4	230	9.89
652507	FTTHOMP4	230	20.31
652509	FTRANDL4	230	11.22
652513	HANLON 4	230	6.01
652514	HURON 4	230	10.97
652516	LAKPLAT4	230	5.73
652519	OAHE 4	230	13.93
652521	SULLYBT4	230	6.31
652523	SIOUXFL4	230	12.89
652526	UTICAJC4	230	7.90
652530	WATERTN4	230	14.43
652536	RASMUSN4	230	6.60
652540	BIGBND14	230	12.24
652541	BIGBND24	230	10.27
652565	SIOUXCY4	230	19.45
652567	DENISON4	230	4.53
652578	PAHOJA 4	230	7.29
652582	APPLEDORN 4	230	7.11
652588	CLEVELD4	230	4.79
652606	LETCHER4	230	4.71
652607	WESSINGTON 4	230	6.87
652614	CARPENTER 4	230	6.92
652630	WATERTNCAP 4	230	14.43
652821	SULLYBT-LNX3	230	6.31
659122	STORLA 4	230	6.10
659205	BRDLAND4	230	9.95
659295	SDPRAIRWND 4	230	5.69
659310	WITTEN 4	230	2.88
659312	LOWERBRULE 4	230	11.23
659313	RELIANCE 4	230	5.46
659900	EAGLE 4	230	7.17
602005	SPLT RK5	161	8.04
635201	RAUN 5	161	28.02
635223	PLYMOTH5	161	20.18
635225	MORNSD 5	161	10.36
635226	LEEDS 5	161	15.97
635260	LEMARST5	161	9.80
652561	DENISON5	161	5.67
652563	SPENCER5	161	10.21
652566	SIOUXCY5	161	20.62
652603	EXIRA 5	161	6.89
656570	WISDOM5	161	10.33
603009	GRANT 7	115	3.92
603011	MINEHAH7	115	12.86
603012	LAWRENC7	115	28.57
603013	PIPESTN7	115	9.15
603016	SPLT RK7	115	35.24
603017	WSX FLS7	115	14.73
603149	ANSON4	115	33.71
603200	ANSON 7	115	31.28
603225	FALLS 7	115	15.33
603228	SPLITRK CAP7	115	34.71
603265	PROSE CAP7	115	33.55
603274	RENNER 7	115	11.52
640080	BELDEN 7	115	6.86
640084	BLMFLD 7	115	6.26
640113	CLRWATR7	115	5.31
640127	COLMB.E7	115	20.52
640134	KELLY 7	115	17.28
640136	COLMBUS7	115	18.57
640163	EMERSON7	115	5.53
640212	HARTGTN7	115	5.81
640305	ONEILL 7	115	4.03
640349	SPENCER7	115	4.72
640387	TWIN CH7	115	10.44
640424	S.SIOUXCITY7	115	7.30
640465	EMMETE.TAP 7	115	3.12
652031	KPS21-GY7	115	1.72
652397	VFODNES7	115	6.31
652463	WH SWAN7	115	13.13
652474	AURORA 7	115	4.54
652475	BONESTL7	115	3.98
652476	EAGLEBT7	115	2.02
652478	GREGORY7	115	2.90
652491	IRVSIMM7	115	8.54
652494	WINNER 7	115	3.44
652501	ARMOUR 7	115	4.27
652502	BERSFRD7	115	3.92
652505	FLANDRU7	115	4.38
652510	FTRANDL7	115	13.48
652511	GAVINS 7	115	10.67
652515	HURON 7	115	15.51
652517	MANNING7	115	5.22
652518	MTVERN 7	115	4.39
652520	OAHE 7	115	12.09
652524	SIOUXFL7	115	25.63
652525	TYNDALL7	115	3.95
652528	WOONSKT7	115	5.34
652531	WATERTN7	115	13.95
652535	REDFELD7	115	4.18
652591	HANLON 7	115	5.51
652600	ASH TAP	115	9.05
652609	LETCHER7	115	6.05
652626	UTICAJC7	115	9.08
659121	SPIRITM7	115	6.55

Table 4-6 (Cont.)
Short-Circuit Analysis for Study Project GEN-2015-089

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
659123	STORLA 7	115	6.71
659198	LETCHR PS227	115	2.61
659250	SXF WBRANDN7	115	13.25
659251	SXF CORSON 7	115	11.04
659256	SXF 57TH ST7	115	2.87
659257	SXF SHINDLR7	115	2.97
659258	SXF HARSBRG7	115	3.68
659259	SXF CHANCLR7	115	4.51
659292	KEYSTN PS237	115	2.60
660003	HURONWP7	115	10.19
660004	MITCHEL7	115	5.88
660005	TRIPP 7	115	4.17
660006	YKNTJCT7	115	9.54
660007	MENNOJT7	115	6.71
660008	MITCLNW7	115	5.50
660009	BTAP WP7	115	15.05
660018	B_H WIND 7	115	3.48
660026	NAPA JCT7	115	8.81
952509	G12_009IS	115	6.66
605191	LAWRENC8	69	15.15
635224	PLYMOTH8	69	21.24
635385	HUDSON 8	69	5.99
635391	IRETONT8	69	5.79
640306	ONEILL 8	69	4.32
640388	TWIN CH8	69	7.82
652229	FLANDRU8	69	3.64
652235	SIOUXFL8	69	3.91
652245	CLEVELD8	69	4.33
652249	ARMOUR 8	69	2.49
652251	MTVERNS8	69	3.09
652252	MTVERNN8	69	2.98
652254	BERSFRD8	69	3.23
652276	FTTHOMP8	69	4.43
652277	LAKPLAT8	69	4.13
652278	HANLON18	69	5.28
652279	HANLON28	69	5.28
652284	HURON 8	69	3.69
652285	SULLYBT8	69	2.42
652286	TYNDALL8	69	2.58
652287	RASMUSN8	69	3.23
652399	VFODNES8	69	4.22
652574	SIOUXCY8	69	17.97
652581	SPENCER8	69	18.94
652583	DENISON8	69	11.49
656267	MANNINGTAP 8	69	4.43
658030	DENISONWEST8	69	6.68
658031	DENSOUMAIN8	69	6.82
659196	CARPENTER 8	69	3.23
659281	HYDE 8	69	3.40
659901	EAGLE 8	69	13.80
659907	J1CENTR8	69	8.20
659912	J6BOYER8	69	9.74
659921	J15SXCNTR8	69	6.65
659942	K217HAWARDE8	69	7.59
659946	K216LIBERTY8	69	7.45
659953	K412HINTONM8	69	11.15
659971	K301HINTON 8	69	10.17
659980	K135CONCORD8	69	6.75

Table 4-7
Short-Circuit Analysis for Study Projects GEN-2016-021 and GEN-2016-043

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
560062	G15-088-TAP	345	10.69
584510	GEN-2015-007	345	7.64
587150	GEN-2016-021	345	4.50
587280	GEN-2016-043	345	10.46
601006	SPLT RK3	345	13.86
601029	LKFLDXL3	345	13.74
601034	NOBLES 3	345	10.81
631138	LAKEFLD3	345	16.31
631193	HUNTLEY3	345	10.77
631197	LEDYARD3	345	11.63
635000	CBLUFFS3	345	29.99
635014	POTTCO 3	345	22.63
635017	ATCHSNT3	345	15.24
635200	RAUN 3	345	24.22
635368	OBRIEN 3	345	11.51
635369	KOSSUTH 3	345	11.15
635400	HIGHLND 3	345	11.33
635589	ECLIPSE3	345	8.27
635590	FALLOW 3	345	9.86
635600	GRIMES 3	345	19.99
635630	BOONVIL3	345	16.82
635635	MADISON3	345	15.50
635680	BONDRNT3	345	18.88
635700	SYCAMOR3	345	19.74
636000	WEBSTER3	345	11.19
636010	LEHIGH 3	345	11.53
640125	COLMB.E3	345	9.85
640139	COOPER 3	345	25.10
640226	HOSKINS3	345	11.63
640271	MCCOOL 3	345	10.14
640277	MOORE 3	345	21.27
640342	SHELCRK3	345	10.01
640520	ANTELOPE 3	345	6.17
645451	S3451 3	345	20.12
645454	S3454 3	345	24.77
645455	S3455 3	345	28.86
645456	S3456 3	345	31.87
645458	S3458 3	345	28.22
645459	S3459 3	345	23.53
645740	S3740 3	345	17.75
650114	NW68HOLDRG3	345	16.63
650185	WAGENER 3	345	20.01
650189	103&ROKEBY3	345	19.91
652537	WHITE 3	345	16.91
652564	SIOUXCY3	345	14.76
652864	SIOUXCY-LNX3	345	14.76
560347	G10-051-TAP	230	7.03
580011	G10-051&1127	230	6.26
640126	E.COL. 4	230	9.41
640131	COLMB.W4	230	9.47
640133	COLMBUS4	230	11.03
640200	GR ISLD4	230	16.17
640227	HOSKINS4	230	9.68
640343	SHELCRK4	230	10.49
640386	TWIN CH4	230	8.53
640540	MEADOWGROVE4	230	5.38
648506	PR BRZ 4	230	4.07
652507	FTTHOMP4	230	20.31
652509	FTRANDL4	230	11.22
652516	LAKPLAT4	230	5.73
652526	UTICAJC4	230	7.90
652536	RASMUSN4	230	6.60
652565	SIOUXCY4	230	19.45
652567	DENISON4	230	4.53
652578	PAHOJA 4	230	7.29
659900	EAGLE 4	230	7.17
631041	LAKEFLD5	161	20.46
635201	RAUN 5	161	28.02
635202	NEAL 4 5	161	19.23
635203	NEAL N 5	161	26.46
635220	INTCHG 5	161	15.08
635221	KELLOGG5	161	17.47
635223	PLYMOTH5	161	20.18
635225	MORNSD 5	161	10.36
635226	LEEDS 5	161	15.97
635228	AIRPORT 5	161	17.37
635230	LIBERTY5	161	25.73
635235	SALIX 5	161	16.49
635300	MONONA 5	161	5.40
635330	CRWFRD 5	161	4.84
635601	GRIMES 5	161	24.81
635602	142ST 5	161	21.69
635605	GRNGRTP5	161	26.79
635608	LINWELD5	161	22.38
635631	BOONVIL5	161	20.86
635701	SYCAMOR5	161	33.16
636001	WEBSTER5	161	17.11
636020	FT.DODG5	161	10.33
636025	HAYES 5	161	10.57
636050	WRIGHT 5	161	9.79
640377	TEKAMAH5	161	8.78
645100	FC1A 5	161	27.89
646206	S1206 5	161	42.39
646209	S1209 5	161	43.10
646226	S1226 5	161	23.47
646231	S1231 5	161	40.54
646237	S1237 5	161	17.19
646249	S1249 5	161	21.90
646250	S1250 5	161	35.42
646251	S1251 5	161	30.24
646252	S1252 5	161	19.72
646254	S1254 5	161	26.92
646255	S1255 5	161	41.71
646281	S1281 5	161	24.39
646297	S1297 5	161	18.39
646298	S1298 5	161	27.70
646301	S1301 5	161	7.42
646305	S1305 5	161	26.39
646341	S1341 5	161	25.71
652561	DENISON5	161	5.67
652563	SPENCER5	161	10.21
652566	SIOUXCY5	161	20.62
656353	HOPE5	161	8.84
579444	G06-044N-HV1	115	5.76
583780	GEN-2013-032	115	11.16
584910	GEN-2015-053	115	13.40
585130	GEN-2015-076	115	3.88
603016	SPLT RK7	115	35.24
640070	BANCRFT7	115	5.25
640072	BATTLCR7	115	7.73
640078	BEEMER 7	115	4.53
640080	BELDEN 7	115	6.86
640084	BLMFLD 7	115	6.26
640113	CLRWATR7	115	5.31
640115	CO.LINE7	115	7.86
640119	COL.COG7	115	18.58
640122	COL.DRY7	115	15.91
640124	COL.SE 7	115	16.13
640127	COLMB.E7	115	20.52
640134	KELLY 7	115	17.28
640136	COLMBUS7	115	18.57
640149	CREITON7	115	4.90
640151	CRESTON7	115	6.14
640157	DAVIDCY7	115	5.43
640163	EMERSON7	115	5.53
640181	GENOA 7	115	5.11
640212	HARTGTN7	115	5.81
640228	HOSKINS7	115	17.72
640263	MADISON7	115	6.31
640278	SHELDON7	115	32.77
640293	NELIGH 7	115	10.34
640296	NORFK.N7	115	13.23
640298	NORFOLK7	115	12.42
640300	OAKLAND7	115	7.64
640305	ONEILL 7	115	4.03
640316	PAWNEEL7	115	11.48
640318	PETRSBG7	115	6.54
640336	SCHUYLR7	115	5.84
640345	SILVRCK7	115	4.67
640357	STANTON7	115	5.22
640363	STNTN.N7	115	7.10
640378	TEKAMAH7	115	8.12
640387	TWIN CH7	115	10.44
640400	W.POINT7	115	5.18
640402	WAHOO 7	115	4.80
640424	S.SIOUXCITY7	115	7.30
640444	PETERSBRG.N7	115	6.55
640461	OAKDALEP23 7	115	8.49
640521	ANTELOPE 7	115	13.61
650210	NW70FAIRFD7	115	21.48
650214	NW68HOLDRG7	115	25.73
650216	SW27&F 7	115	22.31
650285	WAGENER 7	115	31.45
650290	ROKEBY 7	115	26.50
652510	FTRANDL7	115	13.48

Table 4-7 (Cont.)
Short-Circuit Analysis for Study Projects GEN-2016-021 and GEN-2016-043

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
652511	GAVINS 7	115	10.67
659121	SPIRITM7	115	6.55
660006	YKNTJCT7	115	9.54
635204	NEAL 8	69	10.11
635222	KELLOGG8	69	17.99
635227	SBRIDGE T8	69	8.85
635236	SALIX 8	69	13.63
635301	MONONA 8	69	4.56
640073	BATTLCR8	69	4.18

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
640081	BELDEN 8	69	3.87
640085	BLMFLD 8	69	3.88
640150	CREITON8	69	4.50
640164	EMERSONG	69	3.84
640213	HARTGTN8	69	3.66
640294	NELIGH 8	69	6.09
640388	TWIN CH8	69	7.82
640425	S.SIOUXCITY8	69	4.55
647909	S909 8	69	26.49

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
652287	RASMUSN8	69	3.23
652574	SIOUXCY8	69	17.97
652583	DENISON8	69	11.49
656369	WEBSTER8	69	8.84
659901	EAGLE 8	69	13.80

Table 4-8
Short-Circuit Analysis for Study Projects GEN-2016-023 and GEN-2016-029

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
531451	MINGO 7	345	6.58
560075	G16-023-TAP	345	7.10
560090	BANNER_CO	345	6.25
587090	GEN-2016-023	345	6.06
587190	GEN-2016-029	345	6.06
640065	AXTELL 3	345	9.73
640183	GENTLMN3	345	15.85
640252	KEYSTON3	345	11.15
640325	REDWILO3	345	6.14
640374	SWEET W3	345	9.94
640500	THEDFRD3	345	5.63
640510	HOLT.CO3	345	6.89
652571	GR ISLD3	345	11.73
659131	LARAMIE3	345	7.87
659133	SIDNEY 3	345	6.64
659135	STEGALL3	345	5.19
659425	SIDNEY1-LNX3	345	6.64
659426	SIDNEY2-LNX3	345	6.64
640184	GENTLMN4	230	18.97
640286	N.PLATT4	230	12.99
640302	OGALALA4	230	7.88
640396	VICTRYH4	230	3.81
652573	STEGALL4	230	5.44
652873	STEGALL-LNX3	230	5.44
659134	SIDNEY 4	230	6.48
659170	STEGALDC	230	6.02
659206	STGXFMR4	230	5.72
659210	SIDXFMR4	230	7.01
640253	KEYSTON7	115	15.12
640255	KINGSLY7	115	9.36
640304	OGALALANPPD7	115	14.69
640326	REDWILO7	115	10.27
640338	SCOTBLF7	115	5.99
640381	THEDFRD7	115	8.83
640397	VICTRYH7	115	6.12
640530	STEGALL7	115	8.17
659800	GRANTNB7	115	6.42
659801	OGALALA7	115	14.69
659821	GERINGT7	115	5.46

Table 4-9
Short-Circuit Analysis for Study Project GEN-2016-050

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
530583	POSTROCK7	345	9.06
531451	MINGO 7	345	6.58
531469	SPERVIL7	345	15.50
531501	BUCKNER7	345	10.42
539803	IRONWOOD7	345	14.99
560002	IRONWOOD7	345	14.98
560062	G15-088-TAP	345	10.69
560081	G16-049-TAP	345	9.62
560082	G16-050-TAP	345	7.87
560090	BANNER_CO	345	6.25
562334	G13-010-TAP	345	9.27
583600	GEN-2013-010	345	9.27
585240	GEN-2015-088	345	10.29
587340	GEN-2016-049	345	8.80
587350	GEN-2016-050	345	7.21
640065	AXTELL 3	345	9.73
640139	COOPER 3	345	25.10
640183	GENTLMN3	345	15.85
640252	KEYSTON3	345	11.15
640271	MCCOOL 3	345	10.14
640277	MOORE 3	345	21.27
640312	PAULINE3	345	8.07
640325	REDWILO3	345	6.14
640374	SWEET W3	345	9.94
640500	THEDFRD3	345	5.63
640510	HOLT.CO3	345	6.89
650114	NW68HOLDRG3	345	16.63
650189	103&ROKEBY3	345	19.91
652571	GR ISLD3	345	11.73
652871	GR ISLD-LNX3	345	11.73
659425	SIDNEY1-LNX3	345	6.64
530558	KNOLL 6	230	11.67
530582	S HAYS6	230	9.07
530584	POSTROCK6	230	11.89
530592	SMOKYHL6	230	7.07
530593	SMKYP1 6	230	6.14
530599	SMKYP2 6	230	6.56
530680	HEIZER 6	230	8.46
532871	CIRCLE 6	230	9.69
532873	SUMMIT 6	230	13.75
539679	GRTBEND6	230	8.51
539695	SPEARVL6	230	13.41
575010	GEN-2009-008	230	4.66
579470	GEN-2008-092	230	8.42
640131	COLMB.W4	230	9.47
640184	GENTLMN4	230	18.97
640200	GR ISLD4	230	16.17
640214	HASTING4	230	7.19
640286	N.PLATT4	230	12.99
640302	OGALALA4	230	7.88
640330	RIVERDL4	230	7.02
530551	SALINE 3	115	5.05
530552	GORHAM 3	115	3.18
530553	S HAYS 3	115	8.91
530561	KNOLL 3	115	11.74
530581	N HAYS3	115	10.25
530605	REDLIN 3	115	3.77
530676	GMEC 3	115	11.19
530677	OGALATP3	115	2.66
530695	CHETOLAH3	115	9.01
539678	GRTBEND3	115	12.72
539759	SPRVL 3	115	12.08
560134	ROSEMONT	115	6.56
572051	GEN2008-123N	115	5.24
640066	AXTELL 7	115	13.99
640103	CANADAY7	115	13.61
640161	ELMCRK 7	115	6.00
640194	GOSPER 7	115	4.38
640201	GR ISLD7	115	21.30
640206	GUIDE R7	115	4.49
640215	HASTING7	115	18.55
640222	HILDRTH7	115	4.36
640224	HOLDREG7	115	6.32
640242	JOHN.2 7	115	12.51
640244	JOHN.LK7	115	8.74
640248	KEAR.NE7	115	9.08
640250	KEARNEY7	115	11.56
640253	KEYSTON7	115	15.12
640261	LOWELL 7	115	8.13
640272	MCCOOL 7	115	13.57
640275	MINDEN 7	115	7.21
640278	SHELDON7	115	32.77
640310	ORLEANS7	115	2.55
640313	PAULINE7	115	15.77
640321	PROSSER7	115	6.81
640326	REDWILO7	115	10.27
640331	RIVERDL7	115	11.57
640381	THEDFRD7	115	8.83
640383	TOWER 7	115	8.80
640407	WESTMIN7	115	7.95
641087	EGYCNTR7	115	17.51
641088	HASTCTY7	115	18.55
640223	HILDRTH8	69	3.14
640262	LOWELL 8	69	4.05
640311	ORLEANS8	69	2.66
640314	PAULINE8	69	5.06
640448	HOLDREGE 8	69	5.46

Table 4-10
Short-Circuit Analysis for Study Project GEN-2016-075

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
560074	G16-017-TAP	345	6.75
579450	G0717WG0718W	345	5.35
584650	GEN-2015-023	345	6.36
640183	GENTLMN3	345	15.85
640252	KEYSTON3	345	11.15
640271	MCCOOL 3	345	10.14
640325	REDWILO3	345	6.14
640374	SWEET W3	345	9.94
640500	THEDFRD3	345	5.63
640510	HOLT.CO3	345	6.89
652506	FTTHOMP3	345	9.58
652532	GR PRAIRIE3	345	6.20
652571	GR ISLD3	345	11.73
652806	FTTHOM1-LNX3	345	9.58
652807	FTTHOM2-LNX3	345	9.58
652832	GRPRAR1-LNX3	345	6.20
652833	GRPRAR2-LNX3	345	6.20
652871	GR ISLD-LNX3	345	11.73
640184	GENTLMN4	230	18.97
640200	GR ISLD4	230	16.17
652507	FTTHOMP4	230	20.31
652509	FTRANDL4	230	11.22
652514	HURON 4	230	10.97
652516	LAKPLAT4	230	5.73
652519	OAHE 4	230	13.93
652540	BIGBND14	230	12.24
652606	LETCHER4	230	4.71
652607	WESSINGTON 4	230	6.87
659312	LOWERBRULE 4	230	11.23
640096	CALAMS 7	115	3.52
640359	STAPLETON 7	115	4.26
640381	THEDFRD7	115	8.83
652276	FTTHOMP8	69	4.43

SECTION 5: POWER FACTOR ANALYSIS

The objective of this task is to quantify the power factor at the point of interconnection for the wind farms during base case and system contingencies. SPP transmission planning practice requires interconnecting generation projects to maintain the power factor (pf) at the POI within +/- 0.95 pf for system intact conditions and for post-contingency conditions. This is analyzed by having the wind/solar farm maintain a prescribed voltage schedule at the POI of 1.0 p.u. voltage or higher.

The 2016 Winter Peak, 2017 Summer Peak, and 2025 Summer Peak power flows provided by SPP were examined prior to the Power Factor Analysis to ensure they contained the proposed study project modeled at 100% of the nameplate rating and any previously queued projects listed in Table 2-2. There was no suspect power flow data in the study area. The proposed study project and any previously queued projects at the same POI were turned off during the power factor analysis. The wind farm(s) were then replaced by a generator modeled at the high side bus with the same real power (MW) capability as the wind farm(s) and open limits for the reactive power set points (Mvar). The generator was set to hold the POI scheduled bus voltage. All N-1, three-phase fault contingencies from Table 2-3 were then applied and the reactive power required to maintain the bus voltage was recorded.

5.1 Approach

The upgrades that were identified in the Stability Analysis were implemented to each power case for the power factor analysis. Refer to Section 3 for the necessary upgrades and Table 5-1 for the scheduled voltage each study generator was set to hold at the point of interconnection for each season.

GEN-2015-089 was disabled and a generator was placed at the study project's high side bus (563230). The generator was modeled with PGEN = 200 MW, QMin = -9999 Mvar, and QMax = 9999 Mvar. All buses and transformers connected from the study project's high side bus to GEN-2015-089 were disabled.

GEN-2016-021 and GEN-2016-043 were disabled in the power flow case. A generator was placed at the high side bus of GEN-2016-021 (587150) and modeled with PGEN = 300 MW, QMin = -9999 Mvar, and QMax = 9999 Mvar. A second generator was placed at the high side bus of GEN-2016-043 (587280) and was modeled with PGEN = 230 MW, QMin = -9999 Mvar, and QMax = 9999 Mvar. All buses and transformers connected from the high side bus of each project to the corresponding generator were disabled. Note the Power Factor Analysis was performed separately for GEN-2016-021 and GEN-2016-043.

GEN-2016-023 and GEN-2016-029 were disabled in the power flow case. A generator was placed at the high side bus of GEN-2016-023 (587090) and modeled with PGEN = 150.5 MW, QMin = -9999 Mvar, and QMax = 9999 Mvar. A second generator was placed at the high side bus of GEN-2016-029 (587190) and was modeled with PGEN = 150.5 MW, QMin = -9999 Mvar, and QMax = 9999 Mvar. All buses and transformers connected from the high side bus of each project to the corresponding generator were disabled. Note the Power Factor Analysis was performed separately for GEN-2016-023 and GEN-2016-029.

GEN-2016-050 was disabled and a generator was placed at the study project's high side bus (587350). The generator was modeled with PGEN = 250.7 MW, QMin = -9999 Mvar, and QMax = 9999 Mvar. All buses and transformers connected from the study project's high side bus to GEN-2016-050 were disabled.

GEN-2016-075 and Grand Prairie Generation were all disabled in the power flow case. A generator was placed at the high side bus of GEN-2016-075 (579450) and modeled with PGEN = 50 MW, QMin = -9999 Mvar, and QMax = 9999 Mvar. A second generator was placed at the high side bus of G07170718WX2 (579450) and was modeled with PGEN = 200 MW, QMin = -9999 Mvar, and QMax = 9999 Mvar. A third generator was placed at the high side bus of Grand Prairie Generation (579450) and was modeled with PGEN = 200 MW, QMin = -9999 Mvar, and QMax = 9999 Mvar. All buses and transformers connected from the high side bus of each project to the corresponding generator were disabled. Note the Power Factor Analysis was performed for GEN-2016-075.

Table 5-1
Voltage Schedule of All Study Generators for All Seasons

Point of Interconnection Voltage (p.u.)				
Request	**POI**	**16WP**	**17SP**	**25SP**
GEN-2015-089	Utica 230 kV (652526)	1.0125	1.0100	1.0079
GEN-2016-021	Hoskins 345kV (640226)	1.0086	1.0086	1.0113
GEN-2016-023	Tap Sidney (659426) - Laramie River (659131) 345kV (560075)	1.0260	1.0222	1.0216
GEN-2016-029	Tap Sidney (659426) - Laramie River (659131) 345kV (560075)	1.0260	1.0222	1.0216
GEN-2016-043	Hoskins 345kV (640226)	1.0086	1.0086	1.0113
GEN-2016-050	Axtell (640065)-Post Rock (530583) 345 kV (560082)	1.0091	1.0000	1.0000
GEN-2016-075	Tap Ft. Thompson-Hope County 345 kV (Grand Prarie, 652532)	1.0000	1.0000	1.0000

5.2 Power Factor Analysis Results

The power factor was calculated for the 2016 Winter Peak, 2017 Summer Peak, and 2025 Summer Peak conditions. The following tables show the power factor results for the study generators:

- Table 5-1: Power Factor Analysis for GEN-2015-089
- Table 5-2: Power Factor Analysis for GEN-2016-021
- Table 5-3: Power Factor Analysis for GEN-2016-023
- Table 5-4: Power Factor Analysis for GEN-2016-029
- Table 5-5: Power Factor Analysis for GEN-2016-043
- Table 5-6: Power Factor Analysis for GEN-2016-050
- Table 5-7: Power Factor Analysis for GEN-2016-075

Note that a positive Q (Mvar) output illustrates that the generator is absorbing reactive power from the system, implying a leading power factor; a negative Q (Mvar) illustrates that the generator is supplying reactive power to the system, implying a lagging power factor.

Table 5-1
Power Factor Analysis: GEN-2015-089

Cont. No.	Case	2016 Winter Peak			2017 Summer Peak			2025 Summer Peak		
		Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)
0	Base	0.994	Leading	22.89	0.994	Leading	21.08	0.995	Leading	20.26
1	FLT01-3PH	0.997	Leading	16.32	0.996	Leading	17.49	0.996	Leading	17.72
2	FLT02-3PH	0.993	Leading	23.69	0.993	Leading	23.41	0.994	Leading	22.62
3	FLT03-3PH	1.000	Leading	3.60	0.999	Leading	8.23	0.999	Leading	9.31
4	FLT04-3PH	0.994	Leading	22.49	0.995	Leading	20.18	0.995	Leading	19.36
5	FLT05-3PH	0.993	Leading	23.27	0.994	Leading	21.18	0.995	Leading	20.41
6	FLT06-3PH	0.999	Leading	10.28	0.999	Leading	9.68	0.999	Leading	6.49
7	FLT07-3PH	0.994	Leading	22.71	0.994	Leading	21.50	0.995	Leading	20.81
8	FLT08-3PH	0.992	Leading	25.45	0.992	Leading	25.64	0.992	Leading	24.77
9	FLT09-3PH	0.994	Leading	21.21	0.995	Leading	20.81	0.995	Leading	20.31
10	FLT10-3PH	0.994	Leading	22.89	0.994	Leading	21.08	0.995	Leading	20.26
11	FLT11-3PH	0.994	Leading	21.21	0.995	Leading	20.81	0.995	Leading	20.31
12	FLT12-3PH	0.995	Leading	20.96	0.995	Leading	19.37	0.996	Leading	18.69
13	FLT13-3PH	0.994	Leading	21.90	0.995	Leading	19.85	0.995	Leading	19.18
14	FLT14-3PH	0.997	Leading	16.71	0.996	Leading	17.87	0.996	Leading	18.09
15	FLT15-3PH	0.993	Leading	23.06	0.994	Leading	21.34	0.995	Leading	20.48
16	FLT16-3PH	0.994	Leading	22.24	0.995	Leading	20.36	0.995	Leading	19.39
17	FLT17-3PH	0.994	Leading	22.91	0.994	Leading	21.12	0.995	Leading	20.31
18	FLT18-3PH	0.996	Leading	19.02	0.997	Leading	16.46	0.997	Leading	14.96
19	FLT19-3PH	0.993	Leading	22.94	0.994	Leading	21.17	0.995	Leading	20.34
20	FLT20-3PH	0.994	Leading	22.01	0.995	Leading	20.04	0.995	Leading	19.27
21	FLT33-3PH	0.994	Lagging	-22.00	0.996	Lagging	-18.70	0.996	Lagging	-18.60
22	FLT35-3PH	0.994	Leading	22.65	0.995	Leading	20.60	0.995	Leading	19.77
23	FLT36-3PH	0.993	Leading	23.66	0.994	Leading	22.12	0.994	Leading	21.17
24	FLT37-3PH	0.994	Leading	22.89	0.994	Leading	21.07	0.995	Leading	20.21
25	FLT38-3PH	0.994	Leading	22.45	0.995	Leading	20.33	0.995	Leading	19.58
26	FLT39-3PH	0.994	Leading	22.78	0.995	Leading	20.82	0.995	Leading	20.04
27	FLT40-3PH	0.994	Leading	22.89	0.995	Leading	21.03	0.995	Leading	20.23
28	FLT41-3PH	0.994	Leading	22.86	0.995	Leading	21.04	0.995	Leading	20.28
29	FLT42-3PH	0.994	Leading	22.89	0.994	Leading	21.08	0.995	Leading	20.26
30	FLT52-3PH	0.994	Leading	22.14	0.995	Leading	19.36	0.996	Leading	18.49
31	FLT53-3PH	0.995	Leading	20.06	0.996	Leading	17.10	0.997	Leading	16.28
32	FLT54-3PH	0.995	Leading	20.78	0.996	Leading	17.83	0.996	Leading	17.17
33	FLT55-3PH	0.994	Leading	22.17	0.995	Leading	20.34	0.995	Leading	19.62
34	FLT56-3PH	0.993	Leading	23.03	0.994	Leading	21.24	0.995	Leading	20.42
35	FLT57-3PH	0.994	Leading	22.73	0.995	Leading	20.74	0.995	Leading	19.87
36	FLT58-3PH	0.994	Leading	22.05	0.995	Leading	20.03	0.995	Leading	19.32
37	FLT95-3PH	0.997	Lagging	-16.70	1.000	Lagging	-1.10	1.000	Lagging	-1.30
38	FLT96-3PH	0.989	Leading	29.66	0.993	Leading	23.02	0.994	Leading	22.03
39	FLT97-3PH	0.998	Leading	13.74	1.000	Leading	4.94	1.000	Lagging	-4.30
40	FLT98-3PH	0.994	Leading	22.85	0.995	Leading	20.36	0.995	Leading	19.48
41	FLT99-3PH	0.994	Leading	21.95	0.993	Leading	23.90	0.994	Leading	22.20
42	FLT100-3PH	0.993	Leading	23.67	0.994	Leading	21.75	0.995	Leading	20.77

Study Generator GEN-2015-089

The Power Factor Analysis shows that GEN-2015-089 has a power factor range of 0.989 leading (absorbing) to 0.994 lagging (supplying) for the 2016 Winter Peak conditions, a power factor range of 0.992 leading (absorbing) to 0.996 lagging (supplying) for the 2017 Summer Peak conditions, and a power factor range of 0.992 leading (absorbing) to 0.996 lagging (supplying) for the 2025 Summer Peak conditions.

