



**FEASIBILITY CLUSTER  
STUDY FOR GENERATOR  
INTERCONNECTION  
REQUESTS**

FCS-2019-002

Published on August 30<sup>th</sup>, 2019

By SPP Generator Interconnection Department

## REVISION HISTORY

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DATE OR VERSION NUMBER	AUTHOR	CHANGE DESCRIPTION	COMMENTS
8/30/2019	Generator Interconnection	Initial Report	

# CONTENTS

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Revision History.....	i
Introduction.....	1
Model Development.....	3
Upgrades Included in the Analysis.....	3
Base Case Upgrades.....	3
Contingent Upgrades.....	3
Potential Upgrades Not in the Base Case.....	3
Higher Queued Requests Included in the Analysis.....	4
SPP Requests.....	4
Affected System Requests.....	4
Power Flow.....	4
Dispatch of Interconnection Requests.....	4
Dynamic Stability and Short Circuit.....	5
Dynamic Stability.....	5
Short Circuit.....	5
Identification of Network Constraints (System Performance).....	6
Thermal Overloads.....	6
Voltage.....	6
Dynamic Stability.....	6
Upgrades Assigned.....	7
Power Flow Analysis and Results.....	7
Power Flow Analysis Methodology.....	7
Curtailement And System Reliability.....	7
Stability and Short Circuit Analysis.....	8
Required Interconnection Facilities.....	9
Facilities Analysis.....	11
Environmental Review.....	11
Network Upgrades.....	12
Credits/Compensation for Amounts Advanced for Network Upgrades.....	12
Affected Systems Coordination.....	13
Conclusion.....	14

APPENDICES..... 15

Appendix A..... 15

Appendix B ..... 15

Appendix C ..... 16

Appendix D..... 28

Appendix E ..... 49

Appendix F ..... 52

Appendix G..... 53

## INTRODUCTION

Pursuant to the Southwest Power Pool's (SPP) Open Access Transmission Tariff (OATT), SPP conducted this Feasibility Cluster Study (FCS) for generation interconnection requests received during the FCS Queue Cluster Window, which closed on May 24<sup>th</sup> 2019. The customers will be referred to in this study as the FCS Interconnection Customers. This FCS analyzes the impact of interconnecting new generation totaling 1,150 MW to the SPP Transmission System. The interconnecting SPP Transmission Owners include:

- Springfield Utilities (SPRM)
- Nebraska Public Power District (NPPD)
- Southwestern Public Service Company (SPS)
- The Empire District Electric Company (EMDE)
- Western Area Power Administration (WAPA)

The primary objective of this Feasibility Cluster Study is to identify the system constraints associated with connecting the generation to the area transmission system. The Feasibility and other subsequent Interconnection Studies are designed to identify attachment facilities, Network Upgrades and other Direct Assignment Facilities needed to accept power into the grid at each specific interconnection receipt point.

*Table 1: Point of Interconnections Requested and Studied*

Interconnection Request	Fuel Type	Max Output (MW)	Service	Group	Point of Interconnection (POI) Requested	Point of Interconnection (POI) Studied
GEN-2019-005	Solar	200	ER / NR	12	Morgan – Brookline 345kV line	(P) Morgan – Brookline 345kV line
					Dadeville 161kV Substation	(S) Dadeville 161kV Substation
GEN-2019-007	Solar	500	ER / NR	9	Gerald Gentlemen – Red Willow 345kV line	N/A; Invalid POI
					Gerald Gentleman 345kV Substation	Gerald Gentleman 345kV Substation
GEN-2019-008	Solar	300	ER / NR	6	Eddy – Chavez 230kV line	(P) Eddy – Chavez 230kV line
					Eddy – Roswell 115kV line	(S) Eddy – Roswell 115kV line
GEN-2019-043	Solar	150	ER / NR	16	Baker - Mile City 230 kV	Baker - Mile City 230 kV

A First Contingency Incremental Transfer Capability (FCITC) analysis was performed for each request outlined in the table below:

*Table 2: Scenario Descriptions*

<b>Scenario</b>	<b>Interconnection Request(s)</b>	<b>Scenario Description</b>	<b>Point of Interconnection (POI) Studied</b>
<b>Scenario 1</b>	GEN-2019-008 P	Group 06 ERIS/NRIS	Eddy - Chavez 230kV line
	GEN-2019-008 S		Eddy - Roswell 115kV line
<b>Scenario 2</b>	GEN-2019-007	Group 09 ERIS/NRIS	Gerald Gentleman 345kV Sub
<b>Scenario 3</b>	GEN-2019-005 P	Group 12 ERIS/NRIS	Morgan-Brookline 345kV line
	GEN-2019-005 S		Dadeville 161kV Substation
<b>Scenario 4</b>	GEN-2019-043	Group 16 ERIS/NRIS	Baker - Mile City 230 kV line

Please note that since the DISIS-2016-002-1, DISIS-2017-001, DISIS-2017-002, DISIS-2018-001, DISIS-2018-002 and DISIS-2019-001 have not been completed, only higher queued requests queued through DISIS-2016-002-1 and upgrades through DISIS-2016-001 were included in this analysis.

Network upgrades assigned to higher queued interconnection requests may become the cost responsibility of lower queued interconnection requests if the higher queued request withdraws and a restudy deems the network upgrade necessary for the lower queued request.

## MODEL DEVELOPMENT

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### *UPGRADES INCLUDED IN THE ANALYSIS*

#### **BASE CASE UPGRADES**

The facilities listed in Appendix A 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 Feasibility Interconnection Customers have not been assigned advancement costs for the projects listed below.

The FCS 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. If construction on these projects is discontinued, additional restudies will be needed to determine the interconnection needs of the Interconnection Customers during the DISIS.

#### **CONTINGENT UPGRADES**

The facilities in Appendix B 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 FCS 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 FCS Interconnection Customer Generation Facilities in-service dates may need to be delayed until the completion of the following upgrades.

#### **POTENTIAL UPGRADES NOT IN THE BASE CASE**

Upgrades that do not have a Notification to Construct (NTC) or are not explicitly listed within this report have not been included in the base case. These upgrades include those 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.

## HIGHER QUEUED REQUESTS INCLUDED IN THE ANALYSIS

### SPP REQUESTS

Appendix C outlines the higher queued SPP requests included in this analysis. These requests have higher queue priority to the FCS-2019-002 requests. Please note that DISIS-2017-001 through DISIS-2018-002 requests have been excluded from this analysis because the impact studies have not been completed.

### AFFECTED SYSTEM REQUESTS

Please note that several affected system requests that have higher queue priority to the FCS-2019-002 requests may have been excluded from this analysis.

## POWER FLOW

The power flow models used for this study are based on the 2016-series Integrated Transmission Planning models used for the 2017 ITP-Near Term analysis. These models include:

- Year 1 2017 winter peak (17WP)
- Year 2 2018 spring (18G)
- Year 2 2018 summer peak (18SP)
- Year 5 2021 summer (21SP)
- Year 5 2021 light (21L)
- Year 5 2021 winter peak (21WP)
- Year 10 2026 summer peak (26SP)

## DISPATCH OF INTERCONNECTION REQUESTS

### SPP Interconnection Requests

Please refer to the table below for an overview of SPP dispatch criteria.

Table 3: SPP GIR Power Flow Fuel Type Dispatch

Dispatch Type	Season	Service Type	Renewable (in group)	Renewable (out of group)	Conventional (in group)	Conventional (out of group)
ERIS HVER	All	All	100%	20%	N/A	N/A
ERIS LVER	Peak	All	20%	20%	100%	100%
NRIS HVER	Spring and Light Load	ERIS	80%	20%	N/A	N/A
		NRIS	100%	20%	100%	20%
NRIS LVER	Peak	ERIS	20%*	20%*	80%	80%
		NRIS	100%	100%	100%	100%



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.

#### ***Affected System Interconnection Requests***

To incorporate affected system interconnection requests from neighboring queues, SPP adds and dispatches requests which are believed to have an impact on the SPP footprint. These interconnection requests are sunk to their host system footprint, not SPP.

### ***DYNAMIC STABILITY AND SHORT CIRCUIT***

#### **DYNAMIC STABILITY**

Dynamic stability studies performed as part of the DISIS Cluster Studies will provide additional guidance as to whether required reactive compensation can be static or a portion must be dynamic (such as a SVC).

#### **SHORT CIRCUIT**

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

## IDENTIFICATION OF NETWORK CONSTRAINTS (SYSTEM PERFORMANCE)

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### *THERMAL OVERLOADS*

Network constraints are found by using 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.

### *VOLTAGE*

Steady State Voltage analysis is performed as part of the DISIS. Cluster Studies will provide additional guidance as to whether reactive compensation is required. Monitored facilities and transmission reinforcement criteria for this analysis will be provided during the DISIS report phase.