Table 5-2
Power Factor Analysis: GEN-2016-021

Cont. No.	Case	2016 Winter Peak			2017 Summer Peak			2025 Summer Peak		
		Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)
0	Base	0.998	Leading	18.73	1.000	Leading	6.29	1.000	Leading	7.08
1	FLT01-3PH	1.000	Leading	0.74	1.000	Lagging	-2.30	1.000	Lagging	-1.47
2	FLT02-3PH	0.997	Leading	21.52	0.999	Leading	14.72	0.998	Leading	17.45
3	FLT03-3PH	0.999	Lagging	-15.99	0.995	Lagging	-28.89	0.996	Lagging	-25.49
4	FLT04-3PH	0.997	Leading	21.44	0.999	Leading	12.51	0.999	Leading	13.34
5	FLT05-3PH	0.998	Leading	17.66	1.000	Leading	5.33	1.000	Leading	5.89
6	FLT06-3PH	0.998	Leading	18.64	1.000	Leading	4.85	1.000	Leading	4.94
7	FLT07-3PH	0.998	Leading	19.11	1.000	Leading	5.69	1.000	Leading	6.39
8	FLT08-3PH	0.998	Leading	16.72	1.000	Leading	0.53	1.000	Leading	0.43
9	FLT09-3PH	0.998	Leading	19.93	1.000	Leading	6.74	1.000	Leading	7.26
10	FLT10-3PH	0.998	Leading	18.73	1.000	Leading	6.29	1.000	Leading	7.08
11	FLT11-3PH	0.998	Leading	19.93	1.000	Leading	6.74	1.000	Leading	7.26
12	FLT12-3PH	0.999	Leading	10.82	1.000	Lagging	-2.61	1.000	Lagging	-0.46
13	FLT13-3PH	0.995	Leading	28.91	0.998	Leading	19.54	0.998	Leading	20.73
14	FLT14-3PH	0.999	Leading	12.05	1.000	Leading	9.02	0.999	Leading	9.91
15	FLT15-3PH	0.998	Leading	18.43	1.000	Leading	5.67	1.000	Leading	6.48
16	FLT16-3PH	0.998	Leading	17.63	1.000	Leading	6.32	1.000	Leading	8.23
17	FLT17-3PH	0.998	Leading	18.65	1.000	Leading	6.07	1.000	Leading	6.77
18	FLT18-3PH	0.997	Leading	22.53	0.999	Leading	11.60	0.999	Leading	12.05
19	FLT19-3PH	0.998	Leading	18.95	1.000	Leading	6.37	1.000	Leading	7.05
20	FLT20-3PH	0.999	Leading	16.23	1.000	Leading	5.86	1.000	Leading	6.47
21	FLT33-3PH	0.998	Lagging	-18.00	1.000	Lagging	-3.20	1.000	Lagging	-5.70
22	FLT35-3PH	0.998	Leading	18.76	1.000	Leading	6.20	1.000	Leading	6.88
23	FLT36-3PH	0.998	Leading	18.61	1.000	Leading	6.19	1.000	Leading	6.57
24	FLT37-3PH	0.998	Leading	18.71	1.000	Leading	6.26	1.000	Leading	6.94
25	FLT38-3PH	0.998	Leading	18.69	1.000	Leading	6.09	1.000	Leading	6.82
26	FLT39-3PH	0.998	Leading	18.71	1.000	Leading	6.15	1.000	Leading	6.91
27	FLT40-3PH	0.998	Leading	18.70	1.000	Leading	6.20	1.000	Leading	6.97
28	FLT41-3PH	0.998	Leading	18.71	1.000	Leading	6.22	1.000	Leading	7.09
29	FLT42-3PH	0.998	Leading	18.73	1.000	Leading	6.29	1.000	Leading	7.08
30	FLT52-3PH	0.998	Leading	17.19	1.000	Leading	4.85	1.000	Leading	5.49
31	FLT53-3PH	0.999	Leading	13.89	1.000	Leading	2.48	1.000	Leading	3.12
32	FLT54-3PH	0.999	Leading	15.66	1.000	Leading	2.62	1.000	Leading	3.23
33	FLT55-3PH	0.998	Leading	16.97	1.000	Leading	5.25	1.000	Leading	5.91
34	FLT56-3PH	0.998	Leading	18.73	1.000	Leading	6.03	1.000	Leading	6.84
35	FLT57-3PH	0.998	Leading	18.31	1.000	Leading	5.86	1.000	Leading	6.64
36	FLT58-3PH	0.998	Leading	17.58	1.000	Leading	5.65	1.000	Leading	6.62
37	FLT95-3PH	0.998	Lagging	-20.70	1.000	Lagging	-5.20	1.000	Lagging	-5.70
38	FLT96-3PH	0.999	Leading	13.70	1.000	Leading	4.34	1.000	Leading	4.73
39	FLT97-3PH	0.999	Leading	16.09	1.000	Lagging	0.00	1.000	Leading	0.20
40	FLT98-3PH	0.998	Leading	18.20	1.000	Leading	5.46	1.000	Leading	6.19
41	FLT99-3PH	0.998	Leading	18.42	1.000	Leading	7.05	1.000	Leading	7.58
42	FLT100-3PH	0.998	Leading	18.56	1.000	Leading	6.22	1.000	Leading	6.96

Study Generator GEN-2016-021

The Power Factor Analysis shows that GEN-2016-021 has a power factor range of 0.995 leading (absorbing) to 0.998 lagging (supplying) for the 2016 Winter Peak conditions, a power factor range of 0.998 leading (absorbing) to 0.995 lagging (supplying) for the 2017 Summer Peak conditions, and a power factor range of 0.998 leading (absorbing) to 0.996 lagging (supplying) to for the 2025 Summer Peak conditions.

Table 5-3
Power Factor Analysis: GEN-2016-023

Cont. No.	Case	2016 Winter Peak			2017 Summer Peak			2025 Summer Peak		
		Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)
0	Base	0.991	Leading	20.66	0.993	Leading	17.61	0.993	Leading	17.73
1	FLT01-3PH	0.991	Leading	20.32	0.993	Leading	17.41	0.993	Leading	17.50
2	FLT02-3PH	0.991	Leading	20.17	0.994	Leading	16.82	0.994	Leading	16.58
3	FLT03-3PH	0.991	Leading	20.54	0.993	Leading	17.49	0.993	Leading	17.39
4	FLT04-3PH	0.991	Leading	20.69	0.993	Leading	17.65	0.993	Leading	17.78
5	FLT05-3PH	0.991	Leading	20.67	0.993	Leading	17.63	0.993	Leading	17.75
6	FLT06-3PH	0.991	Leading	20.77	0.993	Leading	17.60	0.993	Leading	17.65
7	FLT07-3PH	0.991	Leading	20.51	0.993	Leading	17.40	0.993	Leading	17.42
8	FLT08-3PH	0.991	Leading	20.06	0.994	Leading	16.35	0.994	Leading	15.86
9	FLT09-3PH	0.991	Leading	20.77	0.993	Leading	17.74	0.993	Leading	17.79
10	FLT10-3PH	0.991	Leading	20.66	0.993	Leading	17.61	0.993	Leading	17.73
11	FLT11-3PH	0.991	Leading	20.77	0.993	Leading	17.74	0.993	Leading	17.79
12	FLT12-3PH	0.991	Leading	20.32	0.994	Leading	17.03	0.994	Leading	16.95
13	FLT13-3PH	0.991	Leading	20.52	0.993	Leading	17.44	0.993	Leading	17.38
14	FLT14-3PH	0.991	Leading	20.36	0.993	Leading	17.47	0.993	Leading	17.57
15	FLT15-3PH	0.991	Leading	20.65	0.993	Leading	17.60	0.993	Leading	17.72
16	FLT16-3PH	0.991	Leading	20.63	0.993	Leading	17.54	0.993	Leading	17.65
17	FLT17-3PH	0.991	Leading	20.65	0.993	Leading	17.60	0.993	Leading	17.71
18	FLT18-3PH	0.991	Leading	20.62	0.993	Leading	17.53	0.993	Leading	17.64
19	FLT19-3PH	0.991	Leading	20.65	0.993	Leading	17.61	0.993	Leading	17.73
20	FLT20-3PH	0.991	Leading	20.62	0.993	Leading	17.57	0.993	Leading	17.66
21	FLT33-3PH	0.984	Leading	27.20	0.991	Lagging	-20.83	0.956	Leading	46.20
22	FLT35-3PH	0.995	Leading	15.35	0.999	Leading	4.88	1.000	Leading	3.52
23	FLT36-3PH	0.941	Lagging	-54.29	0.918	Lagging	-65.15	0.905	Lagging	-70.69
24	FLT37-3PH	0.991	Leading	20.51	0.990	Leading	21.54	0.990	Leading	21.73
25	FLT38-3PH	0.997	Leading	11.00	0.999	Leading	6.15	0.999	Leading	6.85
26	FLT39-3PH	0.994	Leading	17.05	0.995	Leading	14.97	0.995	Leading	15.27
27	FLT40-3PH	0.991	Leading	20.42	0.994	Leading	16.14	0.994	Leading	16.83
28	FLT41-3PH	0.991	Leading	20.24	0.996	Leading	13.10	0.995	Leading	14.99
29	FLT42-3PH	0.991	Leading	20.66	0.993	Leading	17.61	0.993	Leading	17.73
30	FLT52-3PH	0.991	Leading	20.06	0.994	Leading	17.09	0.994	Leading	16.28
31	FLT53-3PH	0.992	Leading	19.25	0.995	Leading	14.90	0.995	Leading	14.46
32	FLT54-3PH	0.991	Leading	20.15	0.994	Leading	16.30	0.994	Leading	16.11
33	FLT55-3PH	0.991	Leading	20.82	0.993	Leading	17.43	0.993	Leading	17.37
34	FLT56-3PH	0.991	Leading	20.70	0.993	Leading	17.53	0.993	Leading	17.74
35	FLT57-3PH	0.991	Leading	20.45	0.993	Leading	17.33	0.994	Leading	17.21
36	FLT58-3PH	0.991	Leading	20.65	0.993	Leading	17.80	0.993	Leading	17.92
37	FLT95-3PH	0.990	Lagging	-21.10	0.994	Lagging	-16.20	0.994	Lagging	-16.50
38	FLT96-3PH	0.993	Leading	18.48	0.995	Leading	15.18	0.995	Leading	15.08
39	FLT97-3PH	0.995	Leading	15.54	1.000	Leading	4.63	1.000	Leading	3.43
40	FLT98-3PH	0.991	Leading	20.81	0.993	Leading	18.06	0.993	Leading	18.22
41	FLT99-3PH	0.991	Leading	20.57	0.993	Leading	17.70	0.993	Leading	17.89
42	FLT100-3PH	0.991	Leading	20.56	0.993	Leading	17.49	0.993	Leading	17.50

Study Generator GEN-2016-023

The Power Factor Analysis shows that GEN-2016-023 has a power factor range of 0.984 leading (absorbing) to 0.941 lagging (supplying) for the 2016 Winter Peak conditions, a power factor range of 0.990 leading (absorbing) to 0.918 lagging (supplying) for the 2017 Summer Peak conditions, and a power factor range of 0.956 leading (absorbing) to 0.905 lagging (supplying) for the 2025 Summer Peak conditions.

Table 5-4
Power Factor Analysis: GEN-2016-029

Cont. No.	Case	2016 Winter Peak			2017 Summer Peak			2025 Summer Peak		
		Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)
0	Base	0.991	Leading	20.66	0.993	Leading	17.61	0.993	Leading	17.73
1	FLT01-3PH	0.991	Leading	20.32	0.993	Leading	17.41	0.993	Leading	17.50
2	FLT02-3PH	0.991	Leading	20.17	0.994	Leading	16.82	0.994	Leading	16.58
3	FLT03-3PH	0.991	Leading	20.54	0.993	Leading	17.49	0.993	Leading	17.39
4	FLT04-3PH	0.991	Leading	20.69	0.993	Leading	17.65	0.993	Leading	17.78
5	FLT05-3PH	0.991	Leading	20.67	0.993	Leading	17.63	0.993	Leading	17.75
6	FLT06-3PH	0.991	Leading	20.77	0.993	Leading	17.60	0.993	Leading	17.65
7	FLT07-3PH	0.991	Leading	20.51	0.993	Leading	17.40	0.993	Leading	17.42
8	FLT08-3PH	0.991	Leading	20.06	0.994	Leading	16.35	0.994	Leading	15.86
9	FLT09-3PH	0.991	Leading	20.77	0.993	Leading	17.74	0.993	Leading	17.79
10	FLT10-3PH	0.991	Leading	20.66	0.993	Leading	17.61	0.993	Leading	17.73
11	FLT11-3PH	0.991	Leading	20.77	0.993	Leading	17.74	0.993	Leading	17.79
12	FLT12-3PH	0.991	Leading	20.32	0.994	Leading	17.03	0.994	Leading	16.95
13	FLT13-3PH	0.991	Leading	20.52	0.993	Leading	17.44	0.993	Leading	17.38
14	FLT14-3PH	0.991	Leading	20.36	0.993	Leading	17.47	0.993	Leading	17.57
15	FLT15-3PH	0.991	Leading	20.65	0.993	Leading	17.60	0.993	Leading	17.72
16	FLT16-3PH	0.991	Leading	20.63	0.993	Leading	17.54	0.993	Leading	17.65
17	FLT17-3PH	0.991	Leading	20.65	0.993	Leading	17.60	0.993	Leading	17.71
18	FLT18-3PH	0.991	Leading	20.62	0.993	Leading	17.53	0.993	Leading	17.64
19	FLT19-3PH	0.991	Leading	20.65	0.993	Leading	17.61	0.993	Leading	17.73
20	FLT20-3PH	0.991	Leading	20.62	0.993	Leading	17.57	0.993	Leading	17.66
21	FLT33-3PH	0.984	Leading	27.20	0.991	Lagging	-20.83	0.956	Leading	46.20
22	FLT35-3PH	0.995	Leading	15.35	0.999	Leading	4.88	1.000	Leading	3.52
23	FLT36-3PH	0.941	Lagging	-54.29	0.918	Lagging	-65.15	0.905	Lagging	-70.69
24	FLT37-3PH	0.991	Leading	20.51	0.990	Leading	21.54	0.990	Leading	21.73
25	FLT38-3PH	0.997	Leading	11.00	0.999	Leading	6.15	0.999	Leading	6.85
26	FLT39-3PH	0.994	Leading	17.05	0.995	Leading	14.97	0.995	Leading	15.27
27	FLT40-3PH	0.991	Leading	20.42	0.994	Leading	16.14	0.994	Leading	16.83
28	FLT41-3PH	0.991	Leading	20.24	0.996	Leading	13.10	0.995	Leading	14.99
29	FLT42-3PH	0.991	Leading	20.66	0.993	Leading	17.61	0.993	Leading	17.73
30	FLT52-3PH	0.991	Leading	20.06	0.994	Leading	17.09	0.994	Leading	16.28
31	FLT53-3PH	0.992	Leading	19.25	0.995	Leading	14.90	0.995	Leading	14.46
32	FLT54-3PH	0.991	Leading	20.15	0.994	Leading	16.30	0.994	Leading	16.11
33	FLT55-3PH	0.991	Leading	20.82	0.993	Leading	17.43	0.993	Leading	17.37
34	FLT56-3PH	0.991	Leading	20.70	0.993	Leading	17.53	0.993	Leading	17.74
35	FLT57-3PH	0.991	Leading	20.45	0.993	Leading	17.33	0.994	Leading	17.21
36	FLT58-3PH	0.991	Leading	20.65	0.993	Leading	17.80	0.993	Leading	17.92
37	FLT95-3PH	0.990	Lagging	-21.10	0.994	Lagging	-16.20	0.994	Lagging	-16.50
38	FLT96-3PH	0.993	Leading	18.48	0.995	Leading	15.18	0.995	Leading	15.08
39	FLT97-3PH	0.995	Leading	15.54	1.000	Leading	4.63	1.000	Leading	3.43
40	FLT98-3PH	0.991	Leading	20.81	0.993	Leading	18.06	0.993	Leading	18.22
41	FLT99-3PH	0.991	Leading	20.57	0.993	Leading	17.70	0.993	Leading	17.89
42	FLT100-3PH	0.991	Leading	20.56	0.993	Leading	17.49	0.993	Leading	17.50

Study Generator GEN-2016-029

The Power Factor Analysis shows that GEN-2016-029 has a power factor range of 0.984 leading (absorbing) to 0.941 lagging (supplying) for the 2016 Winter Peak conditions, a power factor range of 0.990 leading (absorbing) to 0.918 lagging (supplying) for the 2017 Summer Peak conditions, and a power factor range of 0.956 leading (absorbing) to 0.905 lagging (supplying) for the 2025 Summer Peak conditions.

Table 5-5
Power Factor Analysis: GEN-2016-043

Cont. No.	Case	2016 Winter Peak			2017 Summer Peak			2025 Summer Peak		
		Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)
0	Base	0.998	Leading	18.73	1.000	Leading	6.29	1.000	Leading	7.08
1	FLT01-3PH	1.000	Leading	0.74	1.000	Lagging	-2.30	1.000	Lagging	-1.47
2	FLT02-3PH	0.997	Leading	21.52	0.999	Leading	14.72	0.998	Leading	17.45
3	FLT03-3PH	0.999	Lagging	-15.99	0.995	Lagging	-28.89	0.996	Lagging	-25.49
4	FLT04-3PH	0.997	Leading	21.44	0.999	Leading	12.51	0.999	Leading	13.34
5	FLT05-3PH	0.998	Leading	17.66	1.000	Leading	5.33	1.000	Leading	5.89
6	FLT06-3PH	0.998	Leading	18.64	1.000	Leading	4.85	1.000	Leading	4.94
7	FLT07-3PH	0.998	Leading	19.11	1.000	Leading	5.69	1.000	Leading	6.39
8	FLT08-3PH	0.998	Leading	16.72	1.000	Leading	0.53	1.000	Leading	0.43
9	FLT09-3PH	0.998	Leading	19.93	1.000	Leading	6.74	1.000	Leading	7.26
10	FLT10-3PH	0.998	Leading	18.73	1.000	Leading	6.29	1.000	Leading	7.08
11	FLT11-3PH	0.998	Leading	19.93	1.000	Leading	6.74	1.000	Leading	7.26
12	FLT12-3PH	0.999	Leading	10.82	1.000	Lagging	-2.61	1.000	Lagging	-0.46
13	FLT13-3PH	0.995	Leading	28.91	0.998	Leading	19.54	0.998	Leading	20.73
14	FLT14-3PH	0.999	Leading	12.05	1.000	Leading	9.02	0.999	Leading	9.91
15	FLT15-3PH	0.998	Leading	18.43	1.000	Leading	5.67	1.000	Leading	6.48
16	FLT16-3PH	0.998	Leading	17.63	1.000	Leading	6.32	1.000	Leading	8.23
17	FLT17-3PH	0.998	Leading	18.65	1.000	Leading	6.07	1.000	Leading	6.77
18	FLT18-3PH	0.997	Leading	22.53	0.999	Leading	11.60	0.999	Leading	12.05
19	FLT19-3PH	0.998	Leading	18.95	1.000	Leading	6.37	1.000	Leading	7.05
20	FLT20-3PH	0.999	Leading	16.23	1.000	Leading	5.86	1.000	Leading	6.47
21	FLT33-3PH	0.998	Lagging	-18.00	1.000	Lagging	-3.20	1.000	Lagging	-5.70
22	FLT35-3PH	0.998	Leading	18.76	1.000	Leading	6.20	1.000	Leading	6.88
23	FLT36-3PH	0.998	Leading	18.61	1.000	Leading	6.19	1.000	Leading	6.57
24	FLT37-3PH	0.998	Leading	18.71	1.000	Leading	6.26	1.000	Leading	6.94
25	FLT38-3PH	0.998	Leading	18.69	1.000	Leading	6.09	1.000	Leading	6.82
26	FLT39-3PH	0.998	Leading	18.71	1.000	Leading	6.15	1.000	Leading	6.91
27	FLT40-3PH	0.998	Leading	18.70	1.000	Leading	6.20	1.000	Leading	6.97
28	FLT41-3PH	0.998	Leading	18.71	1.000	Leading	6.22	1.000	Leading	7.09
29	FLT42-3PH	0.998	Leading	18.73	1.000	Leading	6.29	1.000	Leading	7.08
30	FLT52-3PH	0.998	Leading	17.19	1.000	Leading	4.85	1.000	Leading	5.49
31	FLT53-3PH	0.999	Leading	13.89	1.000	Leading	2.48	1.000	Leading	3.12
32	FLT54-3PH	0.999	Leading	15.66	1.000	Leading	2.62	1.000	Leading	3.23
33	FLT55-3PH	0.998	Leading	16.97	1.000	Leading	5.25	1.000	Leading	5.91
34	FLT56-3PH	0.998	Leading	18.73	1.000	Leading	6.03	1.000	Leading	6.84
35	FLT57-3PH	0.998	Leading	18.31	1.000	Leading	5.86	1.000	Leading	6.64
36	FLT58-3PH	0.998	Leading	17.58	1.000	Leading	5.65	1.000	Leading	6.62
37	FLT95-3PH	0.998	Lagging	-20.70	1.000	Lagging	-5.20	1.000	Lagging	-5.70
38	FLT96-3PH	0.999	Leading	13.70	1.000	Leading	4.34	1.000	Leading	4.73
39	FLT97-3PH	0.999	Leading	16.09	1.000	Lagging	0.00	1.000	Leading	0.20
40	FLT98-3PH	0.998	Leading	18.20	1.000	Leading	5.46	1.000	Leading	6.19
41	FLT99-3PH	0.998	Leading	18.42	1.000	Leading	7.05	1.000	Leading	7.58
42	FLT100-3PH	0.998	Leading	18.56	1.000	Leading	6.22	1.000	Leading	6.96

Study Generator GEN-2016-043

The Power Factor Analysis shows that GEN-2016-043 has a power factor range of 0.995 leading (absorbing) to 0.998 lagging (supplying) for the 2016 Winter Peak conditions, a power factor range of 0.998 leading (absorbing) to 0.995 lagging (supplying) for the 2017 Summer Peak conditions, and a power factor range of 0.998 leading (absorbing) to 0.996 lagging (supplying) to for the 2025 Summer Peak conditions.

Table 5-6
Power Factor Analysis: GEN-2016-050

Cont. No.	Case	2016 Winter Peak			2017 Summer Peak			2025 Summer Peak		
		Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)
0	Base	0.996	Leading	22.47	0.996	Lagging	-21.22	0.994	Lagging	-26.93
1	FLT01-3PH	0.997	Leading	18.09	0.996	Lagging	-23.47	0.993	Lagging	-28.84
2	FLT02-3PH	0.997	Leading	18.11	0.995	Lagging	-25.60	0.992	Lagging	-31.71
3	FLT03-3PH	0.999	Leading	10.96	0.993	Lagging	-30.40	0.990	Lagging	-35.55
4	FLT04-3PH	0.996	Leading	22.57	0.996	Lagging	-21.09	0.994	Lagging	-26.80
5	FLT05-3PH	0.996	Leading	22.48	0.996	Lagging	-21.24	0.994	Lagging	-26.95
6	FLT06-3PH	0.996	Leading	23.21	0.996	Lagging	-21.47	0.994	Lagging	-27.53
7	FLT07-3PH	0.997	Leading	20.18	0.995	Lagging	-24.19	0.993	Lagging	-30.11
8	FLT08-3PH	0.998	Leading	15.78	0.993	Lagging	-30.73	0.989	Lagging	-36.93
9	FLT09-3PH	0.996	Leading	22.66	0.996	Lagging	-21.25	0.994	Lagging	-27.05
10	FLT10-3PH	0.996	Leading	22.47	0.996	Lagging	-21.22	0.994	Lagging	-26.93
11	FLT11-3PH	0.996	Leading	22.66	0.996	Lagging	-21.25	0.994	Lagging	-27.05
12	FLT12-3PH	0.997	Leading	19.80	0.995	Lagging	-24.00	0.993	Lagging	-29.55
13	FLT13-3PH	0.997	Leading	19.82	0.995	Lagging	-24.23	0.993	Lagging	-30.00
14	FLT14-3PH	0.997	Leading	19.00	0.996	Lagging	-22.63	0.994	Lagging	-28.01
15	FLT15-3PH	0.996	Leading	22.42	0.996	Lagging	-21.29	0.994	Lagging	-26.97
16	FLT16-3PH	0.996	Leading	22.42	0.996	Lagging	-21.10	0.994	Lagging	-26.66
17	FLT17-3PH	0.996	Leading	22.40	0.996	Lagging	-21.30	0.994	Lagging	-26.99
18	FLT18-3PH	0.996	Leading	22.69	0.996	Lagging	-21.04	0.994	Lagging	-26.71
19	FLT19-3PH	0.996	Leading	22.47	0.996	Lagging	-21.22	0.994	Lagging	-26.91
20	FLT20-3PH	0.996	Leading	21.74	0.996	Lagging	-21.87	0.994	Lagging	-27.68
21	FLT33-3PH	0.998	Lagging	-17.50	0.981	Leading	50.00	0.988	Leading	38.70
22	FLT35-3PH	0.996	Leading	23.54	0.997	Lagging	-20.23	0.995	Lagging	-26.20
23	FLT36-3PH	0.998	Leading	14.26	0.991	Lagging	-33.42	0.987	Lagging	-41.14
24	FLT37-3PH	0.996	Leading	21.91	0.996	Lagging	-22.20	0.994	Lagging	-28.40
25	FLT38-3PH	0.996	Leading	22.98	0.997	Lagging	-20.05	0.995	Lagging	-25.38
26	FLT39-3PH	0.996	Leading	21.92	0.996	Lagging	-22.93	0.994	Lagging	-28.06
27	FLT40-3PH	0.996	Leading	22.22	0.996	Lagging	-23.33	0.994	Lagging	-28.02
28	FLT41-3PH	0.996	Leading	22.05	0.996	Lagging	-22.20	0.994	Lagging	-26.84
29	FLT42-3PH	0.996	Leading	22.47	0.996	Lagging	-21.22	0.994	Lagging	-26.93
30	FLT52-3PH	0.944	Leading	87.38	0.954	Leading	78.56	0.953	Leading	79.69
31	FLT53-3PH	0.987	Lagging	-41.35	0.988	Lagging	-39.45	0.984	Lagging	-45.23
32	FLT54-3PH	0.996	Leading	23.02	0.999	Leading	8.94	1.000	Leading	1.11
33	FLT55-3PH	0.999	Leading	8.43	0.982	Lagging	-48.51	0.982	Lagging	-48.50
34	FLT56-3PH	0.983	Leading	46.91	1.000	Lagging	-3.70	0.999	Lagging	-9.97
35	FLT57-3PH	1.000	Lagging	-0.42	0.985	Lagging	-44.41	0.983	Lagging	-46.49
36	FLT58-3PH	0.993	Leading	29.41	1.000	Leading	6.63	1.000	Lagging	-1.34
37	FLT95-3PH	0.985	Lagging	-43.80	0.997	Lagging	-19.10	0.999	Lagging	-12.40
38	FLT96-3PH	0.997	Lagging	-18.36	0.988	Lagging	-39.97	0.983	Lagging	-46.97
39	FLT97-3PH	1.000	Leading	5.50	0.984	Lagging	-45.36	0.977	Leading	54.80
40	FLT98-3PH	0.997	Leading	19.20	0.996	Lagging	-22.03	0.994	Lagging	-27.64
41	FLT99-3PH	0.996	Leading	21.38	0.997	Lagging	-18.13	0.995	Lagging	-24.85
42	FLT100-3PH	0.997	Leading	20.50	0.996	Lagging	-23.00	0.994	Lagging	-28.45

Study Generator GEN-2016-050

The Power Factor Analysis shows that GEN-2016-050 has a power factor range of 0.944 leading (absorbing) to 0.985 lagging (supplying) for the 2016 Winter Peak conditions, a power factor range of 0.954 leading (absorbing) to 0.982 lagging (supplying) for the 2017 Summer Peak conditions, and a power factor range of 0.953 leading (absorbing) to 0.982 lagging (supplying) for the 2025 Summer Peak conditions.

Table 5-7
Power Factor Analysis: GEN-2016-075

Cont. No.	Case	2016 Winter Peak			2017 Summer Peak			2025 Summer Peak		
		Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)
0	Base	0.951	Leading	16.23	1.000	Lagging	-1.37	1.000	Lagging	-1.36
1	FLT01-3PH	0.959	Leading	14.84	1.000	Lagging	-1.55	1.000	Lagging	-1.51
2	FLT02-3PH	0.960	Leading	14.56	0.999	Lagging	-2.32	0.999	Lagging	-2.36
3	FLT03-3PH	0.965	Leading	13.60	1.000	Lagging	-1.51	1.000	Lagging	-1.50
4	FLT04-3PH	0.951	Leading	16.29	1.000	Lagging	-1.32	1.000	Lagging	-1.31
5	FLT05-3PH	0.951	Leading	16.22	1.000	Lagging	-1.36	1.000	Lagging	-1.35
6	FLT06-3PH	0.951	Leading	16.29	1.000	Lagging	-1.38	1.000	Lagging	-1.41
7	FLT07-3PH	0.952	Leading	16.06	1.000	Lagging	-1.48	1.000	Lagging	-1.45
8	FLT08-3PH	0.957	Leading	15.08	0.999	Lagging	-2.47	0.999	Lagging	-2.53
9	FLT09-3PH	0.951	Leading	16.29	1.000	Lagging	-1.24	1.000	Lagging	-1.31
10	FLT10-3PH	0.951	Leading	16.23	1.000	Lagging	-1.37	1.000	Lagging	-1.36
11	FLT11-3PH	0.951	Leading	16.29	1.000	Lagging	-1.24	1.000	Lagging	-1.31
12	FLT12-3PH	0.955	Leading	15.56	0.999	Lagging	-1.88	0.999	Lagging	-1.87
13	FLT13-3PH	0.956	Leading	15.28	0.999	Lagging	-1.62	0.999	Lagging	-1.63
14	FLT14-3PH	0.957	Leading	15.09	1.000	Lagging	-1.50	1.000	Lagging	-1.45
15	FLT15-3PH	0.951	Leading	16.22	1.000	Lagging	-1.38	1.000	Lagging	-1.37
16	FLT16-3PH	0.951	Leading	16.21	1.000	Lagging	-1.44	1.000	Lagging	-1.43
17	FLT17-3PH	0.951	Leading	16.20	1.000	Lagging	-1.39	1.000	Lagging	-1.38
18	FLT18-3PH	0.951	Leading	16.28	1.000	Lagging	-1.43	1.000	Lagging	-1.42
19	FLT19-3PH	0.951	Leading	16.23	1.000	Lagging	-1.38	1.000	Lagging	-1.37
20	FLT20-3PH	0.952	Leading	16.09	1.000	Lagging	-1.40	1.000	Lagging	-1.39
21	FLT33-3PH	0.997	Lagging	-3.60	0.997	Leading	3.70	0.999	Leading	2.60
22	FLT35-3PH	0.950	Leading	16.48	1.000	Lagging	-1.49	1.000	Lagging	-1.50
23	FLT36-3PH	0.966	Leading	13.47	0.999	Lagging	-2.01	0.999	Lagging	-2.08
24	FLT37-3PH	0.952	Leading	16.03	1.000	Lagging	-1.45	1.000	Lagging	-1.46
25	FLT38-3PH	0.951	Leading	16.19	0.999	Lagging	-1.62	1.000	Lagging	-1.56
26	FLT39-3PH	0.952	Leading	16.01	1.000	Lagging	-1.58	0.999	Lagging	-1.58
27	FLT40-3PH	0.951	Leading	16.18	1.000	Lagging	-1.49	1.000	Lagging	-1.42
28	FLT41-3PH	0.952	Leading	16.09	1.000	Lagging	-1.43	1.000	Lagging	-1.35
29	FLT42-3PH	0.951	Leading	16.23	1.000	Lagging	-1.37	1.000	Lagging	-1.36
30	FLT52-3PH	0.960	Leading	14.60	1.000	Lagging	-1.33	1.000	Lagging	-1.32
31	FLT53-3PH	0.974	Leading	11.56	0.999	Lagging	-1.65	0.999	Lagging	-1.68
32	FLT54-3PH	0.981	Leading	9.91	0.998	Lagging	-2.76	0.999	Lagging	-2.72
33	FLT55-3PH	0.966	Leading	13.47	0.999	Lagging	-1.79	0.999	Lagging	-1.73
34	FLT56-3PH	0.954	Leading	15.74	1.000	Lagging	-1.57	1.000	Lagging	-1.56
35	FLT57-3PH	0.954	Leading	15.70	1.000	Lagging	-1.44	1.000	Lagging	-1.40
36	FLT58-3PH	0.955	Leading	15.54	1.000	Lagging	-1.21	1.000	Lagging	-1.20
37	FLT95-3PH	1.000	Lagging	-1.34	1.000	Lagging	-0.81	1.000	Lagging	-0.87
38	FLT96-3PH	0.936	Lagging	-18.76	0.990	Lagging	-7.05	0.990	Lagging	-7.01
39	FLT97-3PH	0.988	Lagging	-7.80	0.998	Lagging	-3.07	0.998	Lagging	-3.53
40	FLT98-3PH	0.985	Leading	8.86	0.997	Lagging	-4.04	0.997	Lagging	-4.04
41	FLT99-3PH	0.960	Leading	14.58	1.000	Lagging	-0.91	1.000	Lagging	-1.16
42	FLT100-3PH	0.971	Leading	12.22	0.999	Lagging	-2.36	0.999	Lagging	-2.26

Study Generator GEN-2016-075

The Power Factor Analysis shows that GEN-2016-075 has a power factor range of 0.950 leading (absorbing) to 0.936 lagging (supplying) for the 2016 Winter Peak conditions, a power factor range of 0.997 leading (absorbing) to 0.990 lagging (supplying) for the 2017 Summer Peak conditions, and a power factor range of 0.999 leading (absorbing) to 0.990 lagging (supplying) for the 2025 Summer Peak conditions.

SECTION 6: LOW/NO WIND ANALYSIS

The objective of this task is to determine the impact of low wind or no wind conditions on wind farms that interconnect to a 345 kV or 230 kV bus. The 2016 Winter Peak, 2017 Summer Peak, and 2025 Summer Peak power flows provided by SPP were examined for this analysis.

6.1 Approach

Low/no wind conditions were examined for all renewable energy plants. Generators were disabled (independently), but the collector systems remained in-service. The amount of reactive power injected into the transmission network was recorded at the respective POI. This reactive power comes from the capacitance of the project's transmission lines and collector cables. A shunt reactor was added at the high side bus to bring the Mvar flow into the POI down to approximately zero.

6.2 Low/No Wind Analysis Results

The reactance needed to bring the Mvar flow into the POI to zero Mvar was recorded for each season for all wind farms. Refer to Table 6-1 for the Low/No Wind Analysis results. The table lists the generators examined and the amount of reactive power needed for zero Mvar flow into the POI for each season.

Table 6-1
Low/No Wind Analysis

Request	Size (MW)	Point of Interconnection	16WP	17SP	25SP
GEN-2015-089	200	Utica 230kV (652526)	29.10	29.10	29.10
GEN-2016-021	300	Hoskins 345kV (640226)	42.30	42.30	42.30
GEN-2016-023	150.5	Tap Sidney (659426) - Laramie River (659131) 345kV (587090)	12.40	12.40	12.40
GEN-2016-029	150.5	Tap Sidney (659426) - Laramie River (659131) 345kV (587090)	12.40	12.40	12.40
GEN-2016-043	230	Hoskins 345kV (640226)	15.70	15.70	15.70
GEN-2016-050	250.7	Axtell (640065)-Post Rock (530583) 345 kV (560082)	16.80	16.80	16.80
GEN-2016-075	50	Tap Ft. Thompson-Hope County 345 kV (Grand Prarie, 652532)	6.25	6.25	6.25

SECTION 7: CONCLUSIONS

Summary of the Stability Analysis

The Stability Analysis determined there were multiple contingencies that resulted in system/voltage instability, generation tripping offline, and poor post-fault voltage recovery when all generation interconnection requests were at 100% output.

To mitigate the system/voltage instability and low post-fault steady-state voltages, the following upgrades were provided by SPP and implemented in all seasons:

- Keystone to Banner County (G16-034 Tap) 345 kV circuit #1
- SPP R Plan (16WP and 17SP only)
  - Cherry County/Thedford 345/115/13.8 kV transformer
  - Gentleman to Cherry County 345 kV circuit #1
  - Holt County to Cherry County 345 kV circuit #1
- Gentleman to Keystone 345 kV circuit #2

After discussion with SPP, it was determined that for the prior outage contingencies, FLT103-PO, FLT104-PO, FLT105-PO and FLT106-PO, a total of 500 MW of generation curtailment is required to mitigate the observed violations. G07170718WU2 (200MW) and GEN-2015-023 units 1 and 2 (each 150 MW) should be taken out of service in order to decrease the generation around Cherry County 345 kV.

After implementing the above upgrades, the contingency analysis was re-simulated for all contingencies. With the upgrades, the Stability Analysis determined that there was no generation tripping or system instability observed as a result of interconnecting all study projects at 100% output.

High GGS Sensitivity Scenario

The High GGS Scenario Stability Analysis determined there were multiple contingencies that resulted in system/voltage instability, generation tripping offline, and poor post-fault voltage recovery when all generation interconnection requests were at 100% output.

To mitigate the voltage instability and low post-fault steady-state voltages, the following upgrades were provided by SPP and implemented in all seasons:

- Keystone to Banner County (G16-034 Tap) 345 kV circuit #1
- SPP R Plan (16WP and 17SP only)
  - Cherry County/Thedford 345/115/13.8 kV transformer
  - Gentleman to Cherry County 345 kV circuit #1

  - Holt County to Cherry County 345 kV circuit #1
- Gentleman to Keystone 345 kV circuit #2
- 10 Mvar capacitor bank at Atwood 115 kV (25SP only)

It was determined that for a three phase fault in the Sidney area, the shunt capacitor near Sidney 230 kV should be taken out of service to mitigate the overvoltage violation for FLT42-3PH. For the prior outage contingencies, FLT103-PO, FLT104-PO, FLT105-PO and FLT106-PO, a total of 500 MW of generation curtailment is required to mitigate the observed violations. G07170718WU2 (200MW) and GEN-2015-023 units 1 and 2 (each 150 MW) should be taken out of service in order to decrease the generation around Cherry County 345 kV.

FLT67-PO and FLT68-PO for the 2025 Summer Peak case was observed to have voltages below 0.9 p.u. at the pre and post contingent level. The observed violation was mitigated by a capacitor bank addition, switching off shunt reactors, and generation curtailment (capacitor bank addition identified by SPP in steady-state analysis). The following mitigation is required for FLT67-PO and FLT68-PO:

- Addition of a 10 Mvar capacitor bank at Atwood 115 kV (531364)
- Switching off the following shunt reactors:
  - Setab 345 kV (531465)
  - Mingo 13.8 kV (531452)
  - Red Willow 13.8 kV (640327)
  - 100 MW of generation curtailment (decrease GEN-2016-050 from 250.7 MW to 150.7 MW)

After implementing the above upgrades, the contingency analysis was re-simulated for all contingencies. With the upgrades, the Stability Analysis determined that there was no generation tripping or system instability observed as a result of interconnecting all study projects at 100% output.

Summary of the Short-Circuit Analysis

The Short-Circuit Analysis was performed on the 2017 Summer Peak and 2025 Summer Peak power flows for all study projects. Refer to Table 7-1 for a list of maximum fault currents observed for each study project for the 2017 Summer Peak case. Refer to Table 7-2 for a list of maximum fault currents observed for each study project for the 2025 Summer Peak case.

Table 7-1
List of Maximum Fault Currents Observed for Each Study Project for the 2017 Summer Peak Case

Study Project	POI Name	Fault Current at POI (kA)	Maximum Fault Current (kA)	Fault Location	Bus Voltage (kV)
GEN-2015-089	Utica 230kV (652526)	7.88	34.60	SPLT RK7	115
GEN-2016-021	Hoskins 345kV (640226)	11.56	41.67	S1206 5	161
GEN-2016-023	Tap Sidney (659426) - Laramie River (659131) 345kV (587090)	6.06	18.93	GENTLMN4	230
GEN-2016-029	Tap Sidney (659426) - Laramie River (659131) 345kV (587090)	6.06	18.93	GENTLMN4	230
GEN-2016-043	Hoskins 345kV (640226)	11.56	41.67	S1206 5	161
GEN-2016-050	Axtell (640065)-Post Rock (530583) 345 kV (560082)	7.87	31.77	SHELDON7	115
GEN-2016-075	Tap Ft. Thompson-Hope County 345 kV (Grand Prarie, 652532)	6.19	19.99	FTTHOMP4	230

Table 7-2
List of Maximum Fault Currents Observed for Each Study Project for the 2025 Summer Peak Case

Study Project	POI Name	Fault Current at POI (kA)	Maximum Fault Current (kA)	Fault Location	Bus Voltage (kV)
GEN-2015-089	Utica 230kV (652526)	7.90	35.24	SPLT RK7	115
GEN-2016-021	Hoskins 345kV (640226)	11.63	43.10	S1209 5	161
GEN-2016-023	Tap Sidney (659426) - Laramie River (659131) 345kV (587090)	6.06	18.97	GENTLMN4	230
GEN-2016-029	Tap Sidney (659426) - Laramie River (659131) 345kV (587090)	6.06	18.97	GENTLMN4	230
GEN-2016-043	Hoskins 345kV (640226)	11.63	43.10	S1209 5	161
GEN-2016-050	Axtell (640065)-Post Rock (530583) 345 kV (560082)	7.87	32.77	SHELDON7	115
GEN-2016-075	Tap Ft. Thompson-Hope County 345 kV (Grand Prarie, 652532)	6.20	20.10	FTTHOMP4	230

Summary of Power Factor Analysis

The upgrades identified in the Stability Analysis were implemented in the power flow cases and utilized for the Power Factor Analysis. Refer to Table 7-3 for the power factor analysis results for each study generator.

Table 7-3
Power Factor Analysis Summary for Study Projects

Study Project	Power Factor Range for Each Study Project[1]					
	16WP		17SP		25SP	
GEN-2015-089	-0.994	0.989	-0.996	0.992	-0.996	0.992
GEN-2016-021	-0.998	0.995	-0.995	0.998	-0.996	0.998
GEN-2016-023	-0.941	0.984	-0.918	0.990	-0.905	0.956
GEN-2016-029	-0.941	0.984	-0.918	0.990	-0.905	0.956
GEN-2016-043	-0.998	0.995	-0.995	0.998	-0.996	0.998
GEN-2016-050	-0.985	0.944	-0.982	0.954	-0.982	0.953
GEN-2016-075	-0.936	0.950	-0.990	0.997	-0.990	0.999

[1]Lagging power factors are negative and leading power factors are positive

Summary of Low Wind/No Wind Analysis

The amount of reactive power injected into the transmission network was recorded at the high side of the transformer near the point of interconnection for all study projects for each season.

11.14.9 J12: GROUP 12 DYNAMIC STABILITY ANALYSIS REPORT

Previous stability analysis is still valid.

11.14.10 J13: GROUP 13 DYNAMIC STABILITY ANALYSIS REPORT

No remaining current study requests in this group

11.14.11 J14: GROUP 14 DYNAMIC STABILITY ANALYSIS REPORT

S&C ELECTRIC COMPANY
Excellence Through Innovation

DISIS-2016-001-1 (GROUP 14)

LITTLE ROCK, AR

SOUTHWEST POWER POOL

DEFINITIVE INTERCONNECTION SYSTEM IMPACT STUDY

S&C PROJECT NUMBER: 12258

REVISION: 0

FINAL REPORT

CONFIDENTIAL

NOVEMBER 17, 2017

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1. EXECUTIVE SUMMARY

S&C Electric Company (S&C) has performed several analyses as part of the Definitive Interconnection System Impact Study, DISIS-2016-001-1 (Group 14), in response to a request through Southwest Power Pool (SPP). Group 14 consists of four (4) new generator interconnection requests (GEN-2015-036, GEN-2016-028, GEN-2016-030, and GEN-2016-063).

S&C has performed a dynamic stability analysis for Group 14 using three (3) base cases (2016 Winter Peak (WP), 2017 Summer Peak (SP), and 2025 Summer Peak (SP)) provided by SPP. For each base case, all four new interconnection requests and prior-queued projects were studied at 100% of nameplate MW capacity. The dynamics stability analysis demonstrated that the system remains stable under all studied contingency and all interconnection requests projects remain connected during and after the contingency. However, a prior outage contingency caused instances of transient recovery over-voltages that violate the planning criteria. The mitigation for this prior outage contingency is system adjustment (curtailment of GEN-2015-036) after the initial outage.

S&C has performed power factor analysis on the three base cases of Group 14. Power factor analysis reported the power factors at the study projects point of interconnection (POI) for all N-1 three-phase contingences. This analysis indicates that for all the four interconnection requests, the measured power factor was between 0.95 lagging to 0.95 leading power factor at the POIs under all studied contingencies.

S&C has performed an analysis of low wind/low solar irradiance solar conditions for interconnection requests that are renewable energy projects. The low wind/low solar irradiance analysis was performed by taking the interconnection generation out of service and determining the Mvar size of a shunt reactor to offset the reactive power generated from the capacitance of the project's transmission lines and collector cables. The shunt reactor Mvars are given in Section 8.

S&C has performed a short-circuit analysis for the 2016 Winter Peak, 2017 Summer Peak, and 2025 Summer Peak cases and reported short circuit results at all buses up to five (5) levels away from the POI of the study projects.

2. INTRODUCTION

S&C has performed several analyses as part of the Definitive Interconnection System Impact Study, DISIS-Study, DISIS-2016-001-1 (Group 14), in response to a request through the SPP. Group 14 consist of four (4) consist of four (4) new generator interconnection requests listed in Table 1 and eight (8) previously queued projects listed in

Table 3

Table 1 – Generation Interconnection Requests

Request	Size (MW)	Generator Model	Point of Interconnection
GEN-2015-036	303.6	Siemens 2.3 MW (wind)	PSO Johnston County 345 kV (514809)
GEN-2016-028	100	Vestas V110 VCSS 2.0 MW (wind)	Clayton 138 kV (510919)
GEN-2016-030	100	Power Electronics HEC-US FS28000CU15 2.7MW	Brown 138 kV (515157)
GEN-2016-063	200	Vestas V110 VCSS 2.0MW	Tap Hugo (521157) – Sunnyside (515136) 345 kV (G16-064-TAP, 560088)

Table 2 – Prior-Queued Projects

Request	Size (MW)	Generator Model	Point of Interconnection
GEN-2011-040	110.4	Siemens 2.3MW	Tap Ratliff – Poolville 138 kV (CARTRCO4 138kV, 515561)
GEN-2011-050	109.8	Vestas V90 1.8MW	Tap on the Rushspt4 to Ommarlo4 138 kV line (SANTAFE4 138 kV, 511492)
GEN-2012-004	41.4MW increase (total output 151.8MW)	Siemens 2.3MW	Tap Ratliff – Poolville 138 kV (CARTRCO4 138kV, 515561)
GEN-2013-007	100.0	Vestas V100 2.0MW	Price Falls to Carter 138 kV (ARBWIND4 138kV, 515575)
GEN-2014-057	250.0	GE 2.1MW	LES (511468) to Sunnyside (515136) 345 kV (Proposed AEP Terry Road 345 kV, 560013)
ASGI-2015-006	9.0	Eaton Xpert Solar 1500kW Inverter (solar)	SWPA Tupelo 138 kV (505600)
GEN-2015-045	20.0	Parker 890GT-B 2.0MW inverters (battery storage)	LES (511468) to Sunnyside (515136) 345 kV (Proposed AEP Terry Road 345 kV, 560013)
GEN-2015-092	250.0	GE 2.0MW (wind)	LES (511468) to Sunnyside (515136) 345 kV (Proposed AEP Terry Road 345 kV, 560013)

3. TRANSMISSION SYSTEM AND STUDY AREA

The interconnection requests in Group 14 will interconnect into Oklahoma Gas & Electric (OKGE, Area #524) and Western Farmers Electric Cooperative (WFEC, Area #525).

In addition to Areas #524 and #525, the following areas were monitored also:

- American Electric Power West (AEPW, Area #520)
- Southwestern Public Service (SPS, Area #526)
- Midwest Energy (MIDW, Area #531)
- Sunflower Electric Power Corporation (SUNC, Area #534)
- Westar Energy, Inc. (WERE, Area #536)

4. POWER FLOW BASE CASES

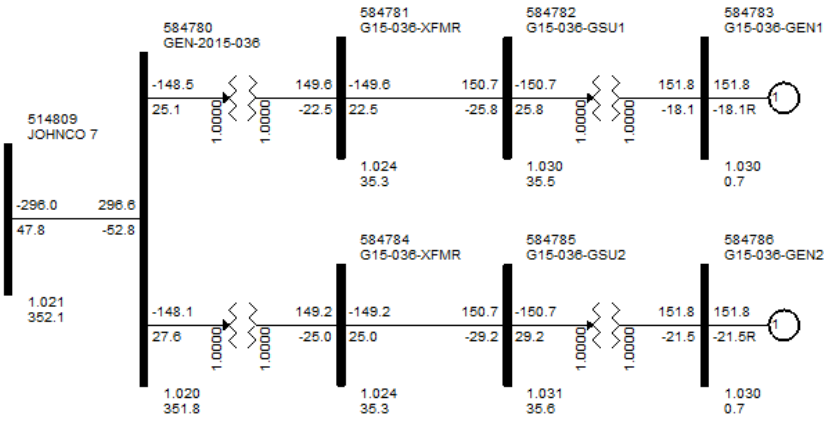
DISIS-2016-001-1 (Group 14) and prior-queued projects were modeled as aggregated generating units in the base cases from SPP.

Study Base Cases Scenario

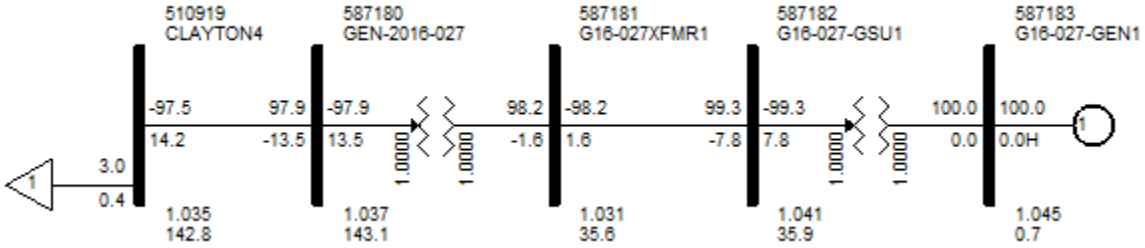
- **MDWG15-16WP_DIS1601_G14.sav** – 2016 Winter Peak Base Case for Group 14. New interconnection requests and prior-queued projects at 100% output power.
- **MDWG15-17SP_DIS1601_G14.sav** – 2017 Summer Peak Base Case for Group 14. New interconnection requests and prior-queued projects at 100% output power.
- **MDWG15-25SP_DIS1601_G14.sav** – 2025 Summer Peak Base Case for Group 14. New interconnection requests and prior-queued projects at 100% output power.

5. POWER FLOW MODEL

SPP's base case power flow models were built in PSS/E 32.2.1. In PSS/E of the same version, S&C created one-line diagrams depicted in Figure 1 for each interconnection request.

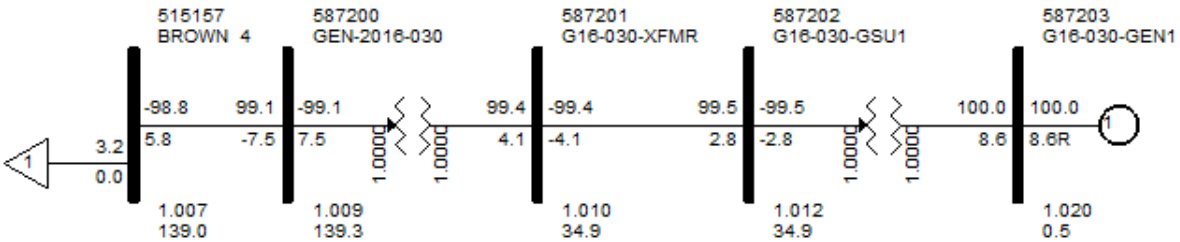


(a) Interconnection request GEN-2015-036

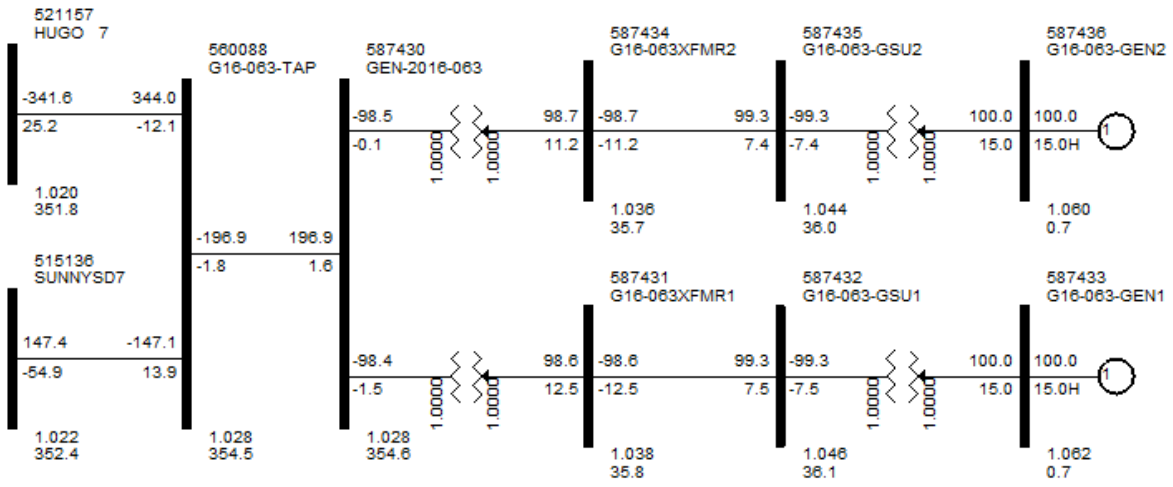


(b) Interconnection request GEN-2016-028

Note: Per SPP, GEN-2016-028 is the correct naming convention (not GEN-2016-027 as shown above)



(c) Interconnection request GEN-2016-030



(d) Interconnection request GEN-2016-063

Figure 1: One-line Diagrams of the Interconnection Request Projects

6. DYNAMIC STABILITY ANALYSIS

6.1. ASSUMPTIONS

Dynamic stability analysis was performed for all the SPP contingencies listed in Appendix A. Three phase faults were simulated as bolted faults, while single line-to-ground faults were simulated under the assumption that a single line-to-ground fault will cause a 40% drop in the positive-sequence voltage at the fault location.

6.2. STABILITY CRITERIA

Dynamic stability studies were performed to ensure system stability following critical faults on the system. The system is considered stable if the following conditions are met:

(1) Disturbances including three-phase and single-phase to ground faults, should not cause synchronous and asynchronous plants to disconnect from the transmission grid.

(2) The angular positions of synchronous machine rotor become constant following an aperiodic system disturbance.

(3) Voltage magnitudes and frequencies at terminals of asynchronous generators should not exceed magnitudes and durations that will cause protection elements to operate. Furthermore, the response after the disturbance at the terminals of the machine exhibits no sustained oscillations in power output, speed, frequency, etc.

(4) Voltage magnitudes and angles after the disturbance should settle to a constant and acceptable operating level. Frequencies should settle to the acceptable range within nominal 60 Hz power frequency.

In addition, performance of the transmission system is measured against the SPP Disturbance Criteria Requirements on Angular oscillations and Transient Voltage Recovery, detailed in Appendix B.

6.3. DYNAMIC STABILITY RESULTS

The dynamic stability study was performed for the three base case scenarios; 2016 WP, 2017 SP, and 2025 SP. Initially, the base case dynamic data was analyzed and stable initial runs were obtained. Analysis of preliminary dynamic stability simulation revealed that interconnection request GEN-2016-030 was tripping on under-frequency due to a spike in frequency measure at its connecting bus. Further investigations and discussions with SPP concluded that this was potentially a simulation numerical issue and thus the frequency relay at interconnection request GEN-2016-030 was deactivated. Then, the study was performed for all the SPP contingencies listed in Appendix A. Detailed plots of dynamic stability results for each contingency and each peak season are given in Appendices C-1 to C-3.

These results demonstrate that the system remains stable under each studied contingency and all studied interconnection projects stay online during and after the contingency.

Post analysis of the results, however, shows that few contingencies caused instances of transient recovery over-voltages that violate the planning criteria.

Table 3 summarizes the observed voltage violations on high-voltage buses. It is worth noting that all the observed over-voltages were damped out shortly post-contingency. In discussions with SPP it was determined that GEN-2015-036 was the source of the transient over-voltage. Mitigation for this prior outage condition is the curtailment of the GEN-2015-036 generation.

Table 3 – Observed Voltage Violations on High Voltage Buses

Contingency	Bus No	Base Voltage (kV)	Maximum Voltage (p.u.)	Minimum Voltage* (p.u.)
2016 Winter Peak				
FLT19-PO	514809	345.0	1.23	1.00
2017 Summer Peak				
FLT19-PO	514809	345.0	1.22	1.00
2025 Summer Peak				
FLT19-PO	514809	345.0	1.22	1.00

** minimum voltage is defined as the minimum voltage observed 2.5 seconds after the fault was cleared, per SPP criteria*

7. Power Factor Analysis

The power factor analysis was performed for each base case and for all N-1 three-phase contingencies shown in the Fault Definition table in Appendix A. Single-phase contingencies, N-1-1 contingencies, and N-2 contingencies were excluded from the study. Prior to the run, the base cases were slightly altered, by turning off the renewable energy projects and replacing them by a generator at the high-voltage bus with the MW rating of the renewable project at that POI and no reactive power capability. A new reactive power generator was placed at each renewable energy project high voltage bus for supporting the reactive power. The reactive power generators were set to hold the voltage schedule at the interconnection project consistent with the voltage schedules in the provided base case or 1.0 p.u. voltage (whichever is higher).