### *DYNAMIC STABILITY*

Dynamic stability studies performed as part of the DISIS Cluster Study will provide additional guidance as to whether required reactive compensation can be static or a portion must be dynamic (such as a SVC). During the DISIS, 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.

### ***UPGRADES ASSIGNED***

In no way does the list of constraints 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.

## **POWER FLOW ANALYSIS AND RESULTS**

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### ***POWER FLOW ANALYSIS METHODOLOGY***

The Direct Current (DC) FCITC function of PSS® MUST was 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.

ERIS and NRIS constraints for mitigation can be found in Appendix F and Appendix G.

### ***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.

## STABILITY AND SHORT CIRCUIT ANALYSIS

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Stability is not applicable to the FCS queue. Short Circuit Analysis was performed for each generator's POI. The Short Circuit Analysis results are found in Appendix D.

## REQUIRED INTERCONNECTION FACILITIES

Table 4 outlines the estimated interconnection costs for each request per FCITC scenario. Please note that not all requested points of interconnection were viable, as discussed in the scoping call, and were subsequently not studied. Also, some points of interconnection, while examined in this analysis, may not be viable in the future (i.e. available outlets being filled by higher queued requests).

- **Costs Not Included** – Costs on Affected Systems for Associated Electric Cooperative Inc. (AECI), Mid-Continent Independent System Operator (MISO), and Minnkota Power Cooperative, Inc (MPC). Impacts to affected systems will be coordinated with the Affected System operators if the Interconnection Request(s) enter into the Definitive Interconnection System Impact Study (DISIS) Queue.
- **Costs Not Included** – Potential upgrades required for AC voltage or transient stability constraints. Impacts to AC voltage and transient stability analysis are evaluated during the DISIS Queue.

Table 4: Estimated Interconnection Costs per Scenario

Scenario	Interconnection Request(s)	Scenario Description	Point of Interconnection (POI) Studied	Interconnection Costs	ERIS Network Upgrade Costs	NRIS Network Upgrade Costs	Total Estimated Cost
Scenario 1	GEN-2019-008 P	Group 06 ERIS/NRIS	Eddy - Chavez 230kV line	\$6.9 Million	\$25.3 Million	\$50.8 Million	\$83 Million
	GEN-2019-008 S		Eddy - Roswell 115kV line	\$6.2 Million	\$25.4 Million	\$49.7 Million	\$81.2 Million
Scenario 2	GEN-2019-007	Group 09 ERIS/NRIS	Gerald Gentleman 345kV Sub	\$10 Million	\$165 Million	\$166.6 Million	\$341.6 Million
Scenario 3	GEN-2019-005 P	Group 12 ERIS/NRIS	Morgan-Brookline 345kV line	\$12.1 Million	\$0	\$43.9 Million	\$56 Million
	GEN-2019-005 S		Dadeville 161kV Substation	\$1.8 Million	\$0	\$52.1 Million	\$53.9 Million
Scenario 4	GEN-2019-043	Group 16 ERIS/NRIS	Baker - Mile City 230 kV line	\$7.5 Million	\$0	\$78.1 Million	\$85.6 Million

Table 5: Network Upgrades Required

Upgrade Name	Description	Groups
G19008 Tap - Eddy 230 kV CKT2 (Primary POI)	Build approximately 23 miles of circuit 230kV from GEN-2019-008 Tap (primary) to Eddy County with minimum of 329 (MVA) normal rating for Light season and minimum of 326 (MVA) normal rating for Summer and Spring	6
Antelope - Holt 345 kV CKT1	NRIS: Build approximately 110 miles of circuit 345 kV from Antelope - Holt with minimum of 720 (MVA) normal rating	9
Stateline - Sweetwater 230 kV CKT 2	NRIS: Build approximately 5 miles of circuit 230 kV from Stateline to Sweetwater with minimum of 504/555 (MVA) normal/emergency rating	12
Stateline - Wheeler 230 kV CKT 2	NRIS: Build approximately 14 miles of circuit 230 kV from Stateline to Wheeler with minimum of 504/555 (MVA) normal/emergency rating	12
Rebuild G19008 Tap - Eddy 230 kV CKT 1 (Primary POI)	NRIS: Rebuild GEN-2019-008 Tap (primary) to Eddy County to achieve minimum of 329 (MVA) emergency rating	6
G19008 Tap - Lubbock 230 kV CKT2	NRIS: Build approximately 5 miles of circuit 230 kV from Lubbock Power & Light Southeast - Lubbock South Interchange with minimum of 478 (MVA) normal rating	6
Brookline - Junction 161 kV CKT 2	NRIS: Build approximately 3 miles of circuit 161 kV from Junction to Brookline with minimum of 336/355 (MVA) normal/emergency rating	12
Brookline 345/161 kV Transformer 3	NRIS: Install third 345/161 kV transformer	12
Groton 345/115 kV Transformer 2	NRIS: Install second 345/115 kV transformer	16
G09_001IS 345/34.5 kV Transformer 2	NRIS: Install second 345/34.5 kV Transformer	16
G19008 Tap - Eddy 115 kV CKT2 (Secondary POI)	Build approximately 30 miles of circuit 115 kV from GEN-2019-008 Tap (secondary) with minimum of 160/175 (MVA) normal/emergency rating	6
G19008 Tap - Eddy 115 kV CKT1 (Secondary POI)	NRIS: Rebuild GEN-2019-008 Tap (secondary) to Eddy County CKT 2 to achieve minimum of 190 (MVA) emergency rating	6
Rebuild G19008 Tap - Eddy 115 kV CKT2 (Secondary POI)	NRIS: Rebuild GEN-2019-008 Tap (secondary) to Eddy County CKT 1 to achieve minimum of 190 (MVA) emergency rating	6
Billings - Chesapeake 161 kV CKT 2	NRIS: Build approximately 6.5 miles of circuit 69 kV from Billings to Chesapeake with minimum of 46 (MVA) normal rating	12
Chesapeake 161/69 kV Transformer 2	NRIS: Install second 161/69 kV Transformer	12
Neosho 345/161 kV Transformer 3	NRIS: Install third 345/161 kV transformer	12
Neosho - Riverton 161 kV CKT 2	NRIS: Build approximately 28 miles of circuit 161 kV from Neosho to Riverton with minimum 205/223 (MVA) normal/emergency rating	12
Monolith - Moore 345 kV CKT 2	NRIS: Build approximately 1 mile of circuit 345 kV from Moore to Monolith with minimum 956 (MVA) normal rating	9

### ***FACILITIES ANALYSIS***

If requests proceed to the DISIS queue, the interconnecting Transmission Owner for each Interconnection Request will provide its preliminary analysis of required Transmission Owner Interconnection Facilities and the associated Network Upgrades. This analysis will be limited only to the expected facilities to be constructed by the Transmission Owner at the Point of Interconnection.

### ***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.

## NETWORK UPGRADES

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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:

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

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

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

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

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

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.

### **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.



## AFFECTED SYSTEMS COORDINATION

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Impacts to affected systems will be coordinated with the Affected System operators if the Interconnection Request(s) enter into the DISIS Queue.

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

- 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 study further 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.
- Impacts on Minnkota Power Cooperative, Inc (MPC) – MPC will be contacted and provided a list of interconnection requests that proceed to move forward into the Interconnection Facilities Study Queue. MP will then evaluate the Interconnection Requests for impacts.
- 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.

## CONCLUSION

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The minimum cost of interconnecting all new generation interconnection requests per scenario included is outlined in Table 4. These costs, 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).

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.

## APPENDICES

### APPENDIX A

Appendix A Table 1: SPP Transmission Expansion Plan, Balanced Portfolio, and Recently Approved Priority Projects

NTC	UID	TO	Upgrade	Estimated Date of Upgrade Completion (EOC)
200360	50957	SPS	Intrepid West - Potash Junction 115 kV Ckt 1 Rebuild	4/15/2019
200360	51250	SPS	National Enrichment Plant - Targa 115 kV Ckt 1	4/5/2019
200391	51528	OGE	DeGrasse 345 kV Substation	6/1/2019
200391	51529	OGE	DeGrasse 345/138 kV Transformer	6/1/2019
200391	51530	OGE	DeGrasse - Knob Hill 138 kV New Line	6/1/2019
200391	51569	OGE	DeGrasse 138 kV Substation (OGE)	6/1/2019
200220	50442	NPPD	Cherry Co. (Theford) - Gentleman 345 kV Ckt 1	1/1/2021
200220	50444	NPPD	Cherry Co. (Theford) Substation 345 kV	1/1/2021
200220	50445	NPPD	Cherry Co. (Theford) - Holt Co. 345 kV Ckt 1	1/1/2021
200220	50446	NPPD	Holt Co. Substation 345 kV	1/1/2021
200309	50457	SPS	Hobbs - Yoakum 345 kV Ckt 1	6/1/2020
200395	50447	SPS	TUCO - Yoakum 345 kV Ckt 1	6/1/2020
200395	50451	SPS	Yoakum 345/230 kV Ckt 1 Transformer	6/1/2019
200282	50869	SPS	China Draw - Yeso Hills 115 kV Ckt 1	12/30/2023
200369	51481	SPS	Canyon East Tap - Randall 115 kV Ckt 1 Rebuild	5/15/2020
200396	51531	WFEC	DeGrasse 138 kV Substation (WFEC)	12/31/2019
200395	50920	SPS	Seminole 230/115 kV #1 Transformer	11/14/2019
200262	51039	SPS	Yoakum County Interchange 230/115 kV Ckt 1 Transformer	3/15/2019
200395	50921	SPS	Seminole 230/115 kV #2 Transformer	5/14/2019
200262	51050	SPS	Yoakum County Interchange 230/115 kV Ckt 2 Transformer	5/31/2019
210507	102156	SPS	Eddy County-Kiowa 345 kV circuit 1	6/1/2024

### APPENDIX B

Appendix B Table 1: Contingent Upgrades

Assigned Study	Upgrade Name	Estimated Date of Upgrade Completion (EOC)
DISIS-2015-002	Beatrice - Harbine 115 kV Ckt 1	TBD
DISIS-2015-002	Belvidere - Fairbury 115 kV CKT 1	TBD
DISIS-2015-002	Border 345 kV 100 MVAR Capacitive Reactive Power Support	TBD
DISIS-2015-002	Cleo Corner - Cleo Plnt Tap 138 kV CKT 1	TBD
DISIS-2015-002	Cleveland - Silver City 138 kV CKT 1	TBD
DISIS-2015-002	Deaf Smith - Plant X 230 kV Ckt 1 Rebuild	TBD
DISIS-2015-002	Deaf Smith 230 kV 60 MVAR Capacitive Reactive Power Support	TBD
DISIS-2015-002	Dickinson 230/115 kV CKT 2	TBD
DISIS-2015-002	Gavins Point - Yankon Junction 115 kV	TBD
DISIS-2015-002	Grapevine - Wheeler 230 kV Ckt 1 Terminal Equipment (SPS)	TBD

Assigned Study	Upgrade Name	Estimated Date of Upgrade Completion (EOC)
DISIS-2015-002	Newhart - Plant X 230 kV Ckt 1 Rebuild	TBD
DISIS-2015-002	Oklaunion 345 kV 100 MVAR Capacitive Reactive Power Support	TBD
DISIS-2015-002	Sweetwater - Wheeler 230 kV Ckt 1 Rebuild (AEPW)	TBD
DISIS-2015-002	Sweetwater - Wheeler 230 kV Ckt 1 Terminal Equipment (SPS)	TBD
DISIS-2016-001	Ranch Road - Sooner 345 kV Ckt 1 Terminal Upgrades	TBD
DISIS-2016-001	Sidney - Keystone 345 kV Ckt 2	TBD
DISIS-2016-001	Beaver County - Clark County 345 kV CKT 1 New Line	TBD
DISIS-2016-001	Keystone - Gentleman 345 kV CKT 2	TBD
DISIS-2016-001	Tolk - Crawfish Draw 345 kV CKT 1 New Line	TBD
DISIS-2016-001	Tolk - Potter County 345 kV CKT 1 New Line	TBD
DISIS-2016-001	Wolf Creek - Emporia 345 kV Ckt 1 New Line	TBD
DISIS-2016-001	Cottonwood Creek - G16-032-Tap 138 kV Ckt 1 Rebuild	TBD
DISIS-2016-001	Andrews 230/115/13 kV Transformer CKT 1	TBD
DISIS-2016-001	Andrews 230/115/13 kV Transformer CKT 2	TBD
DISIS-2016-001	Border - Chisholm 345 kV CKT 1 New Line	TBD
DISIS-2016-001	Crawfish Draw 345 kV Substation	TBD
DISIS-2016-001	Greenburg 115 kV 10 MVAR Capacitive Reactive Power Support	TBD
DISIS-2016-001	Oklaunion 345 kV 20 MVAR Capacitive Reactive Power Support	TBD
DISIS-2016-001	Shamrock 69 kV 10 MVAR Capacitive Reactive Power Support	TBD

**APPENDIX C**

Appendix C Table 1: Requests Included in the Analysis

Study	Generation Interconnection Number	SP PMAX	WP PMAX	Service	Group	Type	Status
PQ	ASGI-2010-006	150	150	ER	08 N-OK & S-KS	Wind	
PQ	GEN-2001-014	94.5	94.5	ER	01 WDWRD	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2001-026	74.25	74.25	ER	07 SW-OK	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2001-033	180.29	180.29	ER	06 NM & W-TX	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2001-036	80	80	ER	06 NM & W-TX	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2001-037	102	102	ER	01 WDWRD	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2001-039A	105	105	ER	03 SPRVLE	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2001-039M	99	99	ER	04 NW-KS	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2002-004	199.5	199.5	ER	08 N-OK & S-KS	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2002-005	120	120	ER	07 SW-OK	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2002-008	240	240	ER	02 HITCHLND	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2002-009	80	80	ER	02 HITCHLND	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2002-022	239.2	239.2	ER	02 HITCHLND	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2002-025A	150	150	ER	03 SPRVLE	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION

Southwest Power Pool, Inc.

PQ	GEN-2003-004	100	100	ER	07 SW-OK	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2003-005	100	100	ER	07 SW-OK	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2003-006A	201	201	ER	04 NW-KS	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2003-019	249.3	249.3	ER	04 NW-KS	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2003-020	159	159	ER	02 HITCHLND	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2003-021N	75	75	ER	09 NEB	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2003-022	120	120	ER	07 SW-OK	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2004-014	154.5	154.5	ER	03 SPRVLE	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2004-020	27	27	ER	07 SW-OK	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2004-023	20.6	20.6	ER	07 SW-OK	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2004-023N	75	75	ER	09 NEB	Coal	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2005-003	30.6	30.6	ER	07 SW-OK	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2005-008	120	120	ER	01 WDWRD	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2005-012	248.4	248.4	ER	03 SPRVLE	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2005-013	199.8	199.8	ER	08 N-OK & S-KS	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2006-002	100.8	100.8	ER	07 SW-OK	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2006-018	162	167.22	ER	06 NM & W-TX	CT	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2006-020N	42	42	ER	09 NEB	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2006-020S	19.8	19.8	ER	02 HITCHLND	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2006-021	100	100	ER	03 SPRVLE	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2006-024S	18.9	18.9	ER	01 WDWRD	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2006-026	502	508	ER	06 NM & W-TX	Gas	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2006-035	225	225	ER	07 SW-OK	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2006-038N005	80	80	ER	09 NEB	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2006-038N019	80	80	ER	09 NEB	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2006-043	99	99	ER	07 SW-OK	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2006-044	370	370	ER	02 HITCHLND	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2006-046	130	130	ER	01 WDWRD	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2007-011N08	81	81	ER	09 NEB	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	GEN-2008-1190	60	60	ER	09 NEB	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
PQ	Gray County Wind (Montezuma)	110	110	ER	03 SPRVLE	Wind	
PQ	Llano Estacado (White Deer)	80	80	ER	02 HITCHLND	Wind	
PQ	NPPD Distributed (Broken Bow)	7.3	7.3	ER	09 NEB	Heat	

Southwest Power Pool, Inc.