Table 4 gives the voltage schedule at each interconnection request location in the original base cases.

Table 4 – Base Case Voltages at the Interconnection Request POI Bus

Request	POI	2016 Winter Peak (p.u.)	2017 Summer Peak (p.u.)	2025 Summer Peak (p.u.)
GEN-2015-036	514809	1.0234	1.0222	1.0232
GEN-2016-028	510919	1.0352	1.0345	1.0316
GEN-2016-030	515157	1.0078	1.0003	0.9985
GEN-2016-063	560088	1.0321	1.0340	1.0387

The power factor analysis results for Group 14 interconnection requests for each N-1 three phase contingency are presented in Appendix D. The measured power factor for all interconnection requests in Group 14 is between normal required capability (from 0.95 lagging to 0.95 leading) at the POIs.

Table 5 provides a summary of the maximum leading/lagging reactive power demand and power factor, corresponding to the worst-case contingencies for each project, found by the power factor analysis at the POIs.

Table 5 – Summary of Power Factor Analysis at the POI

Request	Capacity	POI	Reactive Power/Power Factor at the POI	
			Leading (absorbing vars)	Lagging (providing vars)
GEN-2015-036	303.6 MW	514809	-79.1 Mvar/0.967	*
GEN-2016-028	100 MW	510919	-19 Mvar /0.982	*
GEN-2016-030	100 MW	515157	-18.6 Mvar /0.983	11.5 Mvar /0.993
GEN-2016-063	200 MW	560088	-26.6 Mvar /0.991	32.6 Mvar /0.987

** For Gen-2015-036 and Gen-2016-028 interconnection requests, no lagging power factor condition was observed under studied contingencies.*

8. Low Wind/Low Solar irradiance Conditions Analysis

S&C has performed an analysis of low wind/low solar irradiance conditions for the interconnection requests that is a renewable energy project. The low wind/low solar irradiance analysis was performed for the three base case scenarios, 2016 WP, 2017 SP, and 2025 SP, by taking the interconnection renewable energy project out of service and placing a shunt reactor at the project substation high side to offset the reactive power generated from the capacitance of the project's transmission lines and collector cables. The size of the shunt reactor was adjusted such that the net Mvar flow into the POI from the studied renewable energy project was approximately zero. Table 6 gives the shunt reactor Mvars for the studied projects.

Table 6 – Shunt Reactor Mvar Determined by Low Wind/Low Irradiance Study

Request	POI	2016 Winter Peak	2017 Summer Peak	2025 Summer Peak
GEN-2015-036	514809	20	20	20
GEN-2016-028	510919	8.4	8.4	8.4
GEN-2016-030	515157	5.3	5.3	5.3
GEN-2016-063	560088	10.1	10.1	10.1

9. SHORT-CIRCUIT STUDY

A short-circuit study has been performed on the power flow models for the 2016 Winter Peak, 2017 Summer Peak and 2025 Summer Peak base cases for each generator. Short-circuit analysis includes applying a 3-phase fault on buses up to 5 levels away from the POI of each interconnection request project. PSS/E "Automatic Sequence Fault Calculation (ASCC)" fault analysis module was used for the purpose of short-circuit analysis. The results of the short-circuit analysis have been recorded for all the buses up to five levels away from the point of interconnection of each interconnection request project. Summary of short circuit levels at studied buses is provided in Appendix E-1 and detailed short-circuit study results are provided in Appendix E-2.

10. CONCLUSIONS AND RECOMMENDATIONS

Analysis of Group 14 dynamic simulation results revealed that the system remains stable under all studied contingency and all interconnection requests projects remain connected during and after the contingency. However, a prior outage contingency caused instances of transient recovery over-voltages that violate the planning criteria. The mitigation for this issue is curtailment of GEN-2015-036 after the initial outage.

The results of power factor analysis indicate that for all four interconnection requests, the measured power factor was between 0.95 lagging to 0.95 leading power factor at the POIs under all studied contingencies.

The project's low wind/low solar irradiance study suggested that to offset the reactive power from the capacitance of the project's transmission lines and collector cables during the low wind/low irradiance conditions, a 20 Mvar shunt reactor size is required for GEN-2015-036, 8.4 Mvar for GEN-2016-028, 5.3 Mvar for GEN-2016-030 and 10.1 Mvar for GEN-2016-063.

A short-circuit study has been performed on the power flow models for the 2016 Winter Peak Season, 2017 Summer Peak Season, and 2025 Summer Peak Season for each generator. A 3-phase fault is applied on buses up to five (5) levels away from the POI of each interconnection request project and the results of the study have been presented.

APPENDIX A

SPP GROUP 14 FAULT DEFINITIONS

Table 3 – Fault Definitions

	Cont. Name	Description
1	FLT01-3PH	3 phase fault on JOHNCO 7 345 kV (514809) to PITTSB-7 345 kV (510907), near JOHNCO 7. a. Apply fault at the JOHNCO 7 345 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
2	FLT02-3PH	3 phase fault on the JOHNCO 7 345 kV (514809) to JOHNCO 4 138 kV (514808) to JOHNCO11 13.8 kV (514810) XFMR, near JOHNCO 7 345 kV. a. Apply fault at the JOHNCO 7 345 kV bus. b. Clear fault after 5 cycles and trip the faulted transformer.
3	FLT03-3PH	3 phase fault on JOHNCO 7 345 kV (514809) to SUNNYSD7 345 kV (515136), near JOHNCO 7. a. Apply fault at the JOHNCO 7 345 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
4	FLT04-3PH	3 phase fault on PITTSB-7 345 kV (510907) to VALIANT7 345 kV (510911), near PITTSB-7. a. Apply fault at the PITTSB-7 345 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
5	FLT05-3PH	3 phase fault on PITTSB-7 345 kV (510907) to SEMINOL7 345 kV (515045), near PITTSB-7. a. Apply fault at the PITTSB-7 345 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
6	FLT06-3PH	3 phase fault on PITTSB-7 345 kV (510907) to C-RIVER7 345 kV (515422), near PITTSB-7. a. Apply fault at the PITTSB-7 345 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
7	FLT07-3PH	3 phase fault on JOHNCO 4 138 kV (514808) to RUSSET-4 138 kV (515120), near JOHNCO 4. a. Apply fault at the JOHNCO 4 138 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
8	FLT08-3PH	3 phase fault on JOHNCO 4 138 kV (514808) to SXMLCKT4 138 kV (515122), near JOHNCO 4. a. Apply fault at the JOHNCO 4 138 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

Table 3 – Fault Definitions

	Cont. Name	Description
9	FLT09-3PH	3 phase fault on JOHNCO 4 138 kV (514808) to CANEYCK4 138 kV (515150), near JOHNCO 4. a. Apply fault at the JOHNCO 4 138 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
10	FLT10-3PH	3 phase fault on SUNNYSD7 345 kV (515136) to G14-057T 345 kV (560013), near SUNNYSD7. a. Apply fault at the SUNNYSD7 345 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
11	FLT11-3PH	3 phase fault on the SUNNYSD7 345 kV (515136) to SUNNYSD4 138 kV (515135) to SUNNYSD1 13.8 kV (515762) XFMR, near SUNNYSD7 345 kV. a. Apply fault at the SUNNYSD7 345 kV bus. b. Clear fault after 5 cycles and trip the faulted transformer.
12	FLT12-3PH	3 phase fault on SUNNYSD7 345 kV (515136) to G16-063-TAP 345 kV (560088), near SUNNYSD7. a. Apply fault at the SUNNYSD7 345 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
13	FLT13-SB	**Stuck Breaker at JOHNCO 7 (514809)** a. Apply single phase fault at JOHNCO 7 bus. b. Clear fault after 16 cycles and trip the following elements c. JOHNCO 7 (514809) - PITTSB-7 (510907) d. JOHNCO 7 (514809) - SUNNYSD7 (515136)
14	FLT14-SB	**Stuck Breaker at JOHNCO 7 (514809)** a. Apply single phase fault at JOHNCO 7 bus. b. Clear fault after 16 cycles and trip the following elements c. JOHNCO 7 (514809) - PITTSB-7 (510907) d. JOHNCO 7 345kV (514809) / JOHNCO 4 138 kV (514808) / JOHNCO11 13.8 kV (514810) transformer
15	FLT15-SB	**Stuck Breaker at JOHNCO 7 (514809)** a. Apply single phase fault at JOHNCO 7 bus. b. Clear fault after 16 cycles and trip the following elements c. JOHNCO 7 (514809) - SUNNYSD7 (515136) d. JOHNCO 7 345kV (514809) / JOHNCO 4 138 kV (514808) / JOHNCO11 13.8 kV (514810) transformer
16	FLT16-SB	**Stuck Breaker at SUNNYSD7 (515136)** a. Apply single phase fault at SUNNYSD7 bus. b. Clear fault after 16 cycles and trip the following elements c. SUNNYSD7 (515136) - JOHNCO 7 (514809) d. SUNNYSD7 (515136) - G14-057T (560013)

Table 3 – Fault Definitions

	Cont. Name	Description
17	FLT17-SB	**Stuck Breaker at SUNNYSD7 (515136)** a. Apply single phase fault at SUNNYSD7 bus. b. Clear fault after 16 cycles and trip the following elements c. SUNNYSD7 (515136) - JOHNCO 7 (514809) d. SUNNYSD7 (515136) - G16-063-TAP (560088)
18	FLT18-SB	**Stuck Breaker at PITTSB-7 (510907)** a. Apply single phase fault at PITTSB-7 bus. b. Clear fault after 16 cycles and trip the following elements c. PITTSB-7 (510907) - VALIANT7 (510911) d. PITTSB-7 (510907) - JOHNCO 7 (514809)
19	FLT19-PO	**Prior Outage of JOHNCO 7 (514809) to PITTSB-7 (510907) line;** 3 phase fault on JOHNCO 7 (514809) – SUNNYSD7 (515136) near JOHNCO 7 a. Apply fault at the JOHNCO 7 bus. b. Clear fault after 5 cycles and trip the faulted line.
20	FLT20-PO	**Prior Outage of JOHNCO 7 (514809) to PITTSB-7 (510907) line;** 3 phase fault on the JOHNCO 7 345kV (514809) / JOHNCO 4 138 kV (514808) / JOHNCO11 13.8 kV (514810) transformer near JOHNCO 7 a. Apply fault at the JOHNCO 7 bus. b. Clear fault after 5 cycles and trip the faulted line.
21	FLT21-PO	**Prior Outage of JOHNCO 7 (514809) to SUNNYSD7 (515136) line;** 3 phase fault on the JOHNCO 7 345kV (514809) / JOHNCO 4 138 kV (514808) / JOHNCO11 13.8 kV (514810) transformer near JOHNCO 7 a. Apply fault at the JOHNCO 7 bus. b. Clear fault after 5 cycles and trip the faulted line.
22	FLT22-PO	**Prior Outage of SUNNYSD7 (515136) to G14-057T (560013) line;** 3 phase fault on SUNNYSD7 (515136) – JOHNCO 7 (514809) near SUNNYSD7 a. Apply fault at the SUNNYSD7 bus. b. Clear fault after 5 cycles and trip the faulted line.
23	FLT23-PO	**Prior Outage of SUNNYSD7 (515136) to G16-063-TAP (560088) line;** 3 phase fault on SUNNYSD7 (515136) – JOHNCO 7 (514809) near SUNNYSD7 a. Apply fault at the SUNNYSD7 bus. b. Clear fault after 5 cycles and trip the faulted line.
24	FLT24-3PH	3 phase fault on CLAYTON4 138 kV (510919) to SARDIS 4 138 kV (510926), near CLAYTON4. a. Apply fault at the CLAYTON4 138 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
25	FLT25-3PH	3 phase fault on CLAYTON4 138 kV (510919) to NASHOBA4 138 kV (510927), near CLAYTON4. a. Apply fault at the CLAYTON4 138 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

Table 3 – Fault Definitions

	Cont. Name	Description
26	FLT26-3PH	3 phase fault on SARDIS 4 138 kV (510926) to ENOWILT4 138 kV (510944), near SARDIS 4. a. Apply fault at the SARDIS 4 138 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
27	FLT27-3PH	3 phase fault on NASHOBA4 138 kV (510927) to BETHEL 4 138 kV (510928), near NASHOBA4. a. Apply fault at the NASHOBA4 138 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
28	FLT28-SB	**Stuck Breaker at LONEOAK4 (510897)** a. Apply single phase fault at LONEOAK4 bus. b. Clear fault after 16 cycles and trip the following elements c. LONEOAK4 (510897) - SMCALTP4 (510906) d. LONEOAK4 (510897) - ENOWILT4 (510944)
29	FLT29-SB	**Stuck Breaker at LONEOAK4 (510897)** a. Apply single phase fault at LONEOAK4 bus. b. Clear fault after 16 cycles and trip the following elements c. LONEOAK4 (510897) - HARTSHN4 (520934) d. LONEOAK4 (510897) - ENOWILT4 (510944)
30	FLT30-SB	**Stuck Breaker at LONEOAK4 (510897)** a. Apply single phase fault at LONEOAK4 bus. b. Clear fault after 16 cycles and trip the following elements c. LONEOAK4 (510897) - ENOWILT4 (510944) d. LONEOAK4 (510897) - CARBON 4 (520844)
31	FLT31-SB	**Stuck Breaker at BRKN BW4 (505614)** a. Apply single phase fault at BRKN BW4 bus. b. Clear fault after 16 cycles and trip the following elements c. BRKN BW4 (505614) - BETHEL 4 (510928) d. BRKN BW4 (505614) - CRAIGJT4 (510890)
32	FLT32-SB	**Stuck Breaker at BRKN BW4 (505614)** a. Apply single phase fault at BRKN BW4 bus. b. Clear fault after 16 cycles and trip the following elements c. BRKN BW4 (505614) - HOCHTWN4 (520943) d. BRKN BW4 (505614) - BETHEL 4 (510928)
33	FLT33-PO	**Prior Outage of LONEOAK4 (510897) to SMCALTP4 (510906) line;** 3 phase fault on LONEOAK4 (510897) – ENOWILT4 (510944) near LONEOAK4 a. Apply fault at the LONEOAK4 bus. b. Clear fault after 5 cycles and trip the faulted line.
34	FLT34-PO	**Prior Outage of LONEOAK4 (510897) to HARTSHN4 (520934) line;** 3 phase fault on LONEOAK4 (510897) – ENOWILT4 (510944) near LONEOAK4 a. Apply fault at the LONEOAK4 bus. b. Clear fault after 5 cycles and trip the faulted line.

Table 3 – Fault Definitions

	Cont. Name	Description
35	FLT35-PO	**Prior Outage of LONEOAK4 (510897) to ENOWILT4 (510944) line;** 3 phase fault on LONEOAK4 (510897) – CARBON 4 (520844) near LONEOAK4 a. Apply fault at the LONEOAK4 bus. b. Clear fault after 5 cycles and trip the faulted line.
36	FLT36-PO	**Prior Outage of BRKN BW4 (505614) to BETHEL 4 (510928) line;** 3 phase fault on BRKN BW4 (505614) - CRAIGJT4 (510890) near BRKN BW4 a. Apply fault at the BRKN BW4 bus. b. Clear fault after 5 cycles and trip the faulted line.
37	FLT37-PO	**Prior Outage of BRKN BW4 (505614) to HOCHTWN4 (520943) line;** 3 phase fault on BRKN BW4 (505614) - BETHEL 4 (510928) near BRKN BW4 a. Apply fault at the BRKN BW4 bus. b. Clear fault after 5 cycles and trip the faulted line.
38	FLT38-3PH	3 phase fault on BROWN 4 138 kV (515157) to COLEMNT4 138 kV (515153), near BROWN 4. a. Apply fault at the BROWN 4 138 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
39	FLT39-3PH	3 phase fault on BROWN 4 138 kV (515157) to S BROWN4 138 kV (505602), near BROWN 4. a. Apply fault at the BROWN 4 138 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
40	FLT40-3PH	3 phase fault on COLEMNT4 138 kV (515153) to BROWNTP4 138 kV (515152), near COLEMNT4. a. Apply fault at the COLEMNT4 138 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
41	FLT41-3PH	3 phase fault on S BROWN4 138 kV (505602) to RUSSETT4 138 kV (521044), near S BROWN4. a. Apply fault at the S BROWN4 138 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
42	FLT42-3PH	3 phase fault on S BROWN4 138 kV (505602) to COLBRTP4 138 kV (515159), near S BROWN4. a. Apply fault at the S BROWN4 138 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

Table 3 – Fault Definitions

	Cont. Name	Description
43	FLT43-3PH	3 phase fault on S BROWN4 138 kV (505602) to TUPELO 4 138 kV (505600), near S BROWN4. a. Apply fault at the S BROWN4 138 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
44	FLT44-3PH	3 phase fault on S BROWN4 138 kV (505602) to KRSYJCTS4 138 kV (521109), near S BROWN4. a. Apply fault at the S BROWN4 138 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
45	FLT45-3PH	3 phase fault on S BROWN4 138 kV (505602) to KRSYJCTN4 138 kV (521108), near S BROWN4. a. Apply fault at the S BROWN4 138 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
46	FLT46-SB	**Stuck Breaker at S BROWN4 (505602)** a. Apply single phase fault at S BROWN4 bus. b. Clear fault after 16 cycles and trip the following elements c. S BROWN4 (505602) - COLBRTP4 (515159) d. S BROWN4 (505602) - BROWN 4 (515157)
47	FLT47-SB	**Stuck Breaker at S BROWN4 (505602)** a. Apply single phase fault at S BROWN4 bus. b. Clear fault after 16 cycles and trip the following elements c. S BROWN4 (505602) - KRSYJCTS4 (521109) d. S BROWN4 (505602) - BROWN 4 (515157)
48	FLT48-SB	**Stuck Breaker at S BROWN4 (505602)** a. Apply single phase fault at S BROWN4 bus. b. Clear fault after 16 cycles and trip the following elements c. S BROWN4 (505602) - KRSYJCTN4 (521108) d. S BROWN4 (505602) - BROWN 4 (515157)
49	FLT49-SB	**Stuck Breaker at S BROWN4 (505602)** a. Apply single phase fault at S BROWN4 bus. b. Clear fault after 16 cycles and trip the following elements c. S BROWN4 (505602) - RUSSETT4 (521044) d. S BROWN4 (505602) - BROWN 4 (515157)
50	FLT50-SB	**Stuck Breaker at BROWNTP4 (515152)** a. Apply single phase fault at BROWNTP4 bus. b. Clear fault after 16 cycles and trip the following elements c. BROWNTP4 (515152) - BODLE 4 (515155) d. BROWNTP4 (515152) - COLEMNT4 (515153)
51	FLT51-SB	**Stuck Breaker at BROWNTP4 (515152)** a. Apply single phase fault at BROWNTP4 bus. b. Clear fault after 16 cycles and trip the following elements c. BROWNTP4 (515152) - LTLCITY4 (515151) d. BROWNTP4 (515152) - COLEMNT4 (515153)

Table 3 – Fault Definitions

	Cont. Name	Description
52	FLT52-PO	**Prior Outage of S BROWN4 (505602) to COLBRTP4 (515159) line;** 3 phase fault on S BROWN4 (505602) - BROWN 4 (515157) near S BROWN4. a. Apply fault at the S BROWN4 bus. b. Clear fault after 5 cycles and trip the faulted line.
53	FLT53-PO	**Prior Outage of S BROWN4 (505602) to KRSYJCTN4 (521108) line;** 3 phase fault on S BROWN4 (505602) - BROWN 4 (515157) near S BROWN4. a. Apply fault at the S BROWN4 bus. b. Clear fault after 5 cycles and trip the faulted line.
54	FLT54-PO	**Prior Outage of S BROWN4 (505602) to BROWN 4 (515157) line;** 3 phase fault on S BROWN4 (505602) - RUSSETT4 (521044) near S BROWN4. a. Apply fault at the S BROWN4 bus. b. Clear fault after 5 cycles and trip the faulted line.
55	FLT55-PO	**Prior Outage of BROWNTP4 (515152) to BODLE 4 (515155) line;** 3 phase fault on BROWNTP4 (515152) - COLEMNT4 (515153) near BROWNTP4. a. Apply fault at the BROWNTP4 bus. b. Clear fault after 5 cycles and trip the faulted line.
56	FLT56-PO	**Prior Outage of BROWNTP4 (515152) to LTLCITY4 (515151) line;** 3 phase fault on BROWNTP4 (515152) - COLEMNT4 (515153) near BROWNTP4. a. Apply fault at the BROWNTP4 bus. b. Clear fault after 5 cycles and trip the faulted line.
57	FLT57-3PH	3 phase fault on G14-057T 345 kV (560013) to L.E.S.-7 345 kV (511468), near G14-057T. a. Apply fault at the G14-057T 345 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
58	FLT58-3PH	3 phase fault on L.E.S.-7 345 kV (511468) to GRACMNT7 345 kV (515800), near L.E.S.-7. a. Apply fault at the L.E.S.-7 345 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
59	FLT59-3PH	3 phase fault on L.E.S.-7 345 kV (511468) to O.K.U.-7 345 kV (511456), near L.E.S.-7. a. Apply fault at the L.E.S.-7 345 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
60	FLT60-3PH	3 phase fault on the L.E.S.-7 345 kV (511468) to L.E.S.-4 138 kV (511467) to LES#5-113.8 kV (511411) XFMR, near L.E.S.-7 345 kV. a. Apply fault at the L.E.S.-7 345 kV bus. b. Clear fault after 5 cycles and trip the faulted transformer.

Table 3 – Fault Definitions

	Cont. Name	Description
61	FLT61-SB	**Stuck Breaker at L.E.S.-7 (511468)** a. Apply single phase fault at L.E.S.-7 bus. b. Clear fault after 16 cycles and trip the following elements c. L.E.S.-7 (511468) - GRACMNT7 (515800) d. L.E.S.-7 (511468) - G14-057T (560013)
62	FLT62-SB	**Stuck Breaker at L.E.S.-7 (511468)** a. Apply single phase fault at L.E.S.-7 bus. b. Clear fault after 16 cycles and trip the following elements c. L.E.S.-7 (511468) - O.K.U.-7 (511456) d. L.E.S.-7 (511468) - G14-057T (560013)
63	FLT63-SB	**Stuck Breaker at L.E.S.-7 (511468)** a. Apply single phase fault at L.E.S.-7 bus. b. Clear fault after 16 cycles and trip the following elements c. L.E.S.-7 (511468) - G14-057T (560013) d. L.E.S.-7 345kV (511468) / L.E.S.-4 138 kV (511467) / LES#5-1 13.8 kV (511411) transformer
64	FLT64-SB	**Stuck Breaker at L.E.S.-7 (511468)** a. Apply single phase fault at L.E.S.-7 bus. b. Clear fault after 16 cycles and trip the following elements c. L.E.S.-7 (511468) - O.K.U.-7 (511456) d. L.E.S.-7 (511468) - GRACMNT7 (515800)
65	FLT65-SB	**Stuck Breaker at SUNNYSD7 (515136)** a. Apply single phase fault at SUNNYSD7 bus. b. Clear fault after 16 cycles and trip the following elements c. SUNNYSD7 (515136) - G14-057T (560013) d. SUNNYSD7 (515136) - G16-063-TAP (560088)
66	FLT66-PO	**Prior Outage of L.E.S.-7 (511468) to GRACMNT7 (515800) line;** 3 phase fault on L.E.S.-7 (511468) - G14-057T (560013) near L.E.S.-7. a. Apply fault at the L.E.S.-7 bus. b. Clear fault after 5 cycles and trip the faulted line.
67	FLT67-PO	**Prior Outage of L.E.S.-7 (511468) to O.K.U.-7 (511456) line;** 3 phase fault on L.E.S.-7 (511468) - G14-057T (560013) near L.E.S.-7. a. Apply fault at the L.E.S.-7 bus. b. Clear fault after 5 cycles and trip the faulted line.
68	FLT68-PO	**Prior Outage of L.E.S.-7 345kV (511468) / L.E.S.-4 138 kV (511467) / LES#5-1 13.8 kV (511411) transformer;** 3 phase fault on L.E.S.-7 (511468) - G14-057T (560013) near L.E.S.-7. a. Apply fault at the L.E.S.-7 bus. b. Clear fault after 5 cycles and trip the faulted line.
69	FLT69-3PH	3 phase fault on G16-063-TAP 345 kV (560088) to HUGO 7 345 kV (521157), near G16-063-TAP. a. Apply fault at the G16-063-TAP 345 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

Table 3 – Fault Definitions

	Cont. Name	Description
70	FLT70-3PH	3 phase fault on the HUGO 7 345 kV (521157) to HUGO PP4 138 kV (520948) to HUGO TERTA 13.8 kV (521189) XFMR, near HUGO 7 345 kV. a. Apply fault at the HUGO 7 345 kV bus. b. Clear fault after 5 cycles and trip the faulted transformer.
71	FLT71-3PH	3 phase fault on HUGO 7 345 kV (521157) to VALIANT7 345 kV (510911), near HUGO 7. a. Apply fault at the HUGO 7 345 kV bus. b. Clear fault after 5 cycles and trip the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
72	FLT72-SB	**Stuck Breaker at HUGO 7 (521157)** a. Apply single phase fault at HUGO 7 bus. b. Clear fault after 16 cycles and trip the following elements c. HUGO 7 (521157) - VALIANT7 (510911) d. HUGO 7 (521157) - G16-063-TAP (560088)
73	FLT73-SB	**Stuck Breaker at SUNNYSD7 (515136)** a. Apply single phase fault at SUNNYSD7 bus. b. Clear fault after 16 cycles and trip the following elements c. SUNNYSD7 (515136) - G16-063-TAP (560088) d. SUNNYSD7 345kV (515136) / SUNNYSD4 138 kV (515135) / SUNYSD 1 13.8 kV (515405) transformer
74	FLT74-PO	**Prior Outage of HUGO 7 (521157) to VALIANT7 (510911) line;** 3 phase fault on HUGO 7 (521157) - G16-063-TAP (560088) near HUGO 7. a. Apply fault at the HUGO 7 bus. b. Clear fault after 5 cycles and trip the faulted line.
75	FLT75-PO	**Prior Outage of SUNNYSD7 345kV (515136) / SUNNYSD4 138 kV (515135) / SUNYSD 1 13.8 kV (515405) transformer;** 3 phase fault SUNNYSD7 (515136) - G16-063-TAP (560088) near SUNNYSD7. a. Apply fault at the SUNNYSD7 bus. b. Clear fault after 5 cycles and trip the faulted line.
76	FLT76-PO	**Prior Outage of Elk City (511458) to CL-AFTP (511446) to Hobart (511463) 138kV line;** 3 phase fault on Weatherford WF (511506) to WEATHTP (511536) to Weatherford SE (511497) 138kV near Weatherford WF. a. Apply fault at the Weatherfor WF bus. b. Clear fault after 5 cycles and trip the faulted line.
77	FLT77-PO	**Prior Outage of Elk City 138kV (511458)/230kV (511490) transformer;** 3 phase fault on Weatherford WF (511506) to WEATHTP (511536) to Weatherford SE (511497) 138kV near Weatherford WF. a. Apply fault at the Weatherfor WF bus. b. Clear fault after 5 cycles and trip the faulted line.
78	FLT78-PO	**Prior Outage of Red Hills Wind (521116) to ELLIS (511561) to Mooreland (Moorewood) (521001) 138kV line;** 3 phase fault on Weatherford WF (511506) to WEATHTP (511536) to Weatherford SE (511497) 138kV near Weatherford WF. a. Apply fault at the Weatherfor WF bus. b. Clear fault after 5 cycles and trip the faulted line.

Table 3 – Fault Definitions

	Cont. Name	Description
79	FL79-PO	**Prior Outage of Elk City (511458) to FALCNRD (511511) to SAYRE (511504) to Erick (520903) 138kV line;** 3 phase fault on Weatherford WF (511506) to WEATHTP (511536) to Weatherford SE (511497) 138kV near Weatherford WF. a. Apply fault at the Weatherfor WF bus. b. Clear fault after 5 cycles and trip the faulted line.
80	FLT80-PO	**Prior Outage of Red Rock Road (511548) to CAN_GAS (511540) to Jensen Road (514821) 138kV line;** 3 phase fault on Weatherford WF (511506) to CL-NGTP (511534 to Clinton Jct (511485) 138kV near Weatherford WF. a. Apply fault at the Weatherfor WF bus. b. Clear fault after 5 cycles and trip the faulted line.
81	FLT81-PO	**Prior Outage of Broken Bow Dam (505614) to Craig Jct (510890) 138kV line;** 3 phase fault on Clayton WF (510919) to SARDIS (510926) to ENOWILT (510944) to Lone Oak (510897) 138kV near Clayton WF. a. Apply fault at the Clayton WF bus. b. Clear fault after 5 cycles and trip the faulted line.
82	FLT82-PO	**Prior Outage of Lone Oak (510897) to McAlester City (510908) 138kV line;** 3 phase fault on Clayton WF (510919)_to NASHOBA (510927) to BETHEL (510928) to Broken Bow (505614) 138kV near Clayton WF. a. Apply fault at the Clayton WF bus. b. Clear fault after 5 cycles and trip the faulted line.
83	FLT83-PO	**Prior Outage of Lone Oak (510897) to HARTSHN (520934) to SAVANNA (521047) to Pittsburg (521030) 138kV line;** 3 phase fault on Clayton WF (510919) to NASHOBA (510927) to BETHEL (510928) to Broken Bow (505614)138kV near Clayton WF. a. Apply fault at the Clayton WF bus. b. Clear fault after 5 cycles and trip the faulted line.