PQ	NPPD Distributed (Buffalo County Solar)	10	10	ER	09 NEB	Solar	
PQ	NPPD Distributed (Burt County Wind)	12	12	ER	09 NEB	Wind	
PQ	NPPD Distributed (Burwell)	3	3	ER	09 NEB	Heat	
PQ	NPPD Distributed (Columbus Hydro)	45	45	ER	09 NEB	Hydro	
PQ	NPPD Distributed (Ord)	10.8	10.8	ER	09 NEB	Heat	
PQ	NPPD Distributed (Stuart)	1.8	1.8	ER	09 NEB	Heat	
PQ	SPS Distributed (Carson)	10	10	ER	02 HITCHLND	Wind	Commerical Operation
PQ	SPS Distributed (Dumas 19th St)	20	20	ER	02 HITCHLND	Wind	
PQ	SPS Distributed (Etter)	20	20	ER	02 HITCHLND	Wind	
PQ	SPS Distributed (Hopi)	10	10	ER	06 NM & W-TX	Solar	
PQ	SPS Distributed (Jal)	10	10	ER	06 NM & W-TX	Solar	
PQ	SPS Distributed (Lea Road)	10	10	ER	06 NM & W-TX	Solar	
PQ	SPS Distributed (Monument)	10	10	ER	06 NM & W-TX	Solar	
PQ	SPS Distributed (Moore E)	17.5	17.5	ER	02 HITCHLND	Wind	
PQ	SPS Distributed (Ocotillo)	10	10	ER	06 NM & W-TX	Solar	
PQ	SPS Distributed (Sherman)	20	20	ER	02 HITCHLND	Wind	
PQ	Sunray	34.5	34.5	ER	06 NM & W-TX	Wind	Commerical Operation
PQ	WAPA SEAMS (Ft Randle Hydro)	352	352	ER	09 NEB	Hydro	
PQ	WAPA SEAMS (Gavins Pt Hydro)	102	102	ER	09 NEB	Hydro	
PQ	WAPA SEAMS (Spirit Mound Heat)	120	120	ER	09 NEB	Heat	
ICS1	GEN-2007-021	200	200	ER	01 WDWRD	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
ICS1	GEN-2007-025	299.2	299.2	ER	08 N-OK & S-KS	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
ICS1	GEN-2007-043	200	200	ER	01 WDWRD	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
ICS1	GEN-2007-044	300	300	ER	01 WDWRD	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
ICS1	GEN-2007-046	200	200	ER	02 HITCHLND	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
ICS1	GEN-2007-050	170.2	170.2	ER	01 WDWRD	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
ICS1	GEN-2007-052	150	150	ER	07 SW-OK	Gas	IA FULLY EXECUTED/COMMERCIAL OPERATION
ICS1	GEN-2007-062	425	425	ER	01 WDWRD	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
ICS1	GEN-2008-003	101.2	101.2	ER	01 WDWRD	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
ICS1	GEN-2008-013	299.04	299.04	ER	08 N-OK & S-KS	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
ICS1	GEN-2008-018	250	250	ER	03 SPRVLE	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-09-1	GEN-2006-037N1	74.8	74.8	ER	09 NEB	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-09-1	GEN-2006-044N	40.5	40.5	ER	09 NEB	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-09-1	GEN-2007-040	200	200	ER	03 SPRVLE	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-09-1	GEN-2008-023	150	150	ER	07 SW-OK	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-09-1	GEN-2008-051	322	322	ER	02 HITCHLND	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION

Southwest Power Pool, Inc.

DIS-09-1	GEN-2008-079	98.9	98.9	ER	03 SPRVLE	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-09-1	GEN-2008-086N02	201	201	ER	09 NEB	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-09-1	GEN-2008-092	200.5	200.5	ER	04 NW-KS	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-09-1	GEN-2008-124	200.1	200.1	ER	03 SPRVLE	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-09-1	GEN-2008-129	48	80	ER	13 NE-KS & NW-MO	CT	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-09-1	GEN-2009-025	59.8	59.8	ER	08 N-OK & S-KS	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-10-1	ASGI-2010-010	42.15	42.15	ER	06 NM & W-TX	Gas	
DIS-10-1	GEN-2008-022	299.65	299.65	ER	06 NM & W-TX	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-10-1	GEN-2008-037	100.8	100.8	ER	07 SW-OK	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-10-1	GEN-2008-044	197.8	197.8	ER	01 WDWRD	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-10-1	GEN-2008-047	300	300	ER	02 HITCHLND	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-10-1	GEN-2008-098	99.5	99.5	ER	08 N-OK & S-KS	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-10-1	GEN-2008-123N	89.7	89.7	ER	09 NEB	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-10-1	GEN-2009-008	198.9	198.9	ER	04 NW-KS	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-10-1	GEN-2009-020	48.3	48.3	ER	04 NW-KS	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-10-1	GEN-2009-040	73.8	73.8	ER	09 NEB	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-10-1	GEN-2010-003	99.5	99.5	ER	08 N-OK & S-KS	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-10-1	GEN-2010-005	299.2	299.2	ER	08 N-OK & S-KS	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-10-1	GEN-2010-006	180	205	ER	06 NM & W-TX	Gas	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-10-1	GEN-2010-009	165.6	165.6	ER	03 SPRVLE	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-10-1	GEN-2010-011	29.7	29.7	ER	01 WDWRD	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-10-1	GEN-2010-014	358.8	358.8	ER	02 HITCHLND	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-10-2	ASGI-2010-020	30	30	ER	06 NM & W-TX	Wind	
DIS-10-2	ASGI-2010-021	15	15	ER	06 NM & W-TX	Wind	
DIS-10-2	ASGI-2011-001	27.3	27.3	ER	06 NM & W-TX	Wind	Commerical Operation
DIS-10-2	GEN-2010-001	300	300	ER	02 HITCHLND	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-10-2	GEN-2010-036	5.9	5.9	ER	13 NE-KS & NW-MO	Hydro	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-10-2	GEN-2010-040	300	300	ER	01 WDWRD	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-10-2	GEN-2010-041	10.5	10.5	ER	09 NEB	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-10-2	GEN-2010-046	56	56	ER	06 NM & W-TX	Gas	IA FULLY EXECUTED/ON SCHEDULE
DIS-10-2	GEN-2010-051	200	200	ER	09 NEB	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-11-1	ASGI-2011-002	20	20	ER	02 HITCHLND	Wind	Commerical Operation
DIS-11-1	ASGI-2011-003	10	10	ER	06 NM & W-TX	Wind	
DIS-11-1	GEN-2010-055	4.5	4.5	ER	08 N-OK & S-KS	Gas	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-11-1	GEN-2010-057	201	201	ER/NR	04 NW-KS	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION

Southwest Power Pool, Inc.

DIS-11-1	GEN-2011-008	600	600	ER	03 SPRVLE	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-11-1	GEN-2011-010	100.8	100.8	ER	01 WDWRD	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-11-1	GEN-2011-011	50	50	ER	13 NE-KS & NW-MO	Coal	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-11-1	GEN-2011-014	201	201	ER	02 HITCHLND	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-11-1	GEN-2011-016	200.1	200.1	ER	03 SPRVLE	Wind	IA FULLY EXECUTED/ON SUSPENSION
DIS-11-1	GEN-2011-018	73.6	73.6	ER/NR	09 NEB	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-11-1	GEN-2011-019	175	175	ER/NR	01 WDWRD	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-11-1	GEN-2011-020	165	165	ER/NR	01 WDWRD	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-11-1	GEN-2011-022	299	299	ER	02 HITCHLND	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-11-1	GEN-2011-025	80	80	ER	06 NM & W-TX	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-11-1	GEN-2011-027	120	120	ER/NR	09 NEB	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-11-2-PQ	NPPD Distributed (North Platte - Lexington)	54	54	ER	09 NEB	Hydro	
DIS-11-2	ASGI-2011-004	19.8	19.8	ER	06 NM & W-TX	Wind	
DIS-11-2	GEN-2011-037	7	7	ER	07 SW-OK	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-11-2	GEN-2011-040	110	110	ER/NR	14 S-OK	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-11-2	GEN-2011-045	180	205	ER	06 NM & W-TX	NG CT	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-11-2	GEN-2011-046	23	27	ER	06 NM & W-TX	Diesel CT	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-11-2	GEN-2011-048	165	175	ER/NR	06 NM & W-TX	CT	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-11-2	GEN-2011-049	250.7	250.7	ER	07 SW-OK	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-11-2	GEN-2011-050	109.8	109.8	ER	14 S-OK	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-11-2	GEN-2011-054	300	300	ER	01 WDWRD	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-11-2	GEN-2011-056	3.6	3.6	ER	09 NEB	Hydro	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-11-2	GEN-2011-056A	3.6	3.6	ER	09 NEB	Hydro	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-11-2	GEN-2011-056B	4.5	4.5	ER	09 NEB	Hydro	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-11-2	GEN-2011-057	150	150	ER	08 N-OK & S-KS	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-12-1	ASGI-2012-006	22.5	22.5	ER	03 SPRVLE	Steam	
DIS-12-1	GEN-2012-001	61.2	61.2	ER	06 NM & W-TX	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-12-1	GEN-2012-004	41.4	41.4	ER/NR	14 S-OK	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-12-1	GEN-2012-007	108	120	ER/NR	03 SPRVLE	Gas	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-12-2	ASGI-2012-002	18.15	18.15	ER	06 NM & W-TX	Wind	
DIS-12-2	GEN-2012-020	477.1	477.1	ER	06 NM & W-TX	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-12-2	GEN-2012-021	4.8	4.8	ER	09 NEB	Gas	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-12-2	GEN-2012-024	180	180	ER	03 SPRVLE	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-12-2	GEN-2012-028	74.8	74.8	ER	07 SW-OK	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-12-2	GEN-2012-032	300	300	ER	08 N-OK & S-KS	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION



Southwest Power Pool, Inc.

DIS-12-2	GEN-2012-033	98.82	98.82	ER	08 N-OK & S-KS	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-12-2	GEN-2012-034	7	7	ER	06 NM & W-TX	CT	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-12-2	GEN-2012-035	7	7	ER	06 NM & W-TX	CT	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-12-2	GEN-2012-036	7	7	ER	06 NM & W-TX	CT	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-12-2	GEN-2012-037	195	203	ER	06 NM & W-TX	CT	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-12-2	GEN-2012-041	85.3	121.5	ER	08 N-OK & S-KS	CT	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-13-1	ASGI-2013-001	11.5	11.5	ER	02 HITCHLND	Wind	
DIS-13-1	ASGI-2013-002	18.4	18.4	ER	06 NM & W-TX	Wind	
DIS-13-1	ASGI-2013-003	18.4	18.4	ER	06 NM & W-TX	Wind	
DIS-13-1	GEN-2013-002	50.6	50.6	ER/NR	09 NEB	Wind	IA FULLY EXECUTED/ON SUSPENSION
DIS-13-1	GEN-2013-007	100	100	ER/NR	14 S-OK	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-13-1	GEN-2013-008	1.2	1.2	ER	09 NEB	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-13-1	GEN-2013-011	30	30	ER	12 W-ARK	Coal	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-13-1	GEN-2013-012	68	147	ER	08 N-OK & S-KS	Gas	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-13-1	GEN-2013-016	193	203	ER	06 NM & W-TX	CT	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-13-2	ASGI-2013-004	27.6	36.6	ER	04 NW-KS	Gas	
DIS-13-2	ASGI-2013-005	1.65	1.65	ER	06 NM & W-TX	Wind	
DIS-13-2	GEN-2013-019	73.6	73.6	ER/NR	09 NEB	Wind	IA FULLY EXECUTED/ON SUSPENSION
DIS-13-2	GEN-2013-022	25	25	ER/NR	06 NM & W-TX	Solar	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-13-2	GEN-2013-028	495	552	ER	08 N-OK & S-KS	Gas	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-13-2	GEN-2013-029	299	299	ER	08 N-OK & S-KS	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-13-2	GEN-2013-030	300	300	ER	02 HITCHLND	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-13-2	GEN-2013-032	204	204	ER	09 NEB	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-13-2	GEN-2013-033	27	27	ER/NR	04 NW-KS	Gas	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-14-1	GEN-2014-001	200.6	200.6	ER	08 N-OK & S-KS	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-14-1	GEN-2014-002	10.53	10.53	ER	01 WDWRD	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-14-1	GEN-2014-003	15.04	15.04	ER	01 WDWRD	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-14-1	GEN-2014-004	3.96	3.96	ER	09 NEB	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-14-1	GEN-2014-005	5.67	5.67	ER	01 WDWRD	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-14-1	GEN-2014-013	73.5	73.5	ER/NR	09 NEB	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-14-2	ASGI-2014-014	54.3	56.4	ER	08 N-OK & S-KS	Thermal	
DIS-14-2	GEN-2013-027	150	150	ER/NR	06 NM & W-TX	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-14-2	GEN-2014-020	100	100	ER/NR	01 WDWRD	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-14-2	GEN-2014-021	300	300	ER/NR	13 NE-KS & NW-MO	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-14-2	GEN-2014-025	2.41	2.41	ER	04 NW-KS	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION

Southwest Power Pool, Inc.

DIS-14-2	GEN-2014-028	35	35	ER	08 N-OK & S-KS	CC	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-14-2	GEN-2014-031	35.8	35.8	ER/NR	09 NEB	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-14-2	GEN-2014-032	10.22	10.22	ER/NR	09 NEB	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-14-2	GEN-2014-033	70	70	ER	06 NM & W-TX	Solar	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-14-2	GEN-2014-034	70	70	ER	06 NM & W-TX	Solar	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-14-2	GEN-2014-035	30	30	ER	06 NM & W-TX	Solar	IA FULLY EXECUTED/ON SCHEDULE
DIS-14-2	GEN-2014-039	73.39	73.39	ER/NR	09 NEB	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-14-2	GEN-2014-040	320	320	ER	06 NM & W-TX	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-14-2	GEN-2014-056	250	250	ER	01 WDWRD	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-14-2	GEN-2014-057	250	250	ER	14 S-OK	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-14-2	GEN-2014-064	248.4	248.4	ER	08 N-OK & S-KS	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-15-1-PQ	GEN-2007-017IS	200	200	ER/NR	09 NEB	Wind	On Schedule
DIS-15-1-PQ	GEN-2007-018IS	200	200	ER/NR	09 NEB	Wind	On Schedule
DIS-15-1	ASGI-2015-001	4.28	6.13	ER	03 SPRVLE	Thermal	
DIS-15-1	ASGI-2015-002	2	2	ER	06 NM & W-TX	Wind	
DIS-15-1	ASGI-2015-004	54.3	56.37	ER	08 N-OK & S-KS	Thermal	
DIS-15-1	GEN-2015-001	200	200	ER	08 N-OK & S-KS	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-15-1	GEN-2015-004	52.9	52.9	ER	07 SW-OK	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-15-1	GEN-2015-005	200.11	200.11	ER	13 NE-KS & NW-MO	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-15-1	GEN-2015-007	160	160	ER	09 NEB	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-15-1	GEN-2015-013	119.95	119.95	ER/NR	07 SW-OK	Solar	IA FULLY EXECUTED/ON SUSPENSION
DIS-15-1	GEN-2015-014	150	150	ER	06 NM & W-TX	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-15-1	GEN-2015-015	154.56	154.56	ER/NR	08 N-OK & S-KS	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-15-1	GEN-2015-016	200	200	ER/NR	08 N-OK & S-KS	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-15-1	GEN-2015-021	20	20	ER/NR	03 SPRVLE	Solar	IA FULLY EXECUTED/ON SCHEDULE
DIS-15-1	GEN-2015-023	300.72	300.72	ER/NR	09 NEB	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-15-1	GEN-2015-024	220	220	ER	08 N-OK & S-KS	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-15-1	GEN-2015-025	220	220	ER	08 N-OK & S-KS	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-15-1	GEN-2015-029	161	161	ER	01 WDWRD	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-15-2-PQ	GEN-2002-008IS	40.5	40.5	ER/NR	18 E-ND	Wind	Commercial Operation
DIS-15-2-PQ	GEN-2002-009IS	40.5	40.5	ER/NR	15 E-SD	Wind	Commercial Operation
DIS-15-2-PQ	GEN-2005-003IS	100	100	ER/NR	18 E-ND	Wind	Commercial Operation
DIS-15-2-PQ	GEN-2005-008IS	49.5	49.5	ER/NR	16 W-ND	Wind	Commercial Operation
DIS-15-2-PQ	GEN-2006-002IS	51	51	ER/NR	17 W-SC-SD	Wind	Commercial Operation
DIS-15-2-PQ	GEN-2006-006IS	18.7	18.7	ER/NR	18 E-ND	Wind	Commercial Operation
DIS-15-2-PQ	GEN-2006-015IS	49.5	49.5	ER/NR	16 W-ND	Wind	Commercial Operation

Southwest Power Pool, Inc.

DIS-15-2-PQ	GEN-2007-013IS	50	50	ER/NR	15 E-SD	Wind	Commercial Operation
DIS-15-2-PQ	GEN-2007-014IS	100	100	ER/NR	15 E-SD	Wind	Commercial Operation
DIS-15-2-PQ	GEN-2007-015IS	100	100	ER/NR	16 W-ND	Wind	Commercial Operation
DIS-15-2-PQ	GEN-2007-020IS	16	16	ER/NR	18 E-ND	Wind	Commercial Operation
DIS-15-2-PQ	GEN-2008-008IS	5	5	ER/NR	18 E-ND	Wind	Commercial Operation
DIS-15-2-PQ	GEN-2009-001IS	200	200	ER/NR	15 E-SD	Wind	On Schedule
DIS-15-2-PQ	GEN-2009-018IS	99.5	99.5	ER	15 E-SD	Wind	Commercial Operation
DIS-15-2-PQ	GEN-2009-020AIS	79.55	79.5	ER/NR	17 W-SC-SD	Wind	Commercial Operation
DIS-15-2-PQ	GEN-2009-026IS	106.5	106.5	ER/NR	16 W-ND	Wind	On Schedule
DIS-15-2-PQ	GEN-2010-001IS	99	99	ER/NR	15 E-SD	Wind	On Schedule
DIS-15-2-PQ	GEN-2010-003IS	34	34	ER/NR	15 E-SD	Wind	Commercial Operation
DIS-15-2-PQ	GEN-2012-012IS	75	75	ER/NR	16 W-ND	Wind	On Suspension
DIS-15-2-PQ	GEN-2013-009IS	19.5	19.5	ER	15 E-SD	Wind	Commercial Operation
DIS-15-2-PQ	GEN-2014-001IS	103.7	103.7	ER	15 E-SD	Wind	IA Pending
DIS-15-2-PQ	GEN-2014-006IS	113.28	113.28	ER/NR	16 W-ND	Gas	On Schedule
DIS-15-2-PQ	GEN-2014-010IS	150	150	ER/NR	16 W-ND	Wind	On Schedule
DIS-15-2-PQ	GEN-2014-014IS	149.73	149.73	ER/NR	16 W-ND	Wind	On Schedule
DIS-15-2-PQ	MPC00100	99	99	ER	18 E-ND	Wind	In Service
DIS-15-2-PQ	MPC00200	60	60	ER	18 E-ND	Wind	In Service
DIS-15-2-PQ	MPC00300	40.5	40.5	ER	18 E-ND	Wind	In Service
DIS-15-2-PQ	MPC00500	378.9	378.9	ER/NR	18 E-ND	Wind	In Service
DIS-15-2-PQ	MPC01200	49.5	49.5	ER	18 E-ND	Wind	In Service
DIS-15-2-PQ	MPC01300	493	493	ER/NR	16 W-ND	Coal	In Service
DIS-15-2-PQ	MPC02100	99.25	99.25	ER	16 W-ND	Wind	In Service
DIS-15-2	ASGI-2015-006	9	9	ER	14 S-OK	Solar	
DIS-15-2	GEN-2015-020	99.96	99.96	ER	06 NM & W-TX	Solar	IA FULLY EXECUTED/ON SCHEDULE
DIS-15-2	GEN-2015-034	200	200	ER	08 N-OK & S-KS	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-15-2	GEN-2015-045	20	20	ER	14 S-OK	Battery	IA FULLY EXECUTED/ON SCHEDULE
DIS-15-2	GEN-2015-046	300	300	ER	16 W-ND	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-15-2	GEN-2015-047	300	300	ER	08 N-OK & S-KS	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-15-2	GEN-2015-048	200	200	ER	01 WDWRD	Wind	IA FULLY EXECUTED/ON SUSPENSION
DIS-15-2	GEN-2015-052	300	300	ER	08 N-OK & S-KS	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-15-2	GEN-2015-055	40	40	ER	07 SW-OK	Solar	IA FULLY EXECUTED/ON SCHEDULE
DIS-15-2	GEN-2015-056	101.2	101.2	ER	06 NM & W-TX	WIND	IA FULLY EXECUTED/ON SCHEDULE
DIS-15-2	GEN-2015-057	100	100	ER	01 WDWRD	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION

Southwest Power Pool, Inc.

DIS-15-2	GEN-2015-062	4.51	4.51	ER	08 N-OK & S-KS	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-15-2	GEN-2015-063	300	300	ER	08 N-OK & S-KS	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-15-2	GEN-2015-064	197.8	197.8	ER	04 NW-KS	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-15-2	GEN-2015-065	202.4	202.4	ER	04 NW-KS	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-15-2	GEN-2015-066	248.4	248.4	ER	08 N-OK & S-KS	Wind	IA FULLY EXECUTED/ON SUSPENSION
DIS-15-2	GEN-2015-069	300	300	ER	08 N-OK & S-KS	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-15-2	GEN-2015-071	200	200	ER	07 SW-OK	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-15-2	GEN-2015-073	200.1	200.1	ER/NR	08 N-OK & S-KS	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-15-2	GEN-2015-076	158.4	158.4	ER	09 NEB	Wind	IA FULLY EXECUTED/ON SUSPENSION
DIS-15-2	GEN-2015-087	66	66	ER/NR	09 NEB	Wind	IA FULLY EXECUTED/ON SUSPENSION
DIS-15-2	GEN-2015-088	300	300	ER/NR	09 NEB	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-15-2	GEN-2015-090	220	220	ER	08 N-OK & S-KS	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-15-2	GEN-2015-092	250	250	ER	14 S-OK	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-15-2	GEN-2015-093	250	250	ER	01 WDWRD	Wind	IA FULLY EXECUTED/ON SUSPENSION
DIS-15-2	GEN-2015-096	150	150	ER	16 W-ND	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-16-1-PQ	ASGI-2016-005	19.8	19.8	ER	15 E-SD	Wind	
DIS-16-1-PQ	ASGI-2016-006	19.8	19.8	ER	15 E-SD	Wind	
DIS-16-1-PQ	ASGI-2016-007	19.8	19.8	ER	15 E-SD	Wind	
DIS-16-1	ASGI-2016-002	0.35	0.35	ER	06 NM & W-TX	Wind	
DIS-16-1	ASGI-2016-003	12	12	ER	13 NE-KS & NW-MO	Diesel	
DIS-16-1	ASGI-2016-004	5	5	ER	06 NM & W-TX	Wind	
DIS-16-1	GEN-2015-036	303.6	303.6	ER	14 S-OK	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-16-1	GEN-2015-041	5	5	ER	06 NM & W-TX	CT	FACILITY STUDY STAGE
DIS-16-1	GEN-2015-082	200	200	ER	02 HITCHLND	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-16-1	GEN-2015-089	200	200	ER	09 NEB	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-16-1	GEN-2015-095	176	176	ER	01 WDWRD	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-16-1	GEN-2016-003	248.4	248.4	ER	01 WDWRD	Wind	IA PENDING
DIS-16-1	GEN-2016-004	201.6	201.6	ER/NR	16 W-ND	Wind	FACILITY STUDY STAGE
DIS-16-1	GEN-2016-007	100.05	100.05	ER	18 E-ND	Wind	FACILITY STUDY STAGE
DIS-16-1	GEN-2016-009	29	29	ER	08 N-OK & S-KS	Steam Turbine	IA FULLY EXECUTED/ON SCHEDULE
DIS-16-1	GEN-2016-013	3	10	ER	12 W-ARK	CT	FACILITY STUDY STAGE
DIS-16-1	GEN-2016-014	3	10	ER	12 W-ARK	CT	FACILITY STUDY STAGE
DIS-16-1	GEN-2016-015	100	100	ER	06 NM & W-TX	Solar	FACILITY STUDY STAGE
DIS-16-1	GEN-2016-016	78.2	78.2	ER	03 SPRVLE	Wind	FACILITY STUDY STAGE
DIS-16-1	GEN-2016-017	250.7	250.7	ER	15 E-SD	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-16-1	GEN-2016-020	150	150	ER	01 WDWRD	WIND	IA FULLY EXECUTED/ON SCHEDULE
DIS-16-1	GEN-2016-021	300	300	ER	09 NEB	WIND	FACILITY STUDY STAGE
DIS-16-1	GEN-2016-022	151.8	151.8	ER	08 N-OK & S-KS	Wind	FACILITY STUDY STAGE
DIS-16-1	GEN-2016-023	150.53	150.53	ER	09 NEB	Wind	FACILITY STUDY STAGE

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DIS-16-1	GEN-2016-028	100	100	ER	14 S-OK	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-16-1	GEN-2016-029	150.53	150.53	ER	09 NEB	Wind	FACILITY STUDY STAGE
DIS-16-1	GEN-2016-030	100	100	ER/NR	14 S-OK	Solar	IA FULLY EXECUTED/ON SCHEDULE
DIS-16-1	GEN-2016-031	1.5	1.5	ER	08 N-OK & S-KS	Wind	IA FULLY EXECUTED/COMMERCIAL OPERATION
DIS-16-1	GEN-2016-032	200	200	ER/NR	08 N-OK & S-KS	Wind	IA FULLY EXECUTED/ON SUSPENSION
DIS-16-1	GEN-2016-037	300	300	ER	07 SW-OK	Wind	FACILITY STUDY STAGE
DIS-16-1	GEN-2016-043	230	230	ER	09 NEB	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-16-1	GEN-2016-045	499.1	499.1	ER	01 WDWRD	Wind	FACILITY STUDY STAGE
DIS-16-1	GEN-2016-046	299	299	ER	03 SPRVLE	Wind	FACILITY STUDY STAGE
DIS-16-1	GEN-2016-047	413	469	ER	01 WDWRD	CT	IA FULLY EXECUTED/ON SCHEDULE
DIS-16-1	GEN-2016-050	250.7	250.7	ER	09 NEB	Wind	FACILITY STUDY STAGE
DIS-16-1	GEN-2016-051	9.8	9.8	ER	07 SW-OK	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-16-1	GEN-2016-052	3.3	3.3	ER	16 W-ND	Wind	FACILITY STUDY STAGE
DIS-16-1	GEN-2016-053	3.3	3.3	ER	16 W-ND	Wind	FACILITY STUDY STAGE
DIS-16-1	GEN-2016-054	3.4	3.4	ER	17 W-SC-SD	Wind	FACILITY STUDY STAGE
DIS-16-1	GEN-2016-056	200	200	ER	06 NM & W-TX	Wind	FACILITY STUDY STAGE
DIS-16-1	GEN-2016-057	499.1	499.1	ER	01 WDWRD	Wind	FACILITY STUDY STAGE
DIS-16-1	GEN-2016-061	250.7	250.7	ER	08 N-OK & S-KS	Wind	FACILITY STUDY STAGE
DIS-16-1	GEN-2016-062	250.7	250.7	ER	06 NM & W-TX	Wind	FACILITY STUDY STAGE
DIS-16-1	GEN-2016-063	200	200	ER/NR	14 S-OK	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-16-1	GEN-2016-067	73.6	73.6	ER	04 NW-KS	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-16-1	GEN-2016-068	250	250	ER	08 N-OK & S-KS	Wind	FACILITY STUDY STAGE
DIS-16-1	GEN-2016-069	31.35	31.35	ER	06 NM & W-TX	Solar	FACILITY STUDY STAGE
DIS-16-1	GEN-2016-070	5.3	5.3	ER	02 HITCHLND	Wind	IA FULLY EXECUTED/ON SCHEDULE
DIS-16-1	GEN-2016-071	200.1	200.1	ER	08 N-OK & S-KS	Wind	FACILITY STUDY STAGE
DIS-16-1	GEN-2016-073	220	220	ER	08 N-OK & S-KS	WIND	FACILITY STUDY STAGE
DIS-16-1	GEN-2016-075	50	50	ER	09 NEB	Wind	FACILITY STUDY STAGE
DIS-16-2-PQ	ASGI-2016-011	7.4	7.4	ER	14 S-OK	Thermal	
DIS-16-2-PQ	ASGI-2016-012	61.72	61.72	ER	14 S-OK	Thermal	
DIS-16-2-PQ	ASGI-2016-013	5	5	ER	14 S-OK	Thermal	
DIS-16-2-PQ	ASGI-2017-006	238	238	ER/NR	13 NE-KS & NW-MO	Wind	
DIS-16-2	ASGI-2016-009	3	3	ER	06 NM & W-TX	Wind	
DIS-16-2	ASGI-2016-010	90	90	ER	02 HITCHLND	Wind	
DIS-16-2	GEN-2015-099	70.4	70.4	ER	06 NM & W-TX	Solar	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-036	44.6	44.6	ER	15 E-SD	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-074	200	200	ER	09 NEB	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-087	98.9	98.9	ER	15 E-SD	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-088	151.2	151.2	ER/NR	13 NE-KS & NW-MO	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-091	303.6	303.6	ER	07 SW-OK	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-092	175	175	ER	15 E-SD	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-094	200	200	ER/NR	15 E-SD	Wind	FACILITY STUDY STAGE