APPENDIX B

SOUTHWEST POWER POOL DISTURBANCE PERFORMANCE REQUIREMENTS (SUBMITTED IN A SEPARATE FILE)

APPENDIX C

DYNAMIC STABILITY PLOTS FOR GROUP 14 (SUBMITTED IN SEPARATE FILES FROM APPENDIX C-1 TO C-3)

C-1 Group 14 Dynamic Stability Plots for 2016 Winter Peak Case

C-2 Group 14 Dynamic Stability Plots for 2017 Summer Peak Case

C-3 Group 14 Dynamic Stability Plots for 2025 Summer Peak Case

Each contingency consists of (20) subplots:

- Subplot #1 is the system phase angle channels in the snapshot file provided by SPP.
- Subplot #2 to Subplot #16 are results for (15) generators in the scope of study.
- Subplots #17 and Subplot #18 are voltages at the POI buses in the scope of study.
- Subplots #19 and Subplot #20 are frequencies at the POI buses in the scope of study.

APPENDIX D

POWER FACTOR ANALYSIS RESULTS (SUBMITTED IN SEPARATE FILE FROM APPENDIX D-1 TO D-4)

D-1 Group 14 Power Factor Results for Interconnection Request GEN-2015-036 (#514809)

D-2 Group 14 Power Factor Results for Interconnection Request GEN-2016-028 (#510919)

D-3 Group 14 Power Factor Results for Interconnection Request GEN-2016-030 (#515157)

D-4 Group 14 Power Factor Results for Interconnection Request GEN-2016-063 (#560088)

APPENDIX E

SHORT-CIRCUIT STUDY RESULTS (SUBMITTED IN A SEPARATE FILE FROM APPENDIX E-1 TO E-6)

E-1 Group 14 16WP Short-Circuit Study Results Summary

E-2 Group 14 17SP Short-Circuit Study Results Summary

E-3 Group 14 25SP Short-Circuit Study Results Summary

E-4 Group 14 16WP Detailed Short-Circuit Study Results

E-5 Group 14 17SP Detailed Short-Circuit Study Results

E-6 Group 14 25SP Detailed Short-Circuit Study Results

11.14.12 J15: GROUP 15 DYNAMIC STABILITY ANALYSIS REPORT

Previous stability analysis is still valid.

11.14.13 J16: GROUP 16 DYNAMIC STABILITY ANALYSIS REPORT

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Southwest Power Pool, Inc. (SPP)

DISIS-2016-001-1 (Group 16)
Definitive Impact Study

Final Report

REP-0150
Revision #00

December 2017

Submitted By:
Mitsubishi Electric Power Products, Inc. (MEPPI)
Power Systems Engineering Division
Warrendale, PA

Title:	**DISIS-2016-001-1 (Group 16) Definitive Impact Study: Final Report REP-0150**	
Date:	December 2017	
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EXECUTIVE SUMMARY

SPP requested a Definitive Interconnection System Impact Study (DISIS). The DISIS required a Stability Analysis, Short-circuit Analysis, Power Factor Analysis, and Low/No Wind Analysis detailing the impacts of the interconnecting projects as shown in Table ES-1.

Table ES-1
Interconnection Projects Evaluated

Request	Size (MW)	Generator Model	Point of Interconnection
GEN-2016-004	202	Vestas V136 3.6MW /Vestas V110 2.0MW	BEPC Leland Olds 230kV (659106)
GEN-2016-052	3.3MW uprate to GI-0508 (total = 52.8MW)	GE 1.6MW wind	Hilken 230kV (652466)
GEN-2016-053	3.3MW uprate to GI-0615 (total = 52.8MW)	GE 1.6MW wind	Hilken 230kV (652466)

SUMMARY OF STABILITY ANALYSIS

The Stability Analysis determined there were a couple contingencies that resulted in voltage instability, generator instability, and high post-fault steady-state voltages when all generation interconnection requests were at 100% output.

To mitigate the voltage instability, generator instability, and high post-fault steady-state voltages, the following actions were provided by SPP and implemented for the respective season:

- Curtail GI1414GEN W0.6900 Unit 1 located at bus 659453 from 137 MW to 50 MW (16WP, 17SP, and 25SP)
- Switch off 109.6 Mvar line reactor at bus 659421 (17SP)

After applying the above system changes for all study years, all contingencies were observed to recover within SPP criteria.

SUMMARY OF THE SHORT-CIRCUIT ANALYSIS

The Short-Circuit Analysis was performed on the 2017 Summer Peak and 2025 Summer Peak power flow cases for all study projects. Refer to Table ES-2 for a list of maximum fault currents observed for each study project for the 2017 Summer Peak case. Refer to Table ES-3 for a list of maximum fault currents observed for each study project for the 2025 Summer Peak case.

Table ES-2
List of Maximum Fault Currents Observed for Each Study Project for the 2017 Summer Peak Case

Study Project	POI Name	Fault Current at POI (kA)	Maximum Fault Current (kA)	Fault Location	Bus Voltage (kV)
GEN-2016-004	BEPC Leland Olds 230 kV (659106)	22.19	54.06	COON CK7	115
GEN-2016-052	Hilken 230 kV (652466)	8.49	22.19	LELANDO4	230
GEN-2016-053	Hilken 230 kV (652466)	8.49	22.19	LELANDO4	230

Table ES-3
List of Maximum Fault Currents Observed for Each Study Project for the 2025 Summer Peak Case

Study Project	POI Name	Fault Current at POI (kA)	Maximum Fault Current (kA)	Fault Location	Bus Voltage (kV)
GEN-2016-004	BEPC Leland Olds 230 kV (659106)	22.62	54.13	COON CK7	115
GEN-2016-052	Hilken 230 kV (652466)	8.61	22.62	LELANDO4	230
GEN-2016-053	Hilken 230 kV (652466)	8.61	22.62	LELANDO4	230

SUMMARY OF POWER FACTOR ANALYSIS

Refer to Table ES-4 for the power factor analysis results for each study generator. The table lists the range of power factor required for each study project.

Table ES-4
Power Factor Analysis Summary for Study Projects

Study Project	Power Factor Range for Each Study Project[1]					
	16WP		17SP		25SP	
GEN-2016-004	-0.894	0.959	-0.769	0.917	-0.913	0.555
GEN-2016-052	-0.987	0.985	-0.941	0.984	-0.960	0.964
GEN-2016-053	-0.987	0.985	-0.941	0.984	-0.960	0.964

[1]Lagging power factors are negative and leading power factors are positive

SUMMARY OF THE LOW/NO WIND ANALYSIS

The amount of reactive power injected into the transmission network was recorded at the high side of the transformer near the point of interconnection for all study projects for each season.

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SECTION 1: OBJECTIVES

The objective of this report is to provide Southwest Power Pool, Inc. (SPP) with the deliverables for the DISIS-2016-001-1 (Group 16) Definitive Impact Study. SPP requested an Interconnection System Impact Study for three (3) generation interconnections for 2016 Winter Peak, 2017 Summer Peak, and 2025 Summer Peak, which requires a Stability Analysis, Short-circuit Analysis, Power Factor Analysis, Low/No Wind Analysis, and an Impact Study Report.

SECTION 2: BACKGROUND

The Siemens Power Technologies International PSS/E power system simulation program Version 32.2.0 was used for this study. SPP provided the stability database cases for 2016 Winter Peak, 2017 Summer Peak, and 2025 Summer Peak conditions and a list of contingencies to be examined. The model includes the study projects shown in Table 2-1 and the previously queued projects listed in Table 2-2. Refer to Appendix A for the steady-state and dynamic model data for the study projects. A power flow one-line diagram for each generation interconnection project is shown in Figures 2-1 through 2-3. Note that the one-line diagrams represent the 2016 Winter Peak case.

The Stability Analysis determined the impacts of the new interconnecting projects on the stability and voltage recovery of the nearby system and the ability of the interconnecting projects to meet FERC Order 661A. If problems with stability or voltage recovery are identified, the need for reactive compensation or system upgrades will be investigated. Three-phase faults and single line-to-ground faults will be examined as listed in Table 2-3.

A Short-Circuit Analysis was performed on the 2017 Summer Peak and 2025 Summer Peak study years for each study generator. The study was performed five buses out from the study generator's point of interconnection (POI) and results were documented.

The Power Factor Analysis determined the power factor at the high side of the transformer near the POI for the wind and solar interconnection projects for pre-contingency and post-contingency conditions. The N-1, three phase contingencies listed in Table 2-3 were used in the Power Factor analysis.

The Summary of the Low/No Wind Analysis was completed for all wind and solar farm interconnections. This analysis determined if reactive support is required from the interconnecting generation plants to have an Mvar flow of approximately zero at the POI from the grid.

Table 2-1
Interconnection Projects Evaluated

Request	Size (MW)	Generator Model	Point of Interconnection
GEN-2016-004	202	Vestas V136 3.6MW /Vestas V110 2.0MW	BEPC Leland Olds 230kV (659106)
GEN-2016-052	3.3MW uprate to GI-0508 (total = 52.8MW)	GE 1.6MW wind	Hilken 230kV (652466)
GEN-2016-053	3.3MW uprate to GI-0615 (total = 52.8MW)	GE 1.6MW wind	Hilken 230kV (652466)

Table 2-2
Previously Queued Nearby Interconnection Projects Included

Request	Size (MW)	Generator Model	Point of Interconnection
GI-0708	120	GENROU (659270, ID 1)	Culbertson 115kV (661012)
G645/G788	102.6	GENROU (615015, ID 1)	Spiritwd 115kV (620270)
G752	150	WT3 generic wind (661989)	Hettinger 230kV (661047) 230kV
G723	7	GENSAL (661046)	Heskett 115kV (661043)
J003	19.5	WT3 generic wind (661317)	Baker 60kV (661300)
G502	50.6	W4GUR wind (608603)	SQBUTTE 230kV (657756)
G408	12	WT1 generic wind (600059)	Velva Tap 115kV (605634)
G380	149.2	WT1 generic wind (620115)	Rugby 230kV (620379)
J262/J263	200	GENCLS (11104/ 11108)	Jamestown 115kV (620269)

Request	Size (MW)	Generator Model	Point of Interconnection
G830	99	GENCLS (10648)	McHenry 115kV (615348)
GI-0614A	7.5	GENSAL (659270, ID 2)	Culbertson 115kV (661012)
GI-0508	49.5	WT3 generic wind (659294)	Hilken 230kV (652466)
GI-0615	49.5	WT3 generic wind (659273)	Hilken 230kV (652466)
GI-0715	100	WT3 generic wind (659366)	Hilken 230kV (652466)
GI-0727	99	WT3 generic wind (659010)	Hilken 230kV (652466)
GI-0926	106.5	GENROU (659403)	Hebron 230kV (652468)
GI-1001	99	GENROU (659411)	Mound City 230kV (652499)
GI-1007	172.5	GENROU (659407)	Antelope Valley 345kV (659101)
GI-1105, GI-1205, GI-1207	150	GENROU (659147/ 659158/ 659159)	Williston 115kV (652421)
GI-1202, GI-1204, GI-1208	150	GENROU (659148/ 659156/ 659157)	EASTHYBT-MK 115kV (659587
GI-1206	141	GENROU (659162/ 659163/ 659192)	Patentgate 115kV (659391)
GI-1404	384.2	GE 1.7MW (659125)	Charlie Creek 345kV (659183)
GI-1406	113.3	GENSAL (659431 ID's A1-A6/ 659432 ID's B1-B6)	PNSCOLLECTR 115kV (659430)
GI-1410	150	Vestas V110 VCSS 2.0MW (659141)	Neset 115kV (659139)
GI-1414	149.6	GE 1.7MW wind (659453)	HEARTRVR 230kV (659448)

Request	Size (MW)	Generator Model	Point of Interconnection
GEN-2014-003IS	88.23	WT3 generic wind (659018)	Culbertson 115kV (661012)
GEN-2015-046	300	Vestes V110 2MW wind (584873)	Tandee (Neset) 345kV (659336)
GEN-2015-091	101.2	Siemens 2.3MW wind (585263)	HEARTRVR 230kV (659448)
GEN-2015-096	150	G.E. 2MW wind (585313)	HEARTRVR 230kV (659448)
GEN-2015-098	100	G.E. 2MW wind (585343)	Beaverhill 230kV (652616)

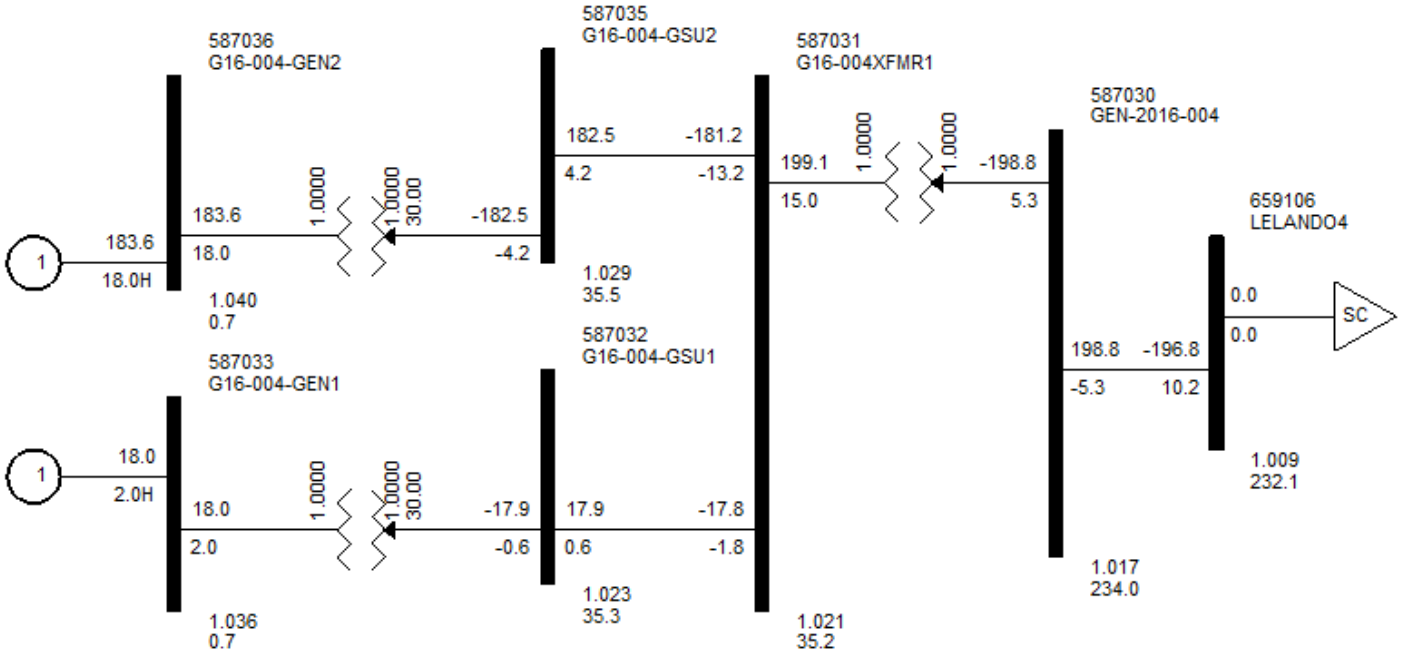

Figure 2-1. Power flow one-line diagram for interconnection project at the Lelando4 230 kV POI (GEN-2016-004).

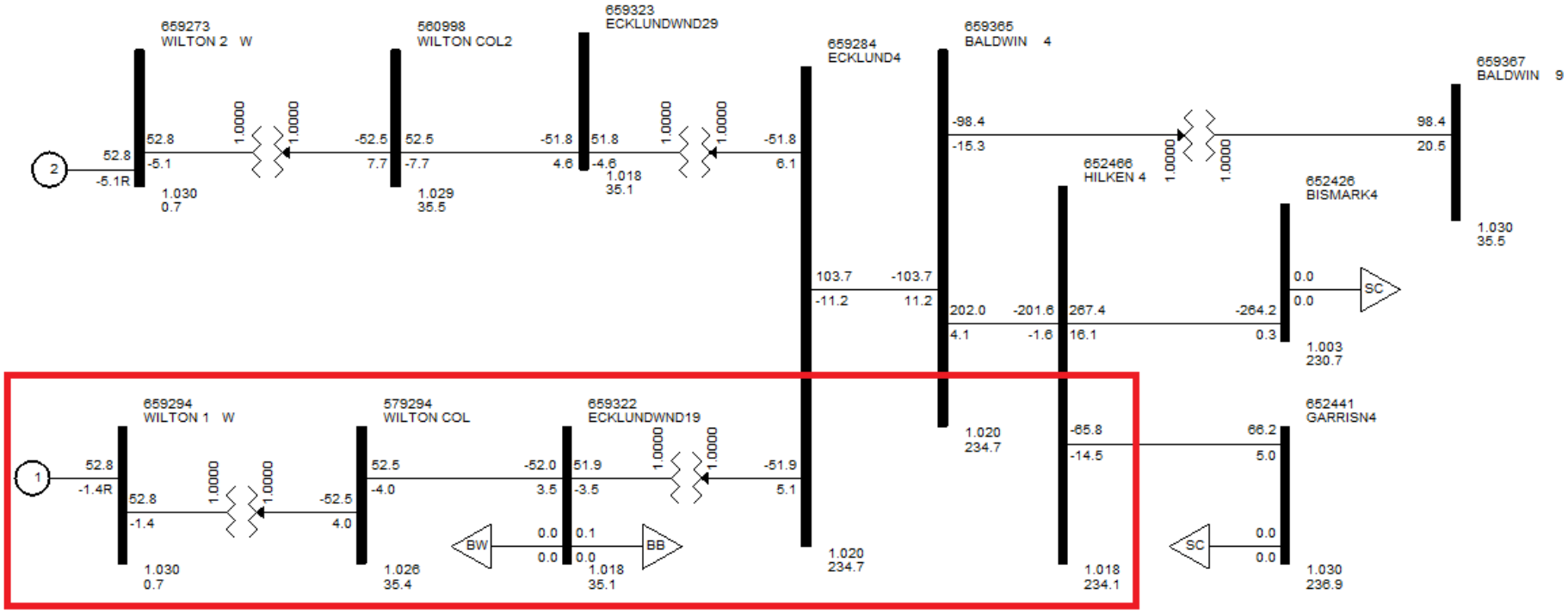

Figure 2-2. Power flow one-line diagram for interconnection project at the Hilken 230kV POI (GEN-2016-052).

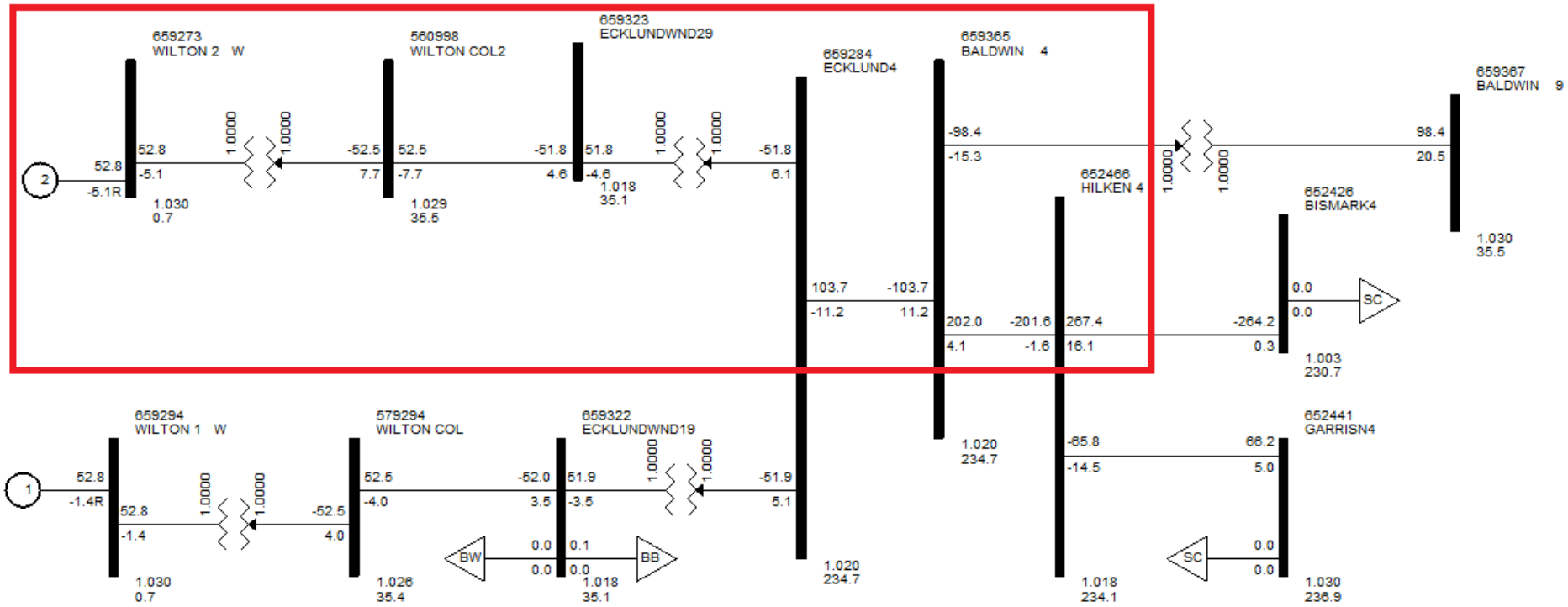

Figure 2-3. Power flow one-line diagram for interconnection project at the Hilken 230kV POI (GEN-2016-053).

Table 2-3
Case List with Contingency Description

Fault Number	Fault Name	Contingency Description
1	FLT01-3PH	3 phase fault on the Leland Olds (659106) to Garrison (652441) 230kV line circuit 1, near Leland Olds. a. Apply fault at the Leland Olds 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
2	FLT02-3PH	3 phase fault on the Leland Olds (659106) to Washburn (652456) 230kV line circuit 1, near Leland Olds. a. Apply fault at the Leland Olds 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
3	FLT03-3PH	3 phase fault on the Leland Olds (659106) to Logan (659108) 230kV line circuit 1, near Leland Olds. a. Apply fault at the Leland Olds 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
4	FLT04-3PH	3 phase fault on the Leland Olds (659106) to Stanton (615901) 230kV line circuit 1, near Leland Olds. a. Apply fault at the Leland Olds 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
5	FLT05-3PH	3 phase fault on the Leland Olds 345/230/13.8kV (659105/659106/659201) transformer circuit 1, near Leland Olds. a. Apply fault at the Leland Olds 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
6	FLT06-3PH	3 phase fault on the Garrison (652441) to Hilken (652466) 230kV line circuit 1, near Garrison. a. Apply fault at the Garrison 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
7	FLT07-3PH	3 phase fault on the Garrison (652441) to Jamestown (652444) 230kV line circuit 1, near Garrison. a. Apply fault at the Garrison 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
8	FLT08-3PH	3 phase fault on the Washburn (652456) to Bismark (652426) 230kV line circuit 1, near Washburn. a. Apply fault at the Washburn 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
9	FLT09-3PH	3 phase fault on the Logan (659108) to Blaisdell (659143) 230kV line circuit 1, near Logan. a. Apply fault at the Logan 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
10	FLT10-3PH	3 phase fault on the Stanton (615901) to Coal Creek Tap (615900) 230kV line circuit 1, near Stanton. a. Apply fault at the Stanton 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
11	FLT11-3PH	3 phase fault on the Leland Olds (659105) to Antelope (659101) 345kV line circuit 1, near Leland Olds. a. Apply fault at the Leland Olds 345kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
12	FLT12-SB	**Leland Olds 230 kV Stuck Breaker Scenario 1** a. Apply fault at the Leland Olds 230kV bus. b. Clear fault after 16 cycles and trip the following elements c. Leland Olds (659106) – Washburn (652456) 230kV d. Leland Olds (659106) – Garrison (652441) 230kV

Table 2-3 (Continued)
Case List with Contingency Description

Fault Number	Fault Name	Contingency Description
13	FLT13-SB	**Leland Olds 230 kV Stuck Breaker Scenario 2** a. Apply fault at the Leland Olds 230kV bus. b. Clear fault after 16 cycles and trip the following elements c. Leland Olds (659106) – Logan (659108) 230kV d. Leland Olds (659106) – Stanton (615901) 230kV
14	FLT14-SB	**Leland Olds 230 kV Stuck Breaker Scenario 3** a. Apply fault at the Leland Olds 230kV bus. b. Clear fault after 16 cycles and trip the following elements c. Leland Olds 345/230/13.8kV (659105/659106/659202) transformer, circuit 1 d. Leland Olds 345/230/13.8kV (659105/659106/659202) transformer, circuit 2
15	FLT15-PO	**Prior Outage of Leland Olds 230 kV (659106) to Washburn 230 kV (652456) CKT 1;** 3 phase fault on Leland Olds 230kV (659106) to Logan 230kV (659108), near Leland Olds. a. Apply fault at the Leland Olds 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
16	FLT16-PO	**Prior Outage of Leland Olds 230 kV (659106) to Washburn 230 kV (652456) CKT 1;** 3 phase fault on Leland Olds 230kV (659106) to Garrison 230kV (652441), near Leland Olds. a. Apply fault at the Leland Olds 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
17	FLT17-PO	**Prior Outage of Leland Olds 230 kV (659106) to Washburn 230 kV (652456) CKT 1;** 3 phase fault on Leland Olds 345/230/13.8kV (659105/659106/659201) transformer, near Leland Olds. a. Apply fault at the Leland Olds 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
18	FLT18-PO	**Prior Outage of Leland Olds 230 kV (659106) to Logan 230 kV (659108) CKT 1;** 3 phase fault on Leland Olds 230kV (659106) to Washburn 230kV (652456), near Leland Olds. a. Apply fault at the Leland Olds 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
19	FLT19-PO	**Prior Outage of Leland Olds 230 kV (659106) to Logan 230 kV (659108) CKT 1;** 3 phase fault on Leland Olds 230kV (659106) to Garrison 230kV (652441), near Leland Olds. a. Apply fault at the Leland Olds 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
20	FLT20-PO	**Prior Outage of Leland Olds 230 kV (659106) to Logan 230 kV (659108) CKT 1;** 3 phase fault on Leland Olds 345/230/13.8kV (659105/659106/659201) transformer, near Leland Olds. a. Apply fault at the Leland Olds 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
21	FLT21-3PH	3 phase fault on the GROTON3 (659160) TO GROTON-LNX3 (659422) to LELAND1-LNX3 (659422) to LELANDO3 (659105) 345kV line circuit 1, near GROTON3. a. Apply fault at the G16-044-Tap 345kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
22	FLT22-3PH	**DELETE**
23	FLT23-3PH	3 phase fault on the Leland Olds (659105) to LELAND2-LNX3 (659424) to G16-017-TAP (560074) 345kV line circuit 1, near Leland Olds. a. Apply fault at the Leland Olds 345kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
24	FLT24-3PH	3 phase fault on the Groton (659160) to G09_001IST (652175) 345kV line circuit 1, near Groton. a. Apply fault at the Groton 345kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
25	FLT25-3PH	3 phase fault on the Groton 345/115/13.8kV (659160/652512/659161) transformer, near Groton. a. Apply fault at the Groton 345kV bus. b. Clear fault after 6 cycles by tripping the faulted line.

Table 2-3 (Continued)
Case List with Contingency Description

Fault Number	Fault Name	Contingency Description
26	FLT26-3PH	3 phase fault on the G09_001IST (652175) to Watertown (652529) 345kV line circuit 1, near G09_001IST. a. Apply fault at the G09_001IST 345kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
27	FLT27-SB	**DELETE**
28	FLT28-SB	**DELETE**
29	FLT29-PO	**DELETE**
30	FLT30-PO	**DELETE**
31	FLT31-PO	**DELETE**
32	FLT32-PO	**DELETE**
33	FLT33-PO	**DELETE**
34	FLT34-PO	**DELETE**
35	FLT35-3PH	3 phase fault on the Hilken (652466) to Baldwin (659365) 230kV line circuit 1, near Hilken. a. Apply fault at the Hilken 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
36	FLT36-3PH	3 phase fault on the Hilken (652466) to Garrison (652441) 230kV line circuit 1, near Hilken. a. Apply fault at the Hilken 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
37	FLT37-3PH	3 phase fault on the Hilken (652466) to Bismark (652426) 230kV line circuit 1, near Hilken. a. Apply fault at the Hilken 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
38	FLT38-3PH	3 phase fault on the Bismark (652426) to Jamestown (652444) 230kV line circuit 1, near Bismark. a. Apply fault at the Bismark 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
39	FLT39-3PH	3 phase fault on the Bismark (652426) to Weber (661028) 230kV line circuit 1, near Bismark. a. Apply fault at the Bismark 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
40	FLT40-3PH	3 phase fault on the Bismark (652426) to Mound City (652499) 230kV line circuit 1, near Bismark. a. Apply fault at the Bismark 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
41	FLT41-3PH	3 phase fault on the Bismark (652426) to Ward (652296) 230kV line circuit 1, near Bismark. a. Apply fault at the Bismark 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
42	FLT42-3PH	3 phase fault on the Bismark 230/115/12.4kV (652426/652427/652392) transformer circuit 1, near Bismark. a. Apply fault at the Bismark 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.

Table 2-3 (Continued)
Case List with Contingency Description

Fault Number	Fault Name	Contingency Description
43	FLT43-3PH	3 phase fault on the Baldwin (659365) to Ecklund (659284) 230kV line circuit 1, near Baldwin. a. Apply fault at the Baldwin 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
44	FLT44-SB	**Hilken 230 kV Stuck Breaker Scenario 1** a. Apply fault at the Hilken 230kV bus. b. Clear fault after 16 cycles and trip the following elements c. Hilken (652466) – Baldwin (659365) 230kV d. Hilken (652466) – Bismark (652426) 230kV
45	FLT45-SB	**Hilken 230 kV Stuck Breaker Scenario 2** a. Apply fault at the Hilken 230kV bus. b. Clear fault after 16 cycles and trip the following elements c. Hilken (652466) – Baldwin (659365) 230kV d. Hilken (652466) – Garrison (652441) 230kV
46	FLT46-SB	**Hilken 230 kV Stuck Breaker Scenario 3** a. Apply fault at the Hilken 230kV bus. b. Clear fault after 16 cycles and trip the following elements c. Hilken (652466) – Garrison (652441) 230kV d. Hilken (652466) – Bismark (652426) 230kV
47	FLT47-SB	**Garrison 230 kV Stuck Breaker Scenario 1** a. Apply fault at the Garrison 230kV bus. b. Clear fault after 16 cycles and trip the following elements c. Garrison (652441) – Leland Olds (659106) 230kV d. Garrison (652441) – Jamestown (652444) 230kV
48	FLT48-SB	**Bismark 230 kV Stuck Breaker Scenario 1** a. Apply fault at the Bismark 230kV bus. b. Clear fault after 16 cycles and trip the following elements c. Bismark (652426) – Weber (661028) 230kV d. Bismark (652426) – Jamestown (652444) 230kV
49	FLT49-PO	**Prior Outage of Hilken 230 kV (652466) to Baldwin 230 kV (659365) CKT 1;** 3 phase fault on the Hilken (652466) to Garrison (652441) 230kV line circuit 1, near Hilken. a. Apply fault at the Hilken 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
50	FLT50-PO	**Prior Outage of Hilken 230 kV (652466) to Baldwin 230 kV (659365) CKT 1;** 3 phase fault on the Hilken (652466) to Bismark (652426) 230kV line circuit 1, near Hilken. a. Apply fault at the Hilken 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
51	FLT51-PO	**Prior Outage of Hilken 230 kV (652466) to Baldwin 230 kV (659365) CKT 1;** 3 phase fault on the Garrison (652441) to Jamestown (652444) 230kV line circuit 1, near Garrison. a. Apply fault at the Garrison 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
52	FLT52-PO	**Prior Outage of Hilken 230 kV (652466) to Garrison 230 kV (652441) CKT 1;** 3 phase fault on the Hilken (652466) to Bismark (652426) 230kV line circuit 1, near Hilken. a. Apply fault at the Hilken 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
53	FLT53-PO	**Prior Outage of Hilken 230 kV (652466) to Garrison 230 kV (652441) CKT 1;** 3 phase fault on the Hilken (652466) to Baldwin (659365) 230kV line circuit 1, near Hilken. a. Apply fault at the Hilken 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.

Table 2-3 (Continued)
Case List with Contingency Description

Fault Number	Fault Name	Contingency Description
54	FLT54-PO	**Prior Outage of Hilken 230 kV (652466) to Garrison 230 kV (652441) CKT 1;** 3 phase fault on the Baldwin (659365) to Ecklund (659284) 230kV line circuit 1, near Baldwin. a. Apply fault at the Baldwin 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
55	FLT55-PO	**Prior Outage of Hilken 230 kV (652466) to Bismark 230 kV (652426) CKT 1;** 3 phase fault on the Hilken (652466) to Baldwin (659365) 230kV line circuit 1, near Hilken. a. Apply fault at the Hilken 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
56	FLT56-PO	**Prior Outage of Hilken 230 kV (652466) to Bismark 230 kV (652426) CKT 1;** 3 phase fault on the Hilken (652466) to Garrison (652441) 230kV line circuit 1, near Hilken. a. Apply fault at the Hilken 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
57	FLT57-PO	**Prior Outage of Hilken 230 kV (652466) to Bismark 230 kV (652426) CKT 1;** 3 phase fault on the Baldwin (659365) to Ecklund (659284) 230kV line circuit 1, near Baldwin. a. Apply fault at the Baldwin 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
58	FLT58-PO	**Prior Outage of Hilken 230 kV (652466) to Bismark 230 kV (652426) CKT 1;** 3 phase fault on the Garrison (652441) to Jamestown (652444) 230kV line circuit 1, near Garrison. a. Apply fault at the Garrison 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
59	FLT59-3PH	3 phase fault on the Heart River (659448) to Rhame (659266) 230kV line circuit 1, near Heart River. a. Apply fault at the Heart River 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
60	FLT60-3PH	3 phase fault on the Heart River (659448) to Belfield (652425) 230kV line circuit 1, near Heart River. a. Apply fault at the Heart River 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
61	FLT61-3PH	3 phase fault on the Belfield (652425) to Dickinson (652417) 230kV line circuit 1, near Belfield. a. Apply fault at the Belfield 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
62	FLT62-3PH	3 phase fault on the Belfield (652425) to Medora (652413) 230kV line circuit 1, near Belfield. a. Apply fault at the Belfield 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
63	FLT63-3PH	3 phase fault on the Belfield (652425) to South Heart River (659309) 230kV line circuit 1, near Belfield. a. Apply fault at the Belfield 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
64	FLT64-3PH	3 phase fault on the Belfield 345/230/13.8kV (652424/652425/652221) transformer circuit 1, near Belfield. a. Apply fault at the Belfield 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
65	FLT65-3PH	3 phase fault on the Rhame (659266) to Bowman (661010) 230kV line circuit 1, near Rhame. a. Apply fault at the Rhame 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
66	FLT66-3PH	3 phase fault on the Rhame (659266) to Little Missouri (659265) 230kV line circuit 1, near Rhame. a. Apply fault at the Rhame 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
67	FLT67-3PH	3 phase fault on the Rhame 230/115kV (659266/659267) transformer circuit 1, near Rhame. a. Apply fault at the Rhame 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
68	FLT68-SB	**Belfield 230 kV Stuck Breaker Scenario 1** a. Apply fault at the Belfield 230kV bus. b. Clear fault after 16 cycles and trip the following elements c. Belfield (652425) – Heart River (659448) 230kV d. Belfield (652425) – Medora (652413) 230kV
69	FLT69-SB	**Belfield 230 kV Stuck Breaker Scenario 2** a. Apply fault at the Belfield 230kV bus. b. Clear fault after 16 cycles and trip the following elements c. Belfield (652425) – Dickinson (652417) 230kV d. Belfield (652425) – Medora (652413) 230kV

Table 2-3 (Continued)
Case List with Contingency Description

Fault Number	Fault Name	Contingency Description
70	FLT70-SB	**Belfield 230 kV Stuck Breaker Scenario 3** a. Apply fault at the Belfield 230kV bus. b. Clear fault after 16 cycles and trip the following elements c. Belfield (652425) – South Heart River (659309) 230kV d. Belfield (652425) – Medora (652413) 230kV
71	FLT71-SB	**Belfield 230 kV Stuck Breaker Scenario 4** a. Apply fault at the Belfield 230kV bus. b. Clear fault after 16 cycles and trip the following elements c. Belfield (652425) – Dickinson (652417) 230kV d. Belfield (652425) – South Heart River (659309) 230kV
72	FLT72-SB	**Belfield 230 kV Stuck Breaker Scenario 5** a. Apply fault at the Belfield 230kV bus. b. Clear fault after 16 cycles and trip the following elements c. Belfield 345/230/13.8kV (652424/652425/652413) transformer, circuit 1 d. Belfield 345/230/13.8kV (652424/652425/652220) transformer, circuit 1
73	FLT73-SB	**Rhame 230 kV Stuck Breaker Scenario 1** a. Apply fault at the Rhame 230kV bus. b. Clear fault after 16 cycles and trip the following elements c. Rhame (659266) – Heart River (659448) 230kV d. Rhame (659266) – Little Missouri (659265) 230kV
74	FLT74-SB	**Rhame 230 kV Stuck Breaker Scenario 2** a. Apply fault at the Rhame 230kV bus. b. Clear fault after 16 cycles and trip the following elements c. Rhame (659266) – Bowman (661010) 230kV d. Rhame (659266) – Little Missouri (659265) 230kV
75	FLT75-SB	**Rhame 230 kV Stuck Breaker Scenario 3** a. Apply fault at the Rhame 230kV bus. b. Clear fault after 16 cycles and trip the following elements c. Rhame 230/115kV (659266/659267) transformer d. Rhame (659266) – Little Missouri (659265) 230kV
76	FLT76-SB	**Rhame 230 kV Stuck Breaker Scenario 4** a. Apply fault at the Rhame 230kV bus. b. Clear fault after 16 cycles and trip the following elements c. Rhame 230/115kV (659266/659267) transformer d. Rhame (659266) – Bowman (661010) 230kV
77	FLT77-PO	**Prior Outage of Heart River 230 kV (659448) to Rhame 230 kV (659266) CKT 1;** 3 phase fault on the Belfield (652425) to Dickinson (652417) 230kV line circuit 1, near Belfield. a. Apply fault at the Belfield 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
78	FLT78-PO	**Prior Outage of Heart River 230 kV (659448) to Rhame 230 kV (659266) CKT 1;** 3 phase fault on the Belfield (652425) to Medora (652413) 230kV line circuit 1, near Belfield. a. Apply fault at the Belfield 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
79	FLT79-PO	**Prior Outage of Heart River 230 kV (659448) to Rhame 230 kV (659266) CKT 1;** 3 phase fault on the Belfield (652425) to South Heart River (659309) 230kV line circuit 1, near Belfield. a. Apply fault at the Belfield 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
80	FLT80-PO	**Prior Outage of Heart River 230 kV (659448) to Rhame 230 kV (659266) CKT 1;** 3 phase fault on the Belfield 345/230/13.8kV (652424/652425/652221) transformer circuit 1, near Belfield. a. Apply fault at the Belfield 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
81	FLT81-PO	**Prior Outage of Heart River 230 kV (659448) to Belfield 230 kV (652425) CKT 1;** 3 phase fault on the Rhame (659266) to Bowman (661010) 230kV line circuit 1, near Rhame. a. Apply fault at the Rhame 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.

Table 2-3 (Continued)
Case List with Contingency Description

Fault Number	Fault Name	Contingency Description
82	FLT82-PO	**Prior Outage of Heart River 230 kV (659448) to Belfield 230 kV (652425) CKT 1;** 3 phase fault on the Rhame (659266) to Little Missouri (6529265) 230kV line circuit 1, near Rhame. a. Apply fault at the Rhame 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.
83	FLT83-PO	**Prior Outage of Heart River 230 kV (659448) to Belfield 230 kV (652425) CKT 1;** 3 phase fault on the Rhame 230/115kV (659266/659267) transformer circuit 1, near Rhame. a. Apply fault at the Rhame 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.

SECTION 3: STABILITY ANALYSIS

The objective of the Stability Analysis was to determine the impacts of the generator interconnections on the stability and voltage recovery on the SPP transmission system.

3.1 Approach

SPP provided MEPPI with the following three power flow cases:

- MDWG15-16WP_DIS16011_G16
- MDWG15-17SP_DIS16011_G16
- MDWG15-25SP_DIS16011_G16

Each case was examined prior to the Stability Analysis to ensure the case contained the proposed study projects and any previously queued projects listed in Tables 2-1 and 2-2 respectively. There was no suspect power flow data in the study area. The dynamic datasets were also verified and stable initial system conditions (i.e., "flat lines") were achieved. Three-phase and single phase-to-ground faults listed in Table 2-3 were examined. Single-phase fault impedances were calculated for each season to result in a voltage of approximately 60% of the pre-fault voltage. Refer to Table 3-1 for a list of the calculated single-phase fault impedances.

Table 3-1
Calculated Single-Phase Fault Impedances

*Cont. No.	Cont. Name	Single-Phase Fault Admittance (MVA)		
		2016 Winter	2017 Summer	2025 Summer
1	16WP_FLT44_1PH_SB	-2144.5	-2000	-2144.5
2	16WP_FLT45_1PH_SB	-2867.2	-2867.2	-3011.7
3	16WP_FLT46_1PH_SB	-4312.5	-4023.4	-4312.5
4	16WP_FLT50_1PH_SB	-2578.1	-2433.6	-2433.6
5	16WP_FLT51_1PH_SB	-1125	-1125	-1125
6	16WP_FLT54_1PH_SB	-1500	-1437.5	-1500
7	16WP_FLT55_1PH_SB	-1250	-1250	-1250
8	16WP_FLT56_1PH_SB	-1125	-1125	-1125
9	16WP_FLT57_1PH_SB	-5468.8	-5468.8	-5468.8

*** Refer to Table 2-3 for a description of the contingency scenario**

Bus voltages, machine rotor angles, and previously queued generation in the study area were monitored in addition to bus voltages and machine rotor angles in the following areas:

- 640 NPPD
- 645 OPPD
- 650 LES

- 652 WAPA
- 600 XEL
- 608 MP
- 613 SMMPA
- 615 GRE
- 620 OTP
- 661 MDU

3.2 Stability Analysis Results

The Stability Analysis determined there were a couple contingencies that resulted in voltage instability and high post-fault steady-state voltages for the 2016 Winter Peak, 2017 Summer Peak, and 2025 Summer Peak conditions when all generation interconnection requests were at 100% output.

Refer to Table 3-2 for a summary of the Stability Analysis results for the contingencies listed in Table 2-3. Table 3-2 is a summary of the stability results for the 2016 Winter Peak, 2017 Summer Peak, and 2025 Summer Peak conditions and states whether the system remained stable or generation tripped offline, if acceptable voltage recovery was observed after the fault was cleared, and if the voltage recovered to above 0.9 p.u. and below 1.1 p.u. post fault steady-state conditions. Voltage recovery criteria includes ensuring that the transient voltage recovery is between 0.7 p.u. and 1.2 p.u. and ending in a steady-state voltage (for N-1 contingencies) at the pre-contingent level or at least above 0.9 p.u. and below 1.1. p.u.

Table 3-2
Stability Analysis Summary of Results for 2016 Winter, 2017 Summer, and 2025 Summer Peak Conditions

Cont. No.	Cont. Name	2016 Winter Peak				2017 Summer Peak				2025 Summer Peak			
		Voltage Recovery		Post Fault Steady-State Voltage	System Stability	Voltage Recovery		Post Fault Steady-State Voltage	System Stability	Voltage Recovery		Post Fault Steady-State Voltage	System Stability
		Less than 0.70 p.u.	Greater than 1.20 p.u.			Less than 0.70 p.u.	Greater than 1.20 p.u.			Less than 0.70 p.u.	Greater than 1.20 p.u.		
1	FLT01-3PH	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
2	FLT02-3PH	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
3	FLT02-3PH	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
4	FLT04-3PH	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
5	FLT05-3PH	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
6	FLT06-3PH	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
7	FLT07-3PH	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
8	FLT08-3PH	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
9	FLT09-3PH	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
10	FLT10-3PH	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
11	FLT11-3PH	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
12	FLT12_SB	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
13	FLT13_SB	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
14	FLT14_SB	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
15	FLT15_PO	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
16	FLT16_PO	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
17	FLT17_PO	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
18	FLT18_PO	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
19	FLT19_PO	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
20	FLT20_PO	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
21	FLT21_3PH	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	V < 0.9 p.u.	Stable
23	FLT23_3PH	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
24	FLT24_3PH	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
25	FLT25_3PH	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
26	FLT26_3PH	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
35	FLT35_3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
36	FLT36_3PH	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
37	FLT37_3PH	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
38	FLT38_3PH	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
39	FLT39_3PH	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
40	FLT40_3PH	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
41	FLT41_3PH	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
42	FLT42_3PH	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
43	FLT43_3PH	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
44	FLT44_SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
45	FLT45_SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
46	FLT46_SB	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
47	FLT47_SB	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
48	FLT48_SB	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
49	FLT49_PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
50	FLT50_PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
51	FLT51_PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
52	FLT52_PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
53	FLT53_PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
54	FLT54_PO	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
55	FLT55_PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
56	FLT56_PO	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
57	FLT57_PO	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable

Table 3-2 (Continued)
Stability Analysis Summary of Results for 2016 Winter, 2017 Summer, and 2025 Summer Peak Conditions

Cont. No.	Cont. Name	2016 Winter Peak				2017 Summer Peak				2025 Summer Peak			
		Voltage Recovery		Post Fault Steady-State Voltage	System Stability	Voltage Recovery		Post Fault Steady-State Voltage	System Stability	Voltage Recovery		Post Fault Steady-State Voltage	System Stability
		Less than 0.70 p.u.	Greater than 1.20 p.u.			Less than 0.70 p.u.	Greater than 1.20 p.u.			Less than 0.70 p.u.	Greater than 1.20 p.u.		
58	FLT58_PO	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
59	FLT59_3PH	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
60	FLT60_3PH	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
61	FLT61_3PH	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
62	FLT62_3PH	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
63	FLT63_3PH	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
64	FLT64_3PH	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
65	FLT65_3PH	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
66	FLT66_3PH	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
67	FLT67_3PH	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
68	FLT68_SB	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
69	FLT69_SB	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
70	FLT70_SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
71	FLT71_SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
72	FLT72_SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
73	FLT73_SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
74	FLT74_SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
75	FLT75_SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
76	FLT76_SB	-	-	Compliant	Stable	-	-	Compliant	Stable	-	-	Compliant	Stable
77	FLT77_PO	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
78	FLT78_PO	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
79	FLT79_PO	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
80	FLT80_PO	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable
81	FLT81_PO	Yes	Yes	V > 1.1	Unstable	Yes	Yes	Not Compliant	GEN TRIP	Yes	Yes	V > 1.1 p.u.	GEN TRIP
82	FLT82_PO	Yes	Yes	Not Compliant	Unstable	Yes	Yes	V < 0.9 p.u.	Stable	-	-	Not Compliant	Unstable
83	FLT83_PO	-	-	Compliant	Stable	-	-	V < 0.9 p.u.	Stable	-	-	Compliant	Stable

2016 Winter Peak

For the 2016 Winter Peak case, one contingency resulted in voltage instability and generator instability. Contingency FLT82-PO had one generator that showed wind plant instability. The following generator showing instability was:

- G752 W (661989) Unit 1

For the 2016 Winter Peak case, one contingency resulted in voltage instability. Contingency FLT81-PO had three generators that showed wind plant instability. The following generators showing instability were:

- G752 W (661989) Unit 1
- CDR HILL W (661317)
- G12_0125 _3 (910006)

In order to mitigate these observed violations, the following system adjustments were provided by SPP:

- Decrease Pgen of GI1414GEN W0.6900 Unit 1 located at bus 659453 from 137 MW to 50 MW

Once the above generation was curtailed, there were no more system instability issues, voltage instability issues, or generators swinging offline.

Refer to Figures 3-1 through 3-4 for stability plots of the violations observed for the 2016 Winter Peak case.

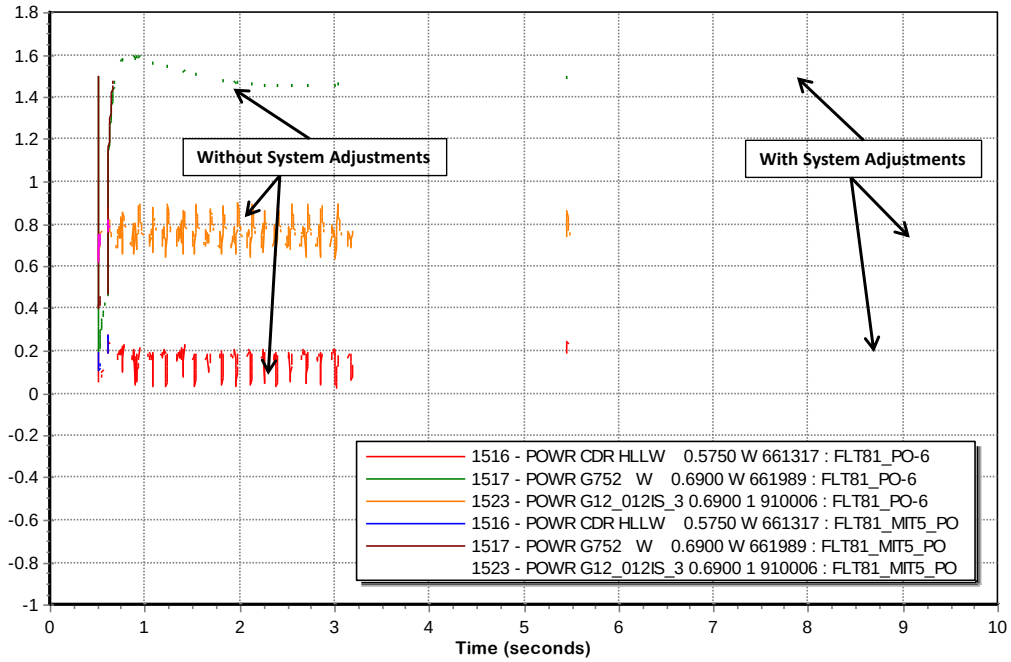

Figure 3-1. Plot of the real power for FLT81-PO for 2016 Winter Peak case with and without system adjustments.

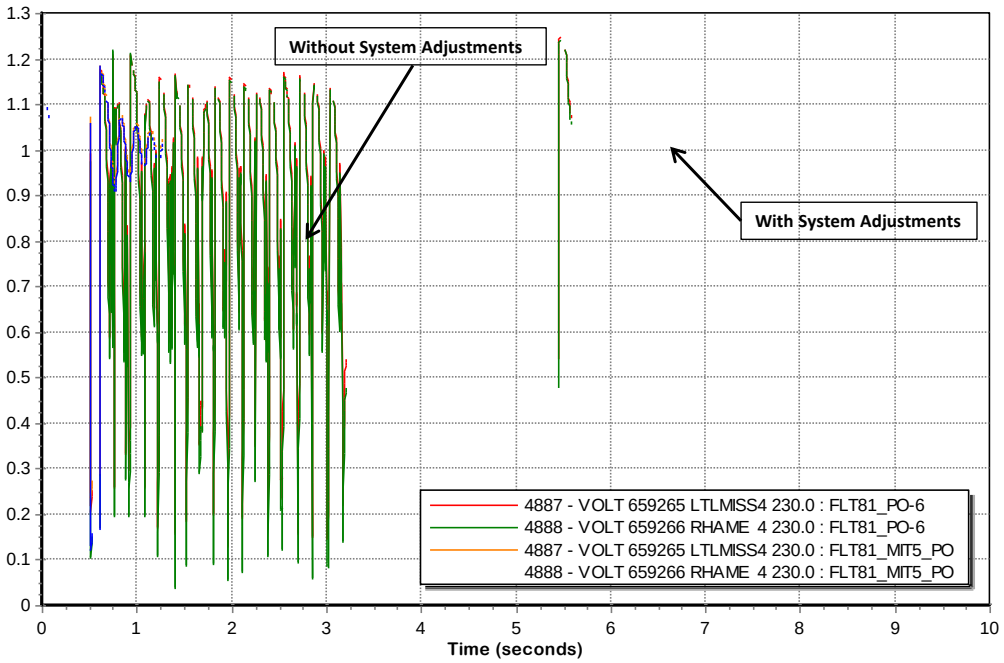

Figure 3-2. Plot of the voltage for FLT81-PO for 2016 Winter Peak case with and without system adjustments.

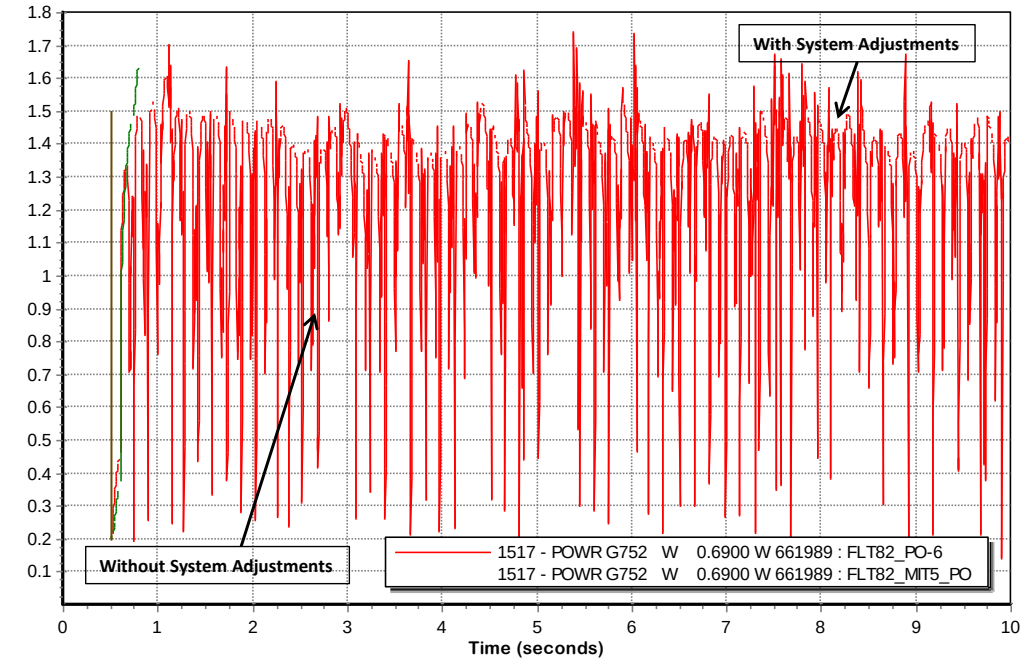

Figure 3-3. Plot of the real power for FLT82-PO for 2016 Winter Peak case with and without system adjustments.

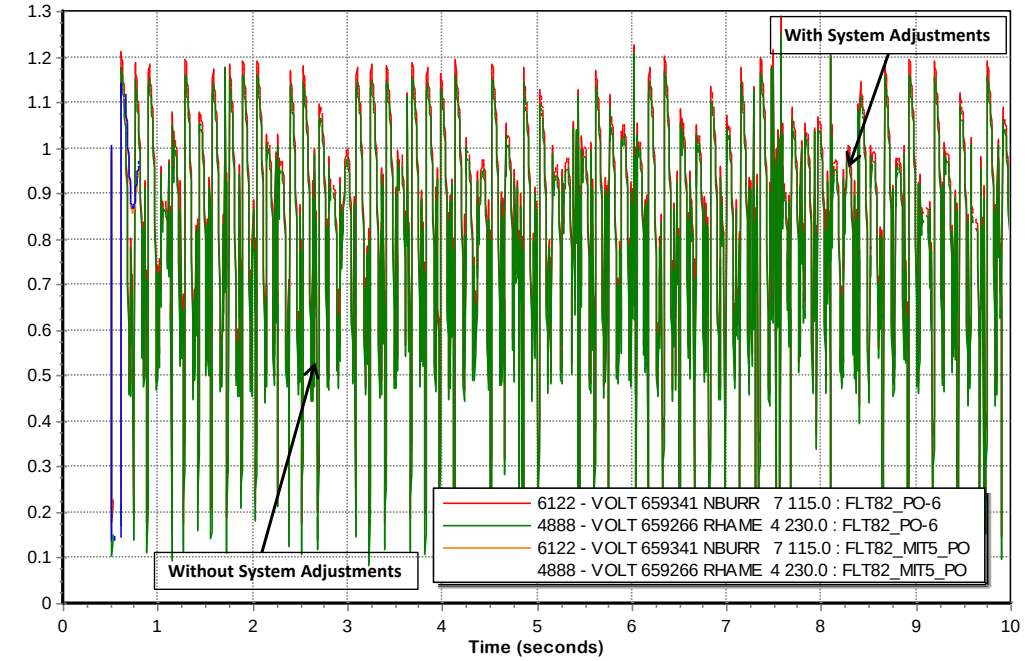

Figure 3-4. Plot of the voltage for FLT82-PO for 2016 Winter Peak case with and without system adjustments.

2017 Summer Peak

Several contingencies in the 2017 Summer Peak case had final voltages less than 0.9 p.u. for the BRDLAND-LNX3 345 kV (659421) and the BRDLAND3 345 kV (659120) buses. The final voltages on those buses for all of these faults were determined to be prior existing conditions. It is recommended that the Transmission Owner investigate this issue further.

FLT21-3PH, FLT23-3PH, FLT24-3PH, FLT25-3PH, FLT26-3PH, FLT58-PO and FLT82-PO were observed to have several bus voltages less than 0.9 p.u.

FLT81-PO was observed to have final voltages greater than 1.1 p.u., voltage instability issues, and generation tripping offline. One contingency caused a generator to trip offline. Contingency FLT81-PO had the following generator tripping offline:

- G15-096-GEN10.6900 (585313) Unit 1

Contingency FLT81-PO was observed to have voltage instability. Contingency FLT81-PO was also observed to have post-contingency final voltages greater than 1.1 p.u. for several buses.

In order to mitigate these observed violations, the following system adjustments were provided by SPP:

- Switch off line reactor at 659421 (109.6 Mvar)
- Decrease Pgen of GI1414GEN W0.6900 Unit 1 located at bus 659453 from 137 MW to 50 MW

Once the system adjustments were applied to the case, there were no more voltage violations or generators swinging offline for all contingencies.

Refer to Figure 3-5 for a stability plot of the violations observed for the 2017 Summer Peak case.

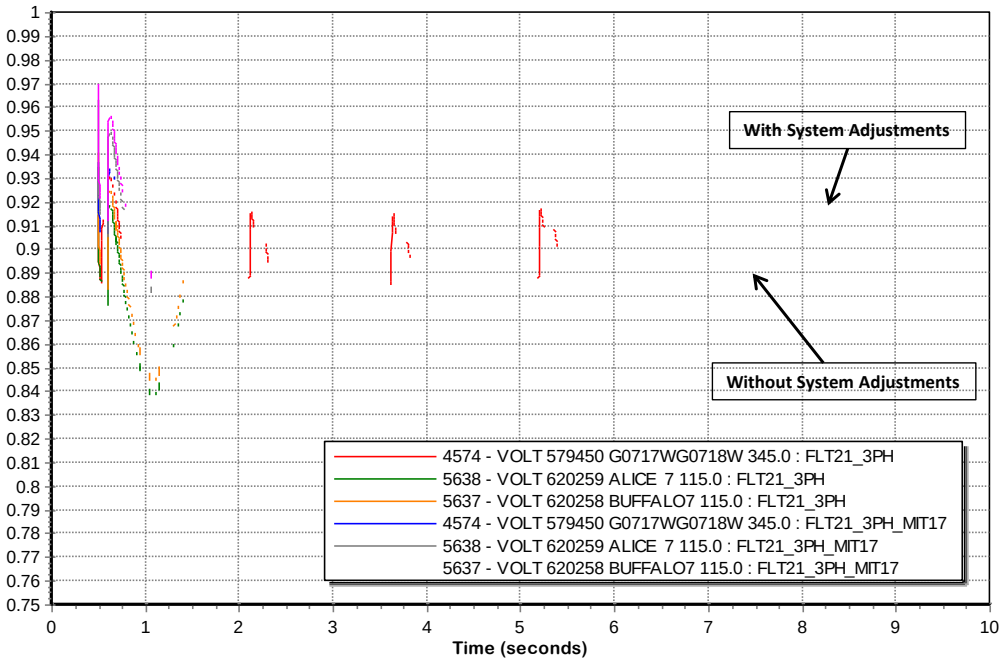

Figure 3-5. Plot of the voltage for FLT21-3PH for 2017 Summer Peak case with and without system adjustments.