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DIS-16-2	GEN-2016-095	200	200	ER/NR	07 SW-OK	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-096	227.7	227.7	ER	09 NEB	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-097	100	100	ER/NR	07 SW-OK	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-100	100	100	ER	08 N-OK & S-KS	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-101	195	195	ER	08 N-OK & S-KS	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-102	150.9	150.9	ER/NR	14 S-OK	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-106	400	400	ER	09 NEB	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-110	152	152	ER	09 NEB	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-111	302	302	ER	04 NW-KS	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-112	220	220	ER	04 NW-KS	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-114	310	310	ER/NR	04 NW-KS	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-115	300	300	ER	13 NE-KS & NW-MO	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-118	288	288	ER	01 WDWRD	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-119	600	600	ER	08 N-OK & S-KS	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-121	110	110	ER	06 NM & W-TX	Solar	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-122	225	225	ER	04 NW-KS	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-123	298	298	ER	06 NM & W-TX	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-124	150	150	ER	06 NM & W-TX	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-125	74	74	ER	06 NM & W-TX	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-126	172.5	172.5	ER/NR	14 S-OK	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-128	176	176	ER	08 N-OK & S-KS	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-129	132	132	ER	14 S-OK	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-130	202	202	ER	16 W-ND	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-131	2.5	2.5	ER	01 WDWRD	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-132	6.12	6.12	ER	07 SW-OK	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-133	187.5	187.5	ER	08 N-OK & S-KS	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-134	187.5	187.5	ER	08 N-OK & S-KS	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-135	100	100	ER	08 N-OK & S-KS	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-136	75	75	ER	08 N-OK & S-KS	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-137	187.5	187.5	ER	08 N-OK & S-KS	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-138	187.5	187.5	ER	08 N-OK & S-KS	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-139	100	100	ER	08 N-OK & S-KS	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-140	75	75	ER	08 N-OK & S-KS	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-141	350	350	ER	08 N-OK & S-KS	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-142	350	350	ER	08 N-OK & S-KS	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-143	175	175	ER	08 N-OK & S-KS	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-144	175	175	ER	08 N-OK & S-KS	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-145	175	175	ER	08 N-OK & S-KS	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-146	175	175	ER	08 N-OK & S-KS	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-147	40	40	ER	09 NEB	Solar	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-149	302	302	ER	13 NE-KS & NW-MO	Wind	FACILITY STUDY STAGE
DIS-16-2	GEN-2016-150	302	302	ER	13 NE-KS & NW-MO	Wind	FACILITY STUDY STAGE

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<b>DIS-16-2</b>	GEN-2016-151	202	202	ER	16 W-ND	Wind	FACILITY STUDY STAGE
<b>DIS-16-2</b>	GEN-2016-153	134	134	ER	08 N-OK & S-KS	Wind	FACILITY STUDY STAGE
<b>DIS-16-2</b>	GEN-2016-155	1.28	1.28	ER	16 W-ND	Wind	FACILITY STUDY STAGE
<b>DIS-16-2</b>	GEN-2016-157	252	252	ER	13 NE-KS & NW-MO	Wind	FACILITY STUDY STAGE
<b>DIS-16-2</b>	GEN-2016-158	252	252	ER	13 NE-KS & NW-MO	Wind	FACILITY STUDY STAGE
<b>DIS-16-2</b>	GEN-2016-160	19.8	19.8	ER/NR	04 NW-KS	Battery	FACILITY STUDY STAGE
<b>DIS-16-2</b>	GEN-2016-161	3.02	3.02	ER	02 HITCHLND	Wind	FACILITY STUDY STAGE
<b>DIS-16-2</b>	GEN-2016-162	252	252	ER	08 N-OK & S-KS	Wind	FACILITY STUDY STAGE
<b>DIS-16-2</b>	GEN-2016-163	252	252	ER	08 N-OK & S-KS	Wind	FACILITY STUDY STAGE
<b>DIS-16-2</b>	GEN-2016-164	7.92	7.92	ER	15 E-SD	Wind	FACILITY STUDY STAGE
<b>DIS-16-2</b>	GEN-2016-165	202	202	ER	09 NEB	Wind	FACILITY STUDY STAGE
<b>DIS-16-2</b>	GEN-2016-166	35	35	ER/NR	12 W-ARK	Solar	FACILITY STUDY STAGE
<b>DIS-16-2</b>	GEN-2016-167	73.5	73.5	ER/NR	10 E-TX	Solar	FACILITY STUDY STAGE
<b>DIS-16-2</b>	GEN-2016-171	60.8	60.8	ER	06 NM & W-TX	Solar	FACILITY STUDY STAGE
<b>DIS-16-2</b>	GEN-2016-172	231	231	ER	06 NM & W-TX	Wind	FACILITY STUDY STAGE
<b>DIS-16-2</b>	GEN-2016-174	302	302	ER	13 NE-KS & NW-MO	Wind	FACILITY STUDY STAGE
<b>DIS-16-2</b>	GEN-2016-176	302	302	ER	13 NE-KS & NW-MO	Wind	FACILITY STUDY STAGE
<b>DIS-16-2</b>	GEN-2016-177	14.4	17	ER	06 NM & W-TX	Gas Turbine	FACILITY STUDY STAGE
<b>FCS-19-2</b>	GEN-2019-005	200	200	ER/NR	12 W-ARK	Solar	
<b>FCS-19-2</b>	GEN-2019-007	500	500	ER/NR	09 NEB	Solar	
<b>FCS-19-2</b>	GEN-2019-008	300	300	ER/NR	06 NM & W-TX	Solar	
<b>FCS-19-2</b>	GEN-2019-043	150	150	ER/NR	16 W-ND	Solar	



**APPENDIX D**

Short Circuit Analysis

**GEN-2019-005P:**

PSS(R)E-33.7.0 ASCC SHORT CIRCUIT CURRENTS                    THU, AUG 29 2019 17:44  
 2016 MDWG FINAL WITH 2015 SERIES MMWG FINAL  
 MDWG 2018S WITH MMWG 2017S

OPTIONS USED:

- SET PRE-FAULT VOLTAGE ON ALL BUSES TO 1.00 PU AT 0 PHASE SHIFT ANGLE
- SET SYNCHRONOUS/ASYNCHRONOUS MACHINE POWER OUTPUTS TO P=0.0, Q=0.0
- SET GENERATOR POSITIVE SEQUENCE REACTANCES TO ZSORCE
- SET TRANSFORMER TAP RATIOS=1.0 PU AND PHASE SHIFT ANGLES=0.0
- SET LINE CHARGING=0.0 IN +/-/0 SEQUENCES
- SET LINE/FIXED/SWITCHED SHUNTS=0.0 AND TRANSFORMER MAGNETIZING ADMITTANCE=0.0 IN +/-/0 SEQUENCES
- SET LOAD=0.0 IN +/- SEQUENCES
- DC LINES AND FACTS DEVICES BLOCKED
- IMPEDANCE CORRECTIONS APPLIED TO TRANSFORMER ZERO SEQUENCE IMPEDANCES