2025 Summer Peak

Voltage violations and generation tripping offline was observed for the 2025 Summer Peak case. FLT21-3PH, FLT81-PO, and FLT82-PO had final voltages less than 0.9 p.u. for the BRDLAND-LNX3 345 kV (659421) and the BRDLAND3 345 kV (659120) buses. The final voltages for all three of these faults were determined to be prior existing conditions. It is recommended that the Transmission Owner investigate this issue further.

FLT81-PO was observed to have voltage instability and the following generation tripping offline:

- G15-096-GEN10.6900 (585313) Unit 2

FLT81-PO was observed to have two buses that had final voltages greater than 1.1 p.u. Contingency FLT81-PO had the following buses with final voltages greater than 1.1 p.u.:

- RHAME 7 (659267)
- LTLMISS 7 (659263)

FLT82-PO was observed to have system instability.

In order to mitigate these observed violations, the following system adjustments were provided by SPP:

- Decrease Pgen of GI1414GEN W0.6900 Unit 1 located at bus 659453 from 137 MW to 50 MW

Once the above generation was curtailed, there were no more system instability issues, voltage instability issues, or generators swinging offline.

Refer to Figures 3-6 through 3-9 for stability plots of the violations observed for the 2025 Summer Peak case.

Refer to Appendix B, Appendix C, and Appendix D for a complete set of plots for all contingencies for 2016 Winter Peak, 2017 Summer Peak, and 2025 Summer Peak conditions, respectively.

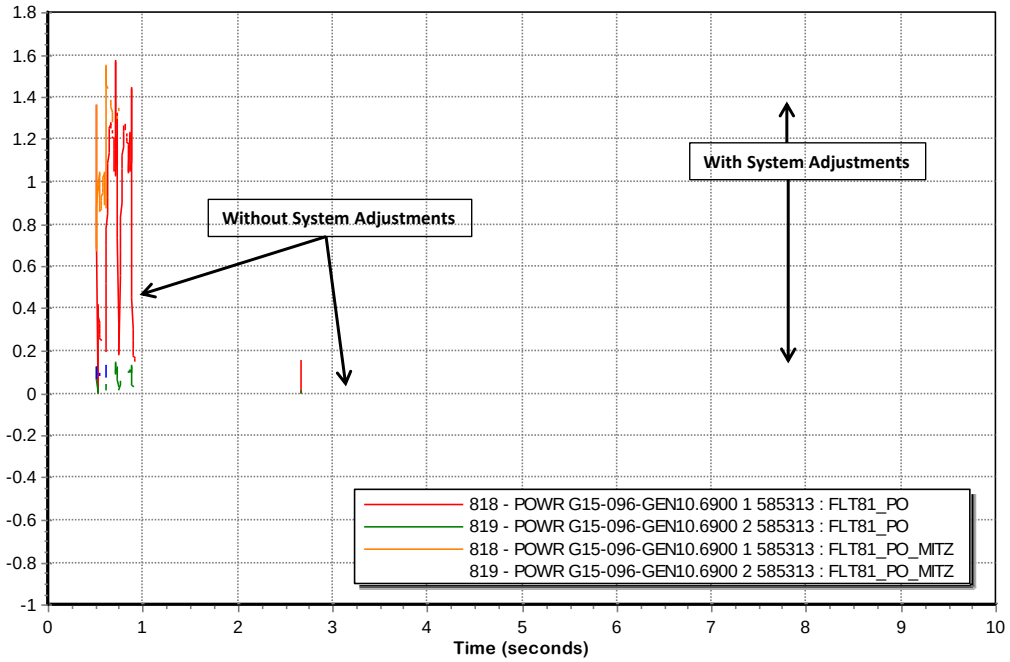

Figure 3-6. Plot of the real power for FLT81-PO for 2025 Summer Peak case with and without system adjustments.

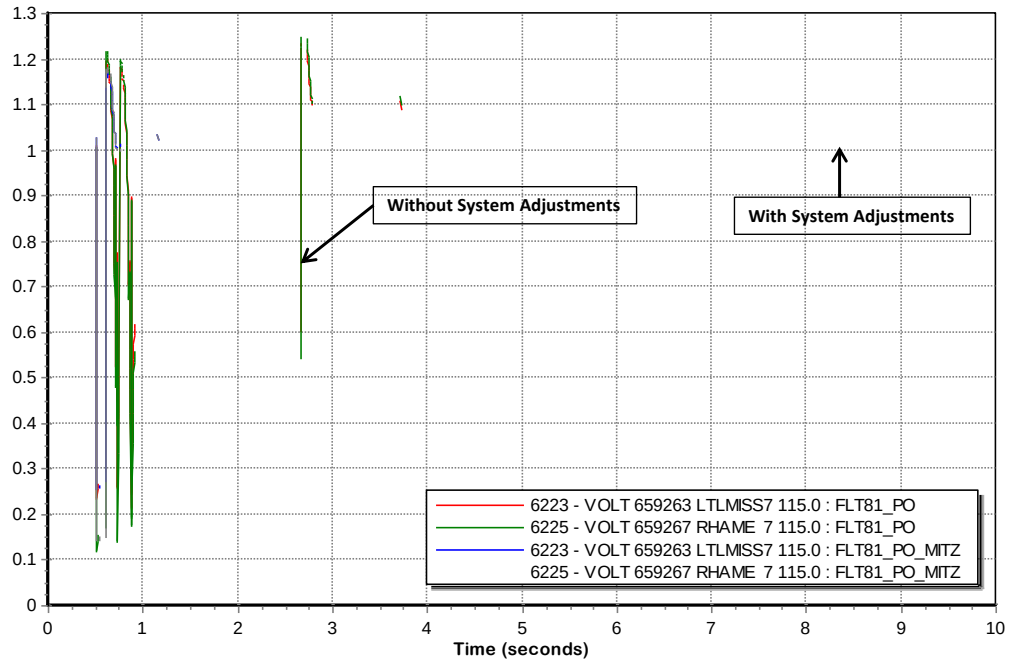

Figure 3-7. Plot of the voltage for FLT81-PO for 2025 Summer Peak case with and without system adjustments.

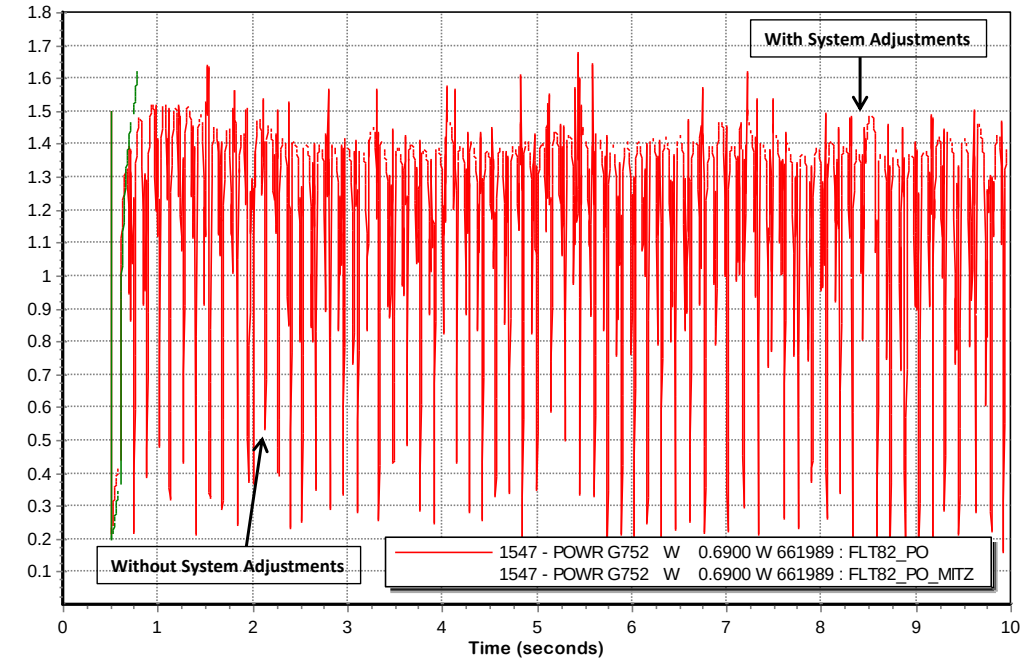

Figure 3-8. Plot of the real power for FLT82-PO for 2025 Summer Peak case with and without system adjustments.

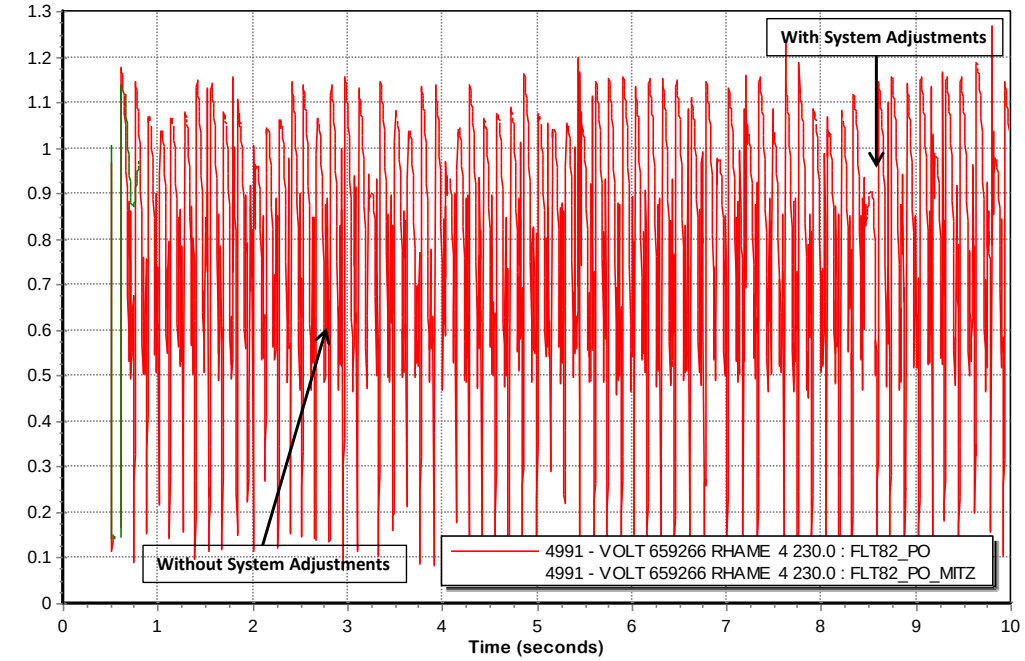

Figure 3-9. Plot of the voltage for FLT82-PO for 2025 Summer Peak case with and without system adjustments.

SECTION 4: SHORT-CIRCUIT ANALYSIS

The objective of this task is to quantify the three-phase to ground fault currents for the 2017 and 2025 Summer Peak season for each interconnecting generator.

4.1 Approach

The Short-Circuit analysis will assess breaker adequacy and fault duties for the generator interconnection bus and five buses away from the point of interconnection. MEPPI will assume no outages to find maximum short-circuit currents that flow through the breaker. The Automatic Sequencing Fault Calculation (ASCC) function in PSS/E was utilized to perform this task. FLAT conditions were applied to pre-fault conditions and the following adjustments were utilized:

- All synchronous and asynchronous machine P and Q output was set to zero
- All transformer tap ratios were set to 1.0 p.u. and all phase shift angles were set to zero
- All generator reactance's were fixed to the subtransient reactance
- All line charging was set to zero
- All shunts were set to zero
- All loads were set to zero
- All pre-fault bus voltages were set to 1.0 p.u. and a phase shift angle of zero

4.2 Short-Circuit Results: 2017 Summer Peak

The maximum fault current for each bus is provided for the 2017 Summer Peak conditions. The following tables show the short circuit results for the study generators for the 2017 Summer Peak condition:

- Table 4-1: Short-circuit Analysis for GEN-2016-004
- Table 4-2: Short-circuit Analysis for GEN-2016-052 and GEN-2016-053

Table 4-1
Short-Circuit Analysis for Study Project GEN-2016-004 (17SP)

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
601001	FORBES 2	500	9.86
560074	G16-017-TAP	345	6.08
587130	GEN-2016-017	345	6.05
601005	ELM CRK3	345	21.47
601011	SHERCO 3	345	36.05
601015	BLUE LK3	345	30.72
601019	COON CK3	345	31.05
601021	KOLMNLK3	345	27.66
601022	PARKERS3	345	27.62
601024	TERMINL3	345	24.99
601025	EDEN PR3	345	26.42
615327	GRE-BUNKER 3	345	23.43
615353	GRE-DICKNSN3	345	17.13
620358	BUFFALO3	345	5.55
620369	JAMESTN3	345	4.90
652175	G09_001IST	345	5.44
652424	BELFELD3	345	6.47
652506	FTTHOMP3	345	8.76
652806	FTTHOM1-LNX3	345	8.76
657791	CENTER 3	345	11.54
657946	PRAIRIE3	345	4.08
657951	CNTSHNT3	345	11.54
659101	ANTELOP3	345	16.12
659105	LELANDO3	345	15.63
659120	BRDLAND3	345	3.58
659160	GROTON 3	345	4.97
659183	CHAR.CK3	345	10.42
659212	DGC 3	345	15.39
659218	COTEAU 3	345	16.12
659333	JUDSON 3	345	5.87
659384	ROUNDUP 3	345	8.63
659387	KUMMERRIDGE3	345	3.49
659390	PATENTGATE 3	345	6.33
659404	ANTELPHILLS3	345	11.07
659420	ANTELOP-LNX3	345	16.12
659421	BRDLAND-LNX3	345	3.58
659422	LELAND1-LNX3	345	15.63
659423	GROTON-LNX3	345	4.97
659424	LELAND2-LNX3	345	15.63
661016	COYOTE 3	345	8.11
699449	ARROWHD	345	4.87
587030	GEN-2016-004	230	7.54
602006	SHEYNNE4	230	10.09
602037	ROCKCR 4	230	6.15
608600	BISONMP4	230	7.84
608614	98L TAP4	230	11.31
608615	ARROWHD4	230	11.56
608616	HILLTOP4	230	8.56
608623	MINNTAC4	230	11.29
608624	FORBES 4	230	19.70
608625	BLCKBRY4	230	16.33
615335	GRE-RAMSEY 4	230	3.87
615347	GRE-MCHENRY4	230	6.10
615466	GRE-BEARCK 4	230	5.34
615600	GRE-COAL CR4	230	17.27
615900	GRE-COAL TP4	230	15.17
615901	GRE-STANTON4	230	17.11
615903	GRE-BALTA 4	230	6.46
620290	HARVEY 4	230	5.10
620336	AUDUBON4	230	5.14
620379	RUGBY 4	230	5.82
620381	UNDERWD4	230	14.21
652216	WATFORD4	230	6.32
652296	WARD 4	230	11.18
652400	WILISTN4	230	8.17
652425	BELFELD4	230	8.90
652426	BISMARK4	230	12.75
652435	FARGO 4	230	9.33
652437	GRNDFKS4	230	6.42
652441	GARRISN4	230	11.54
652444	JAMESTN4	230	7.65
652456	WASHBRN4	230	9.92

Table 4-1 (Cont.)
Short-Circuit Analysis for Study Project GEN-2016-004 (17SP)

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
652466	HILKEN 4	230	8.49
652468	HEBRON 4	230	5.15
652499	MOUNDCITY 4	230	3.50
652527	WHITLOK4	230	4.25
652553	MOORHED4	230	6.59
652554	MORRIS 4	230	4.60
657741	MPC02100TAP4	230	15.24
657742	MPC2100WIND4	230	12.90
657751	CENTER 4	230	19.56
657754	MAPLE R4	230	11.10
657755	PRAIRIE4	230	7.02
657756	SQBUTTE4	230	21.51
657759	PICKERT4	230	4.11
657848	YNG2 4	230	18.08
659106	LELANDO4	230	22.19
659108	LOGAN 4	230	5.39
659138	NESET 4	230	7.92
659143	BLAISDELL 4	230	5.05
659233	DGC 4	230	7.05
659284	ECKLUND4	230	7.51
659302	CHAR.CK4	230	11.30
659337	TANDE 4	230	7.61
659362	WHEELOCK 4	230	6.11
659365	BALDWIN 4	230	7.51
659408	CAMPBLCNTY 4	230	3.27
659695	HARVEY Y	230	1.93
661028	WEBER 4	230	4.60
661038	GLENHAM4	230	3.45
661042	HESKETT4	230	12.77
661053	MANDAN 4	230	13.44
661084	TIOGA4 4	230	7.93
672602	BDX 4	230	4.15
672603	BDV 4	230	4.45
699448	AWHD PST	230	8.65
10651	G830_SUB	115	5.48
587050	GEN-2016-007	115	3.98
603018	SHEYNNE7	115	11.89
603022	SOURIS 7	115	7.25
603023	MALLARD7	115	9.49
603068	COON CK7	115	54.06
603095	PARKERS7	115	43.52
605634	VELVA TAP	115	7.07
608634	131L_TP7	115	13.34
608673	ARROWHD7	115	19.89
608674	HANESRD7	115	9.15
608676	HIBBARD7	115	13.97
608686	15TH AV7	115	11.06
608688	COLBYVL7	115	7.44
608722	FORBES 7	115	22.98
608916	CANOSIA7	115	11.03
615348	GRE-MCHENRY7	115	8.59
615354	GRE-DICKNSN7	115	26.72
615517	GRE-4CORNRS7	115	9.50
615548	GRE-ST BONI7	115	11.85
615590	GRE-CROWRIV7	115	18.83
618001	GRE-BERGNTP7	115	6.05
619804	GRE-DCKSNSS7	115	25.46
620269	JAMSTWN7	115	7.61
652416	DEVAUL 7	115	1.50
652419	KILDEER7	115	7.95
652420	NSALEM 7	115	2.00
652422	HALIDAY7	115	4.80
652423	BARLOW 7	115	2.63
652427	BISMARK7	115	14.04
652428	CARNGTN7	115	2.64
652432	EDGELEY7	115	3.91
652436	FARGO 7	115	10.11
652440	NELSON 7	115	8.14
652442	GARRISN7	115	12.92
652443	GRNDFKS7	115	10.41
652445	JAMESTN7	115	9.58
652446	PLEASANT LK7	115	5.28

Table 4-1 (Cont.)
Short-Circuit Analysis for Study Project GEN-2016-004 (17SP)

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
652449	MAX 7	115	5.48
652452	RUGBY 7	115	6.71
652453	TOWNER 7	115	4.12
652454	VALLEYC7	115	4.36
652464	DENBIGH TAP7	115	4.12
652512	GROTON 7	115	12.77
652534	ORDWAY 7	115	4.81
652587	MOORHED7	115	6.11
652590	SNAKECR7	115	5.36
652638	ENDERLIN 7	115	3.26
657707	CALEDON7	115	3.41
658080	MPSBROOK	115	6.39
659109	BASIN 7	115	5.41
659113	VOLTAIR7	115	8.53
659139	NESET 7	115	9.70
659144	BLAISDELL 7	115	6.89
659155	LOGAN 7	115	9.27
659165	RUTHVILLECP7	115	4.69
659166	DUNNING7	115	1.63
659182	CHAR.CK7	115	14.26
659184	R.RIDER7	115	4.43
659185	FOUREYES 7	115	3.71
659190	NDPRAIRWND 7	115	8.13
659261	BTHOLD 7	115	5.48
659280	POMONA 7	115	3.25
659282	BIS EA CEPC7	115	14.04
659297	BIS WARD 7	115	4.22
659305	NWMANDANMGS7	115	17.27
659307	SWMINOT CP7	115	6.53
659308	KENASTON 7	115	3.16
659363	WHEELOCK 7	115	5.56
659385	ROUNDUP 7	115	12.71
659391	PATENTGATE 7	115	12.19
659544	PLAZA MW7	115	4.90
659553	BEARCREK-MK7	115	9.66
659593	DUNNCENTRMK7	115	5.08
659594	HALLIDAY-MK7	115	3.63
659608	PARSHALL-MW7	115	3.87
659616	PALERMO -MW7	115	5.14
659617	STANLEY -MW7	115	4.57
659653	GRSYBUTTAP 7	115	13.29
659661	DGLASCRK-CP7	115	3.75
659662	ROSEGLEN-CP7	115	3.61
659664	MAKOTI -CP7	115	4.50
659665	RUGBY TAP 7	115	6.71
661008	BEULAH 7	115	9.76
661009	BISEXP 7	115	11.96
661018	COYOTE 7	115	10.13
661021	WSTMD1 7	115	8.09
661029	ESTBMRK7	115	14.03
661035	GLENHAM7	115	3.87
661043	HESKETT7	115	17.28
661054	MANDAN 7	115	17.27
661060	LINTON 7	115	1.33
661067	MANDANW7	115	12.59
661080	STANLEY7	115	3.53
661085	TIOGA4 7	115	9.47
661086	TIOGA7 7	115	7.91
661119	26TH&D 7	115	12.91
615467	GRE-BEAR CK8	69	5.54
615601	GRE-COAL FM8	69	9.26
619843	GRE-DICKIN 8	69	11.37
652203	FARGO 8	69	11.63
652204	VALLEYC8	69	2.52
652257	DEVAUL 8	69	1.55
652433	EDGELEY8	69	2.32
657923	PICKERT8	69	2.99
659222	COTEAU1 8	69	9.35
659236	DGC UREA 8	69	7.03

Table 4-2
Short-Circuit Analysis for Study Project GEN-2016-052 and GEN-2016-053 (17SP)

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
560074	G16-017-TAP	345	6.08
615353	GRE-DICKNSN3	345	17.13
657791	CENTER 3	345	11.54
659101	ANTELOP3	345	16.12
659105	LELANDO3	345	15.63
659183	CHAR.CK3	345	10.42
659212	DGC 3	345	15.39
659218	COTEAU 3	345	16.12
659384	ROUNDUP 3	345	8.63
659404	ANTELPHILLS3	345	11.07
659420	ANTELOP-LNX3	345	16.12
659422	LELAND1-LNX3	345	15.63
659423	GROTON-LNX3	345	4.97
659424	LELAND2-LNX3	345	15.63
661016	COYOTE 3	345	8.11
587030	GEN-2016-004	230	7.54
602006	SHEYNNE4	230	10.09
608600	BISONMP4	230	7.84
608615	ARROWHD4	230	11.56
615347	GRE-MCHENRY4	230	6.10
615600	GRE-COAL CR4	230	17.27
615900	GRE-COAL TP4	230	15.17
615901	GRE-STANTON4	230	17.11
620336	AUDUBON4	230	5.14
620381	UNDERWD4	230	14.21
652296	WARD 4	230	11.18
652417	DICKNSN4	230	6.62
652426	BISMARK4	230	12.75
652435	FARGO 4	230	9.33
652437	GRNDFKS4	230	6.42
652441	GARRISN4	230	11.54
652444	JAMESTN4	230	7.65
652456	WASHBRN4	230	9.92
652466	HILKEN 4	230	8.49
652468	HEBRON 4	230	5.15
652499	MOUNDCITY 4	230	3.50

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
652527	WHITLOK4	230	4.25
652553	MOORHED4	230	6.59
652554	MORRIS 4	230	4.60
652821	SULLYBT-LNX3	230	6.13
657741	MPC02100TAP4	230	15.24
657742	MPC2100WIND4	230	12.90
657751	CENTER 4	230	19.56
657754	MAPLE R4	230	11.10
657755	PRAIRIE4	230	7.02
657756	SQBUTTE4	230	21.51
657759	PICKERT4	230	4.11
657848	YNG2 4	230	18.08
659106	LELANDO4	230	22.19
659108	LOGAN 4	230	5.39
659143	BLAISDELL 4	230	5.05
659284	ECKLUND4	230	7.51
659365	BALDWIN 4	230	7.51
659400	NDSUNFLWR 4	230	4.65
659408	CAMPBLCNTY 4	230	3.27
661028	WEBER 4	230	4.60
661038	GLENHAM4	230	3.45
661042	HESKETT4	230	12.77
661053	MANDAN 4	230	13.44
661084	TIOGA4 4	230	7.93
661094	WISHEK 4	230	3.89
10651	G830_SUB	115	5.48
587050	GEN-2016-007	115	3.98
603018	SHEYNNE7	115	11.89
603023	MALLARD7	115	9.49
605634	VELVA TAP	115	7.07
615348	GRE-MCHENRY7	115	8.59
652416	DEVAUL 7	115	1.50
652419	KILDEER7	115	7.95
652420	NSALEM 7	115	2.00
652422	HALIDAY7	115	4.80
652423	BARLOW 7	115	2.63

Table 4-2 (Cont.)
Short-Circuit Analysis for Study Project GEN-2016-052 and GEN-2016-053 (17SP)

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
652427	BISMARK7	115	14.04
652428	CARNGTN7	115	2.64
652432	EDGELEY7	115	3.91
652436	FARGO 7	115	10.11
652440	NELSON 7	115	8.14
652442	GARRISN7	115	12.92
652443	GRNDFKS7	115	10.41
652445	JAMESTN7	115	9.58
652449	MAX 7	115	5.48
652453	TOWNER 7	115	4.12
652454	VALLEYC7	115	4.36
652464	DENBIGH TAP7	115	4.12
652534	ORDWAY 7	115	4.81
652587	MOORHED7	115	6.11
652590	SNAKECR7	115	5.36
652638	ENDERLIN 7	115	3.26
657707	CALEDON7	115	3.41
658080	MPSBROOK	115	6.39
659109	BASIN 7	115	5.41
659113	VOLTAIR7	115	8.53
659144	BLAISDELL 7	115	6.89
659155	LOGAN 7	115	9.27
659190	NDPRAIRWND 7	115	8.13
659280	POMONA 7	115	3.25
659282	BIS EA CEPC7	115	14.04
659297	BIS WARD 7	115	4.22
659305	NWMANDANMGS7	115	17.27
659307	SWMINOT CP7	115	6.53
659594	HALLIDAY-MK7	115	3.63
659661	DGLASCRK-CP7	115	3.75
659662	ROSEGLEN-CP7	115	3.61
661008	BEULAH 7	115	9.76
661009	BISEXP 7	115	11.96
661018	COYOTE 7	115	10.13
661021	WSTMD1 7	115	8.09
661029	ESTBMRK7	115	14.03
661030	STEIN 7	115	12.14
661035	GLENHAM7	115	3.87
661037	BOWDLE 7	115	1.52
661039	MOBRIDG7	115	2.41
661043	HESKETT7	115	17.28
661051	STH9TH 7	115	10.77
661054	MANDAN 7	115	17.27
661060	LINTON 7	115	1.33
661067	MANDANW7	115	12.59
661095	WISHEK 7	115	2.35
661119	26TH&D 7	115	12.91
615601	GRE-COAL FM8	69	9.26
652203	FARGO 8	69	11.63
652204	VALLEYC8	69	2.52
652433	EDGELEY8	69	2.32
657923	PICKERT8	69	2.99

4.3 Short-Circuit Results: 2025 Summer Peak

The maximum fault current for each bus is provided for the 2025 Summer Peak conditions. The following tables show the short circuit results for the study generators for the 2025 Summer Peak conditions:

- Table 4-3: Short-circuit Analysis for GEN-2016-004
- Table 4-4: Short-circuit Analysis for GEN-2016-052 and GEN-2016-053

Table 4-3
Short-Circuit Analysis for Study Project GEN-2016-004 (25SP)

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
601001	FORBES 2	500	9.92
560074	G16-017-TAP	345	6.38
587130	GEN-2016-017	345	6.34
601005	ELM CRK3	345	21.49
601011	SHERCO 3	345	36.13
601015	BLUE LK3	345	30.84
601019	COON CK3	345	31.14
601021	KOLMNLK3	345	27.73
601022	PARKERS3	345	27.68
601024	TERMINL3	345	25.04
601025	EDEN PR3	345	26.48
615327	GRE-BUNKER 3	345	23.47
615353	GRE-DICKNSN3	345	17.12
620358	BUFFALO3	345	5.67
620369	JAMESTN3	345	5.01
652175	G09_001IST	345	6.12
652424	BELFELD3	345	6.60
652506	FTTHOMP3	345	9.21
652806	FTTHOM1-LNX3	345	9.21
657791	CENTER 3	345	11.71
657946	PRAIRIE3	345	4.30
657951	CNTSHNT3	345	11.71
659101	ANTELOP3	345	16.46
659105	LELANDO3	345	16.02
659120	BRDLAND3	345	3.78
659160	GROTON 3	345	5.95
659183	CHAR.CK3	345	10.73
659212	DGC 3	345	15.70
659218	COTEAU 3	345	16.46
659333	JUDSON 3	345	6.07
659384	ROUNDUP 3	345	8.81
659387	KUMMERRIDGE3	345	3.55
659390	PATENTGATE 3	345	6.51
659404	ANTELPHILLS3	345	11.25
659420	ANTELOP-LNX3	345	16.46
659421	BRDLAND-LNX3	345	3.78
659422	LELAND1-LNX3	345	16.02
659423	GROTON-LNX3	345	5.95
659424	LELAND2-LNX3	345	16.02
661016	COYOTE 3	345	8.15
699449	ARROWHD	345	4.86
587030	GEN-2016-004	230	7.56
602006	SHEYNNE4	230	10.32
602037	ROCKCR 4	230	6.24
608600	BISONMP4	230	7.85
608614	98L TAP4	230	11.35
608615	ARROWHD4	230	11.61
608616	HILLTOP4	230	8.54
608623	MINNTAC4	230	11.19
608624	FORBES 4	230	19.67
608625	BLCKBRY4	230	16.26
615335	GRE-RAMSEY 4	230	3.98
615347	GRE-MCHENRY4	230	6.10
615466	GRE-BEARCK 4	230	5.35
615600	GRE-COAL CR4	230	17.30
615900	GRE-COAL TP4	230	15.20
615901	GRE-STANTON4	230	17.18
615903	GRE-BALTA 4	230	6.51
620290	HARVEY 4	230	5.11
620336	AUDUBON4	230	5.16
620379	RUGBY 4	230	5.85
620381	UNDERWD4	230	14.21
652216	WATFORD4	230	6.63
652296	WARD 4	230	11.71
652400	WILISTN4	230	8.86
652425	BELFELD4	230	9.10
652426	BISMARK4	230	13.33
652435	FARGO 4	230	9.54
652437	GRNDFKS4	230	6.82
652441	GARRISN4	230	11.61
652444	JAMESTN4	230	7.82
652456	WASHBRN4	230	10.07

Table 4-3 (Cont.)
Short-Circuit Analysis for Study Project GEN-2016-004 (25SP)

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
652466	HILKEN 4	230	8.61
652468	HEBRON 4	230	5.23
652499	MOUNDCITY 4	230	3.57
652527	WHITLOK4	230	4.33
652553	MOORHED4	230	6.70
652554	MORRIS 4	230	4.65
657741	MPC02100TAP4	230	15.57
657742	MPC2100WIND4	230	13.14
657751	CENTER 4	230	19.86
657754	MAPLE R4	230	11.37
657755	PRAIRIE4	230	7.53
657756	SQBUTTE4	230	21.81
657759	PICKERT4	230	4.18
657848	YNG2 4	230	18.23
659106	LELANDO4	230	22.62
659108	LOGAN 4	230	5.57
659138	NESET 4	230	8.47
659143	BLAISDELL 4	230	5.21
659233	DGC 4	230	7.13
659284	ECKLUND4	230	7.60
659302	CHAR.CK4	230	11.60
659337	TANDE 4	230	8.10
659362	WHEELOCK 4	230	6.74
659365	BALDWIN 4	230	7.60
659372	LARSON 4	230	5.62
659375	WHITBY 4	230	2.05
659408	CAMPBLCNTY 4	230	3.32
659695	HARVEY Y	230	1.92
661028	WEBER 4	230	4.68
661038	GLENHAM4	230	3.52
661042	HESKETT4	230	13.66
661053	MANDAN 4	230	14.40
661084	TIOGA4 4	230	8.48
672603	BDV 4	230	4.96
699448	AWHD PST	230	8.64
10651	G830_SUB	115	5.43
587050	GEN-2016-007	115	3.99
603018	SHEYNNE7	115	12.08
603022	SOURIS 7	115	7.33
603023	MALLARD7	115	9.80
603068	COON CK7	115	54.13
603095	PARKERS7	115	43.49
605634	VELVA TAP	115	7.05
608634	131L_TP7	115	13.29
608673	ARROWHD7	115	19.91
608674	HANESRD7	115	9.08
608676	HIBBARD7	115	13.94
608686	15TH AV7	115	11.00
608688	COLBYVL7	115	7.37
608722	FORBES 7	115	22.79
608916	CANOSIA7	115	10.97
615348	GRE-MCHENRY7	115	8.60
615354	GRE-DICKNSN7	115	26.56
615517	GRE-4CORNRS7	115	9.42
615548	GRE-ST BONI7	115	11.77
615590	GRE-CROWRIV7	115	18.79
618001	GRE-BERGNTP7	115	5.97
619804	GRE-DCKSNSS7	115	25.32
620269	JAMSTWN7	115	7.82
652416	DEVAUL 7	115	1.51
652419	KILDEER7	115	8.00
652420	NSALEM 7	115	2.01
652422	HALIDAY7	115	4.80
652423	BARLOW 7	115	2.63
652427	BISMARK7	115	14.81
652428	CARNGTN7	115	2.64
652432	EDGELEY7	115	4.04
652436	FARGO 7	115	10.26
652440	NELSON 7	115	8.18
652442	GARRISN7	115	12.98
652443	GRNDFKS7	115	10.97
652445	JAMESTN7	115	9.72

Table 4-3 (Cont.)
Short-Circuit Analysis for Study Project GEN-2016-004 (25SP)

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
652446	PLEASANT LK7	115	5.29
652449	MAX 7	115	5.45
652452	RUGBY 7	115	6.73
652453	TOWNER 7	115	4.10
652454	VALLEYC7	115	4.39
652455	BOTTNO 7	115	1.37
652464	DENBIGH TAP7	115	4.09
652512	GROTON 7	115	17.85
652534	ORDWAY 7	115	7.84
652587	MOORHED7	115	6.17
652590	SNAKECR7	115	5.36
652638	ENDERLIN 7	115	3.30
657707	CALEDON7	115	3.41
658080	MPSBROOK	115	6.46
659109	BASIN 7	115	5.45
659113	VOLTAIR7	115	8.54
659139	NESET 7	115	9.95
659144	BLAISDELL 7	115	7.02
659150	WHITBY -CP7	115	3.16
659151	BOTNO_SE_CP7	115	1.40
659155	LOGAN 7	115	9.34
659165	RUTHVILLECP7	115	5.26
659166	DUNNING7	115	2.85
659182	CHAR.CK7	115	14.46
659184	R.RIDER7	115	4.42
659185	FOUREYES 7	115	3.72
659190	NDPRAIRWND 7	115	8.17
659261	BTHOLD 7	115	5.53
659280	POMONA 7	115	3.32
659282	BIS EA CEPC7	115	14.81
659297	BIS WARD 7	115	4.27
659305	NWMANDANMGS7	115	19.79
659307	SWMINOT CP7	115	6.56
659308	KENASTON 7	115	3.16
659363	WHEELOCK 7	115	6.95
659373	LARSON 7	115	4.04

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
659385	ROUNDUP 7	115	12.86
659391	PATENTGATE 7	115	12.38
659544	PLAZA MW7	115	4.95
659553	BEARCREK-MK7	115	9.75
659593	DUNNCENTRMK7	115	5.10
659594	HALLIDAY-MK7	115	3.62
659608	PARSHALL-MW7	115	3.89
659616	PALERMO -MW7	115	5.22
659617	STANLEY -MW7	115	4.63
659653	GRSYBUTTAP 7	115	13.46
659661	DGLASCRK-CP7	115	3.74
659662	ROSEGLEN-CP7	115	3.60
659664	MAKOTI -CP7	115	4.52
659665	RUGBY TAP 7	115	6.73
661008	BEULAH 7	115	9.80
661009	BISEXP 7	115	12.56
661018	COYOTE 7	115	10.16
661021	WSTMD1 7	115	8.10
661029	ESTBMRK7	115	14.80
661035	GLENHAM7	115	3.93
661043	HESKETT7	115	20.26
661054	MANDAN 7	115	19.79
661060	LINTON 7	115	1.33
661067	MANDANW7	115	13.74
661080	STANLEY7	115	3.56
661085	TIOGA4 7	115	9.68
661086	TIOGA7 7	115	8.06
661119	26TH&D 7	115	13.61
615467	GRE-BEAR CK8	69	5.51
615601	GRE-COAL FM8	69	9.23
619843	GRE-DICKIN 8	69	11.39
652203	FARGO 8	69	11.75
652204	VALLEYC8	69	2.49
652257	DEVAUL 8	69	1.56
652433	EDGELEY8	69	2.35
657923	PICKERT8	69	2.98
659222	COTEAU1 8	69	9.42
659236	DGC UREA 8	69	7.08

Table 4-4
Short-Circuit Analysis for Study Project GEN-2016-052 and GEN-2016-053 (25SP)

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
560074	G16-017-TAP	345	6.38
615353	GRE-DICKNSN3	345	17.12
657791	CENTER 3	345	11.71
659101	ANTELOP3	345	16.46
659105	LELANDO3	345	16.02
659183	CHAR.CK3	345	10.73
659212	DGC 3	345	15.70
659218	COTEAU 3	345	16.46
659384	ROUNDUP 3	345	8.81
659404	ANTELPHILLS3	345	11.25
659420	ANTELOP-LNX3	345	16.46
659422	LELAND1-LNX3	345	16.02
659423	GROTON-LNX3	345	5.95
659424	LELAND2-LNX3	345	16.02
661016	COYOTE 3	345	8.15
587030	GEN-2016-004	230	7.56
602006	SHEYNNE4	230	10.32
608600	BISONMP4	230	7.85
608615	ARROWHD4	230	11.61
615347	GRE-MCHENRY4	230	6.10
615600	GRE-COAL CR4	230	17.30
615900	GRE-COAL TP4	230	15.20
615901	GRE-STANTON4	230	17.18
620336	AUDUBON4	230	5.16
620381	UNDERWD4	230	14.21
652296	WARD 4	230	11.71
652417	DICKNSN4	230	6.74
652426	BISMARK4	230	13.33
652435	FARGO 4	230	9.54
652437	GRNDFKS4	230	6.82
652441	GARRISN4	230	11.61
652444	JAMESTN4	230	7.82
652456	WASHBRN4	230	10.07
652466	HILKEN 4	230	8.61
652468	HEBRON 4	230	5.23
652499	MOUNDCITY 4	230	3.57

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
652527	WHITLOK4	230	4.33
652553	MOORHED4	230	6.70
652554	MORRIS 4	230	4.65
652821	SULLYBT-LNX3	230	6.23
657741	MPC02100TAP4	230	15.57
657742	MPC2100WIND4	230	13.14
657751	CENTER 4	230	19.86
657754	MAPLE R4	230	11.37
657755	PRAIRIE4	230	7.53
657756	SQBUTTE4	230	21.81
657759	PICKERT4	230	4.18
657848	YNG2 4	230	18.23
659106	LELANDO4	230	22.62
659108	LOGAN 4	230	5.57
659143	BLAISDELL 4	230	5.21
659284	ECKLUND4	230	7.60
659365	BALDWIN 4	230	7.60
659375	WHITBY 4	230	2.05
659400	NDSUNFLWR 4	230	4.72
659408	CAMPBLCNTY 4	230	3.32
661028	WEBER 4	230	4.68
661038	GLENHAM4	230	3.52
661042	HESKETT4	230	13.66
661053	MANDAN 4	230	14.40
661084	TIOGA4 4	230	8.48
661094	WISHEK 4	230	4.50
10651	G830_SUB	115	5.43
587050	GEN-2016-007	115	3.99
603018	SHEYNNE7	115	12.08
603023	MALLARD7	115	9.80
605634	VELVA TAP	115	7.05
615348	GRE-MCHENRY7	115	8.60
652416	DEVAUL 7	115	1.51
652419	KILDEER7	115	8.00
652420	NSALEM 7	115	2.01
652422	HALIDAY7	115	4.80

Table 4-4 (Cont.)
Short-Circuit Analysis for Study Project GEN-2016-052 and GEN-2016-053 (25SP)

Bus Number	Bus Name	Bus Voltage (kV)	Fault Current 3-LG (kA)
652423	BARLOW 7	115	2.63
652427	BISMARK7	115	14.81
652428	CARNGTN7	115	2.64
652432	EDGELEY7	115	4.04
652436	FARGO 7	115	10.26
652440	NELSON 7	115	8.18
652442	GARRISN7	115	12.98
652443	GRNDFKS7	115	10.97
652445	JAMESTN7	115	9.72
652449	MAX 7	115	5.45
652453	TOWNER 7	115	4.10
652454	VALLEYC7	115	4.39
652464	DENBIGH TAP7	115	4.09
652534	ORDWAY 7	115	7.84
652587	MOORHED7	115	6.17
652590	SNAKECR7	115	5.36
652638	ENDERLIN 7	115	3.30
657707	CALEDON7	115	3.41
658080	MPSBROOK	115	6.46
659109	BASIN 7	115	5.45
659113	VOLTAIR7	115	8.54
659144	BLAISDELL 7	115	7.02
659150	WHITBY -CP7	115	3.16
659155	LOGAN 7	115	9.34
659190	NDPRAIRWND 7	115	8.17
659280	POMONA 7	115	3.32
659282	BIS EA CEPC7	115	14.81
659297	BIS WARD 7	115	4.27
659305	NWMANDANMGS7	115	19.79
659307	SWMINOT CP7	115	6.56
659594	HALLIDAY-MK7	115	3.62
659661	DGLASCRK-CP7	115	3.74
659662	ROSEGLEN-CP7	115	3.60
661008	BEULAH 7	115	9.80
661009	BISEXP 7	115	12.56
661018	COYOTE 7	115	10.16
661021	WSTMD1 7	115	8.10
661029	ESTBMRK7	115	14.80
661030	STEIN 7	115	12.80
661035	GLENHAM7	115	3.93
661037	BOWDLE 7	115	1.54
661039	MOBRIDG7	115	2.44
661043	HESKETT7	115	20.26
661051	STH9TH 7	115	11.29
661054	MANDAN 7	115	19.79
661060	LINTON 7	115	1.33
661067	MANDANW7	115	13.74
661095	WISHEK 7	115	2.46
661119	26TH&D 7	115	13.61
615601	GRE-COAL FM8	69	9.23
652203	FARGO 8	69	11.75
652204	VALLEYC8	69	2.49
652433	EDGELEY8	69	2.35
657923	PICKERT8	69	2.98

SECTION 5: POWER FACTOR ANALYSIS

The objective of this task is to quantify the power factor at the POI for the wind farms during base case and system contingencies. SPP transmission planning practice requires interconnecting generation projects to maintain the power factor (pf) at the POI within +/- 0.95 pf for system intact conditions and for post-contingency conditions. This is analyzed by having the wind/solar farm maintain a prescribed voltage schedule at the POI of 1.0 p.u. voltage or higher.

The 2016 Winter Peak, 2017 Summer Peak, and 2025 Summer Peak power flows provided by SPP were examined prior to the Power Factor Analysis to ensure they contained the proposed study project modeled at 100% of the nameplate rating and any previously queued projects listed in Table 2-2. There was no suspect power flow data in the study area. The proposed study project and any previously queued projects at the same point of interconnection were turned off during the power factor analysis. The wind farm(s) were then replaced by a generator modeled at the high side bus with the same real power (MW) capability as the wind farm(s) and open limits for the reactive power set points (Mvar). The generator was set to hold the POI scheduled bus voltage. All N-1, three-phase fault contingencies from Table 2-3 were then applied and the reactive power required to maintain the bus voltage was recorded.

5.1 Approach

Refer to Table 5-1 for the scheduled voltage each study generator was set to hold at the POI for each season.

GEN-2016-004 (587033 and 587036) was disabled in the power flow case. The LELAN41G (659110) generator was also disabled. A generator was placed at the high side bus of GEN-2016-004 and modeled with PGEN = 202 MW, QMin = -9999 Mvar, and QMax = 9999 Mvar. A generator was also placed at the high side bus of the LELAN41G (659106) generator modeled with PGEN = 230 MW, QMin = -9999 Mvar, and QMax = 9999 Mvar. All buses and transformers connected from the high side bus of each project to the corresponding generator were disabled.

GEN-2016-052 (659294) and GEN-2016-053 (659273) have the same point of interconnection, Hilken 230 kV, and both were disabled in the power flow case. WILTON3 (659366) is also tapped off of the Hilken 230 kV point of interconnection and was also disabled. One equivalent generator was placed at the high side bus of GEN-2016-052 and GEN-2016-053 and modeled with PGEN = 205 MW, QMin = -9999 Mvar, and QMax = 9999 Mvar. All buses and transformers connected from the high side bus of each project to the corresponding generator were disabled.

Table 5-1
Voltage Schedule of All Study Generators for All Seasons

Point of Interconnection Voltage (p.u.)				
Request	**POI**	**16WP**	**17SP**	**25SP**
GEN-2016-004	BEPC Leland Olds 230 kV (659106)	1.016	1.000	1.005
GEN-2016-052	Hilken 230 kV (652466)	1.020	1.009	1.012
GEN-2016-053	Hilken 230 kV (652466)	1.020	1.009	1.012

5.2 Power Factor Analysis Results

The power factor was calculated for the 2016 Winter Peak, 2017 Summer Peak, and 2025 Summer Peak conditions. The following tables show the power factor results for the study generators:

- Table 5-2: Power Factor Analysis for GEN-2016-004
- Table 5-3: Power Factor Analysis for GEN-2016-052 and GEN-2015-053

Note that a positive Q (Mvar) output illustrates that the generator is absorbing reactive power from the system, implying a leading power factor; a negative Q (Mvar) illustrates that the generator is supplying reactive power to the system, implying a lagging power factor.

Table 5-2
Power Factor Analysis: GEN-2016-004

Cont. No.	Case	2016 Winter Peak			2017 Summer Peak			2025 Summer Peak		
		Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)
0	Base	0.967	Lagging	-53.601	0.919	Lagging	-86.366	0.993	Lagging	-23.213
1	FLT01-3PH	0.899	Lagging	-98.628	0.769	Lagging	-167.977	0.917	Lagging	-87.863
2	FLT02-3PH	0.939	Lagging	-73.972	0.884	Lagging	-106.736	0.983	Lagging	-38.289
3	FLT03-3PH	0.922	Lagging	-84.727	0.891	Lagging	-102.755	0.972	Lagging	-49.192
4	FLT04-3PH	0.940	Lagging	-73.023	0.833	Lagging	-134.086	0.960	Lagging	-58.802
5	FLT05-3PH	0.999	Leading	6.840	1.000	Leading	0.021	0.983	Leading	37.648
6	FLT06-3PH	0.956	Lagging	-62.033	0.884	Lagging	-106.850	0.981	Lagging	-40.312
7	FLT07-3PH	0.895	Lagging	-100.808	0.774	Lagging	-165.068	0.928	Lagging	-81.330
8	FLT08-3PH	0.943	Lagging	-71.210	0.888	Lagging	-104.574	0.985	Lagging	-35.936
9	FLT09-3PH	0.950	Lagging	-66.392	0.926	Lagging	-82.211	0.987	Lagging	-33.060
10	FLT10-3PH	0.963	Lagging	-56.604	0.912	Lagging	-90.636	0.992	Lagging	-25.588
11	FLT11-3PH	0.943	Lagging	-71.232	0.849	Lagging	-125.885	0.971	Lagging	-49.816
12	FLT21-3PH	0.982	Leading	39.239	Blown Up			0.560	Leading	298.717
13	FLT23-3PH	0.959	Leading	59.332	Blown Up			0.555	Leading	302.788
14	FLT24-3PH	0.981	Lagging	-40.323	0.882	Lagging	-108.050	0.995	Lagging	-19.425
15	FLT25-3PH	0.962	Lagging	-57.219	0.904	Lagging	-95.416	0.979	Lagging	-42.367
16	FLT26-3PH	0.986	Lagging	-33.543	0.933	Lagging	-77.646	0.996	Lagging	-17.339
17	FLT35-3PH	0.990	Lagging	-29.405	0.972	Lagging	-49.130	0.999	Leading	7.708
18	FLT36-3PH	0.956	Lagging	-62.033	0.884	Lagging	-106.850	0.981	Lagging	-40.312
19	FLT37-3PH	0.894	Lagging	-101.212	0.771	Lagging	-166.589	0.913	Lagging	-90.387
20	FLT38-3PH	0.954	Lagging	-63.708	0.890	Lagging	-103.607	0.988	Lagging	-31.915
21	FLT39-3PH	0.955	Lagging	-62.370	0.892	Lagging	-102.433	0.988	Lagging	-31.263
22	FLT40-3PH	0.949	Lagging	-67.069	0.822	Lagging	-140.158	0.975	Lagging	-45.634
23	FLT41-3PH	0.966	Lagging	-54.372	0.908	Lagging	-93.224	0.992	Lagging	-25.868
24	FLT42-3PH	0.966	Lagging	-54.151	0.922	Lagging	-84.706	0.994	Lagging	-23.042
25	FLT43-3PH	0.967	Lagging	-53.601	0.919	Lagging	-86.366	0.993	Lagging	-23.213
26	FLT59-3PH	0.951	Lagging	-65.976	0.933	Leading	78.194	0.979	Lagging	-42.459
27	FLT60-3PH	0.972	Lagging	-49.260	0.937	Lagging	-75.420	0.994	Lagging	-21.658
28	FLT61-3PH	0.949	Lagging	-67.035	0.849	Lagging	-125.720	0.978	Lagging	-42.947
29	FLT62-3PH	0.966	Lagging	-54.252	0.919	Lagging	-86.841	0.993	Lagging	-24.278
30	FLT63-3PH	0.967	Lagging	-53.601	0.919	Lagging	-86.366	0.993	Lagging	-23.213
31	FLT64-3PH	0.966	Lagging	-54.028	0.928	Lagging	-81.209	0.993	Lagging	-24.745
32	FLT65-3PH	0.953	Lagging	-63.949	0.917	Leading	87.612	0.558	Leading	300.212
33	FLT66-3PH	0.969	Lagging	-51.069	0.918	Lagging	-87.031	0.995	Lagging	-21.218
34	FLT67-3PH	0.987	Leading	32.956	0.958	Leading	60.195	0.572	Leading	289.897

Study Generator GEN-2016-004

The Power Factor Analysis shows that GEN-2016-004 has a power factor range of 0.894 lagging (supplying) to 0.959 leading (absorbing) for the 2016 Winter Peak conditions, a power factor range of 0.769 lagging (supplying) to 0.917 leading (supplying) for the 2017 Summer Peak conditions, and a power factor range of 0.913 lagging (supplying) to 0.555 leading (absorbing) for the 2025 Summer Peak conditions.

Table 5-3
Power Factor Analysis: GEN-2016-052 and GEN-2016-053

Cont. No.	Case	2016 Winter Peak			2017 Summer Peak			2025 Summer Peak		
		Power Factor		Q (MVAR)	Power Factor		Q (MVAR)	Power Factor		Q (MVAR)
0	Base	1.000	Leading	2.385	0.996	Lagging	-17.725	0.997	Lagging	-14.737
1	FLT01-3PH	1.000	Leading	3.757	0.996	Lagging	-17.549	0.998	Lagging	-13.752
2	FLT02-3PH	1.000	Leading	2.079	0.995	Lagging	-19.976	0.996	Lagging	-18.596
3	FLT03-3PH	1.000	Lagging	-0.073	0.996	Lagging	-17.873	0.996	Lagging	-17.320
4	FLT04-3PH	1.000	Lagging	-1.750	0.991	Lagging	-27.191	0.995	Lagging	-20.718
5	FLT05-3PH	1.000	Leading	5.252	0.997	Lagging	-14.747	0.999	Lagging	-11.108
6	FLT06-3PH	0.999	Lagging	-11.175	0.978	Lagging	-43.348	0.985	Leading	36.231
7	FLT07-3PH	0.987	Lagging	-33.733	0.941	Lagging	-73.667	0.960	Lagging	-59.928
8	FLT08-3PH	1.000	Lagging	-0.626	0.993	Lagging	-24.587	0.994	Lagging	-22.497
9	FLT09-3PH	1.000	Leading	1.867	0.996	Lagging	-17.957	0.997	Lagging	-14.718
10	FLT10-3PH	1.000	Leading	1.648	0.996	Lagging	-18.640	0.997	Lagging	-15.086
11	FLT11-3PH	1.000	Leading	2.423	0.996	Lagging	-18.697	0.997	Lagging	-14.754
12	FLT21-3PH	0.989	Leading	31.012	Blown Up			0.964	Leading	56.934
13	FLT23-3PH	0.993	Leading	24.433	Blown Up			0.968	Leading	53.507
14	FLT24-3PH	0.999	Lagging	-9.419	0.957	Lagging	-62.231	0.985	Lagging	-36.074
15	FLT25-3PH	1.000	Leading	1.502	0.996	Lagging	-19.348	0.998	Lagging	-14.338
16	FLT26-3PH	0.999	Lagging	-10.203	0.968	Lagging	-52.969	0.983	Lagging	-37.992
17	FLT35-3PH	1.000	Leading	2.386	0.996	Lagging	-17.738	0.997	Lagging	-14.743
18	FLT36-3PH	0.999	Lagging	-11.175	0.978	Lagging	-43.348	0.997	Leading	14.736
19	FLT37-3PH	0.985	Leading	35.434	0.984	Leading	37.158	0.982	Leading	39.946
20	FLT38-3PH	0.999	Leading	7.327	0.997	Lagging	-14.801	0.999	Lagging	-6.879
21	FLT39-3PH	0.999	Leading	9.006	0.998	Lagging	-12.429	1.000	Lagging	-4.977
22	FLT40-3PH	1.000	Lagging	-6.337	0.990	Lagging	-28.982	0.994	Lagging	-23.023
23	FLT41-3PH	1.000	Lagging	-2.515	0.989	Lagging	-30.632	0.992	Lagging	-26.217
24	FLT42-3PH	1.000	Leading	1.360	0.996	Lagging	-18.069	0.998	Lagging	-13.501
25	FLT43-3PH	1.000	Leading	2.385	0.996	Lagging	-17.725	0.997	Lagging	-14.737
26	FLT59-3PH	1.000	Lagging	-1.117	0.996	Leading	17.725	0.995	Lagging	-20.313
27	FLT60-3PH	1.000	Leading	3.555	0.998	Lagging	-14.346	0.998	Lagging	-14.307
28	FLT61-3PH	1.000	Leading	0.713	0.995	Lagging	-19.972	0.997	Lagging	-17.106
29	FLT62-3PH	1.000	Leading	2.243	0.996	Lagging	-17.885	0.997	Lagging	-15.107
30	FLT63-3PH	1.000	Leading	2.385	0.996	Lagging	-17.725	0.997	Lagging	-14.737
31	FLT64-3PH	1.000	Leading	2.612	0.996	Lagging	-17.842	0.997	Lagging	-14.921
32	FLT65-3PH	1.000	Lagging	-0.358	0.989	Leading	30.927	0.995	Leading	20.419
33	FLT66-3PH	1.000	Leading	2.839	0.996	Lagging	-18.104	0.998	Lagging	-14.352
34	FLT67-3PH	1.000	Lagging	-2.424	0.996	Leading	17.759	0.997	Leading	14.773

Study Generator GEN-2016-052 and GEN-2016-053

The Power Factor Analysis shows that GEN-2016-052 and GEN-2016-053 has a power factor range of 0.987 lagging (supplying) to 0.985 leading (absorbing) for the 2016 Winter Peak conditions, a power factor range of 0.941 lagging (supplying) to 0.984 leading (absorbing) for the 2017 Summer Peak conditions, and a power factor range of 0.960 lagging (supplying) to 0.964 leading (absorbing) for the 2025 Summer Peak conditions.

SECTION 6: LOW/NO WIND ANALYSIS

The objective of this task is to determine the impact of low/no wind conditions on wind farms. The 2016 Winter Peak, 2017 Summer Peak, and 2025 Summer Peak power flows provided by SPP were examined for this analysis.

6.1 Approach

Low/no wind conditions were examined for all wind farms. Generators were disabled (independently), but the collector systems remained in-service. The amount of reactive power injected into the transmission network was recorded at the respective POI. This reactive power comes from the capacitance of the project's transmission lines and collector cables. A shunt reactor was added at the high side bus to bring the Mvar flow into the POI down to approximately zero.

6.2 Low/No Wind Analysis

The reactance needed to bring the Mvar flow into the POI to zero Mvar was recorded for each season for all wind or solar farms. Refer to Table 6-1 for the Low/No Wind Analysis results. The table lists the generators examined and the amount of reactive power needed for zero Mvar flow into the POI for each season.

Table 6-1
Low/No Wind/Solar Irradiance Analysis Results

Request	Size (MW)	POI Name	2016 WP	2017 SP	2025 SP
GEN-2016-004	201.6	BEPC Leland Olds 230 kV (659106)	-16.45	-16.45	-16.45
GEN-2016-052	52.8	Hilken 230 kV (652466)	-4.50	-4.50	-4.50
GEN-2016-053	52.8	Hilken 230 kV (652466)	-4.50	-4.50	-4.50

SECTION 7: CONCLUSIONS

SUMMARY OF STABILITY ANALYSIS

The Stability Analysis determined there were a couple contingencies that resulted in voltage instability, generator instability, and high post-fault steady-state voltages when all generation interconnection requests were at 100% output.

To mitigate the voltage instability, generator instability, and high post-fault steady-state voltages, the following actions were provided by SPP and implemented for the respective season:

- Curtail GI1414GEN W0.6900 Unit 1 located at bus 659453 from 137 MW to 50 MW (16WP, 17SP, and 25SP)
- Switch off 109.6 Mvar line reactor at bus 659421 (17SP)

After applying the above system changes for all study years, all contingencies were observed to recover within SPP criteria.

SUMMARY OF THE SHORT-CIRCUIT ANALYSIS

The Short-Circuit Analysis was performed on the 2017 Summer Peak and 2025 Summer Peak power flow cases for all study projects. Refer to Table 7-2 for a list of maximum fault currents observed for each study project for the 2017 Summer Peak case. Refer to Table 7-3 for a list of maximum fault currents observed for each study project for the 2025 Summer Peak case.

Table 7-2
List of Maximum Fault Currents Observed for Each Study Project for the 2017 Summer Peak Case

Study Project	POI Name	Fault Current at POI (kA)	Maximum Fault Current (kA)	Fault Location	Bus Voltage (kV)
GEN-2016-004	BEPC Leland Olds 230 kV (659106)	22.19	54.06	COON CK7	115
GEN-2016-052	Hilken 230 kV (652466)	8.49	22.19	LELANDO4	230
GEN-2016-053	Hilken 230 kV (652466)	8.49	22.19	LELANDO4	230

Table 7-3
List of Maximum Fault Currents Observed for Each Study Project for the 2025 Summer Peak Case

Study Project	POI Name	Fault Current at POI (kA)	Maximum Fault Current (kA)	Fault Location	Bus Voltage (kV)
GEN-2016-004	BEPC Leland Olds 230 kV (659106)	22.62	54.13	COON CK7	115
GEN-2016-052	Hilken 230 kV (652466)	8.61	22.62	LELANDO4	230
GEN-2016-053	Hilken 230 kV (652466)	8.61	22.62	LELANDO4	230

SUMMARY OF POWER FACTOR ANALYSIS

Refer to Table 7-4 for the power factor analysis results for each study generator. The table lists the range of power factor required for each study project.

Table 7-4
Power Factor Analysis Summary for Study Projects

Study Project	Power Factor Range for Each Study Project[1]					
	16WP		17SP		25SP	
GEN-2016-004	-0.894	0.959	-0.769	0.917	-0.913	0.555
GEN-2016-052	-0.987	0.985	-0.941	0.984	-0.960	0.964
GEN-2016-053	-0.987	0.985	-0.941	0.984	-0.960	0.964

[1]**Lagging power factors are negative and leading power factors are positive**

SUMMARY OF THE LOW/NO WIND ANALYSIS

The amount of reactive power injected into the transmission network was recorded at the high side of the transformer near the point of interconnection for all study projects for each season.

11.14.14 J17: GROUP 17 DYNAMIC STABILITY ANALYSIS REPORT

Previous stability analysis is still valid.

11.14.15 J18: GROUP 18 DYNAMIC STABILITY ANALYSIS REPORT

Previous stability analysis is still valid.