			THREE PHASE FAULT	
X-----	BUS	-----X	/I+/ AMP	AN(I+) -
90051	[G19005S-TAP	161.00]	22350.0	-84.40
300040	[7FLETCH	345.00]	8012.1	-83.32
300041	[7FRANKS	345.00]	14999.1	-83.89
300042	[7HUBEN	345.00]	9576.3	-83.66
300045	[7MORGAN	345.00]	10737.9	-84.31
300047	[7SALEM	345.00]	9079.4	-83.40
300064	[5CAMDEN	161.00]	6165.2	-79.88
300070	[5CLARK	161.00]	7446.1	-79.37
300072	[5COFFMN	161.00]	11643.5	-82.28
300078	[5FRANKS	161.00]	17956.2	-84.10
300080	[5FTWOOD	161.00]	10253.5	-81.50
300088	[5HUBEN	161.00]	14902.0	-82.95
300089	[5JAMESV	161.00]	15360.8	-81.67
300092	[5LEBANN	161.00]	11251.4	-80.85
300096	[5MARIES	161.00]	14547.7	-83.02
300101	[5MORGAN	161.00]	9859.1	-77.65
300102	[5MRSNFL	161.00]	8759.9	-79.47
300109	[5PHLIPS	161.00]	13133.0	-82.82
300112	[5SALEM	161.00]	9629.5	-83.46
300118	[5STKAEC	161.00]	7907.6	-77.76
300348	[5BTLFD	161.00]	21017.0	-83.40
300651	[2LAMR	69.000]	9536.6	-75.53
300668	[2DAEVL	69.000]	5289.3	-70.53
300669	[2ELWOOD	69.000]	5141.8	-62.25
300678	[5NIXA-1	161.00]	18517.6	-82.45
300739	[7BLACKBERRY	345.00]	12210.3	-84.33
300740	[7SPORTSMAN	345.00]	23407.4	-86.99
300741	[5SPORTSMAN	161.00]	38764.2	-87.94
300774	[2EUDORA	69.000]	5304.5	-71.06
300782	[2MORGAN	69.000]	6255.0	-74.51
300794	[5LAMAR	161.00]	8261.4	-81.09
300816	[5COLLINS	161.00]	6170.7	-77.33
300827	[5SCROCKR	161.00]	7661.7	-79.07
300949	[7JASPER	345.00]	10642.6	-83.95
300950	[5JASPER	161.00]	11794.5	-85.10
301048	[2COFFMN	69.000]	5935.8	-77.52
301071	[2PBURG	69.000]	10064.8	-76.58
301077	[5WHISPR	161.00]	8343.8	-81.26
301159	[5HOLMAN	161.00]	10043.7	-80.08
301161	[5LOGAN	161.00]	13936.0	-81.04
301163	[2MRSNFL	69.000]	11675.1	-77.42
344154	[7BLAND	345.00]	19086.2	-85.13
344155	[4BLAND	138.00]	17575.2	-82.30



Southwest Power Pool, Inc.

344224	[7CALAWY 1	345.00]	AMP	24613.1	-86.06
344327	[7LOOSECRK	345.00]	AMP	13865.2	-84.82
344885	[7LABADIE2	345.00]	AMP	37668.0	-86.74
345238	[7MARIOSIA	345.00]	AMP	10425.7	-84.67
504010	[ELMSPRGS 5	161.00]	AMP	16305.1	-84.09
504201	[GENTRY 5	161.00]	AMP	25371.4	-85.00
504202	[SILOAMSP 5	161.00]	AMP	18565.3	-82.20
505472	[TABLE R5	161.00]	AMP	14207.1	-81.58
505488	[CARTHAG5	161.00]	AMP	15682.6	-80.63
505492	[SPRGFLD5	161.00]	AMP	26226.9	-83.74
505494	[SPRGFLD2	69.000]	AMP	15410.7	-85.36
505496	[NIXA 5	161.00]	AMP	12142.0	-81.93
505498	[STOCKTN5	161.00]	AMP	8344.5	-77.83
505501	[NIXA 2	69.000]	AMP	9704.3	-82.83
506927	[DYESS 5	161.00]	AMP	15629.8	-83.93
506934	[FLINTCR5	161.00]	AMP	31560.3	-85.73
506935	[FLINTCR7	345.00]	AMP	14541.3	-86.23
506938	[LOWELL 5	161.00]	AMP	11655.8	-84.25
506944	[CHAMSPR5	161.00]	AMP	21503.4	-84.06
506948	[SILOAM 5	161.00]	AMP	20866.8	-83.73
506952	[CENTRTN5	161.00]	AMP	14412.6	-85.97
506957	[TONTITN5	161.00]	AMP	19394.9	-83.82
506959	[TONTITN7	345.00]	AMP	8404.0	-84.72
506960	[BEN279_5	161.00]	AMP	13511.3	-85.03
506973	[SILOAM 2	69.000]	AMP	10882.1	-86.27
506978	[MATTISN5	161.00]	AMP	18943.4	-83.88
506979	[SHIPERD7	345.00]	AMP	9857.0	-85.66
506980	[SHIPERD5	161.00]	AMP	14886.1	-86.25
510380	[DELAWARE7	345.00]	AMP	11454.3	-84.85
512643	[SILMCTY5	161.00]	AMP	19188.1	-83.70
512650	[GRDA1 7	345.00]	AMP	25809.1	-87.25
512656	[GRDA1 5	161.00]	AMP	41042.6	-86.47
512750	[TONECE7	345.00]	AMP	14370.7	-86.29
512751	[TONECE5	161.00]	AMP	14697.9	-85.70
512753	[TONNEC2	69.000]	AMP	4710.3	-89.41
512865	[GREC TAP5	345.00]	AMP	25403.1	-87.24
532780	[CANEYRV7	345.00]	AMP	9942.3	-85.55
532793	[NEOSHO 7	345.00]	AMP	16000.9	-84.40
532937	[NEOSHO 5	161.00]	AMP	20867.0	-84.27
533021	[NEOSHO 4	138.00]	AMP	22567.0	-84.38
542981	[LACYGNE7	345.00]	AMP	25262.3	-86.93
547478	[DAD368 5	161.00]	AMP	9686.5	-77.56
547479	[LAR382 5	161.00]	AMP	12120.1	-80.38
547480	[MON383 5	161.00]	AMP	10690.0	-79.65
547484	[DEC392 5	161.00]	AMP	14781.4	-82.59
547493	[BOL431 5	161.00]	AMP	4757.2	-77.51
547496	[NOL435 5	161.00]	AMP	9601.4	-80.86
547499	[CPK446 5	161.00]	AMP	7258.2	-78.14
547585	[DAD368 2	69.000]	AMP	8505.2	-74.69
547594	[DEC392 2	69.000]	AMP	8189.2	-80.73
549904	[JAMES RIVER269.000]	AMP	26470.0	-83.08	
549925	[NICHOLS 269.000]	AMP	22141.4	-77.81	
549954	[JTEC 5161.00]	AMP	25880.0	-84.28	
549955	[JUNCTION 5161.00]	AMP	20050.1	-83.26	
549956	[NICHOLS 5161.00]	AMP	18318.3	-83.04	
549957	[WEST BELT 5161.00]	AMP	18094.9	-83.04	
549958	[MAIN STREET5161.00]	AMP	18342.9	-83.06	
549959	[BATTLEFIELD5161.00]	AMP	25624.3	-83.62	
549960	[SW DISP PLT5161.00]	AMP	24334.1	-83.82	
549961	[JAMES RIVERS161.00]	AMP	15132.2	-83.75	
549962	[MILL 5161.00]	AMP	15349.9	-82.13	
549963	[MENTOR 5161.00]	AMP	14430.4	-82.19	
549966	[SUMMIT 5161.00]	AMP	12708.3	-82.45	
549969	[BROOKLINE 5161.00]	AMP	27158.6	-84.22	
549970	[CLAY 5161.00]	AMP	17813.9	-81.87	
549971	[PIC WEST 5161.00]	AMP	16484.3	-82.88	
549979	[BATTLEFIELD269.000]	AMP	20508.1	-81.15	
549984	[BROOKLINE 7345.00]	AMP	10852.3	-85.13	

PSS(R)E-33.7.0 ASCC SHORT CIRCUIT CURRENTS  
 2016 MDWG FINAL WITH 2015 SERIES MMWG FINAL  
 MDWG 2026S WITH MMWG 2026S

THU, AUG 29 2019 17:44

OPTIONS USED:

- SET PRE-FAULT VOLTAGE ON ALL BUSES TO 1.00 PU AT 0 PHASE SHIFT ANGLE
- SET SYNCHRONOUS/ASYNCHRONOUS MACHINE POWER OUTPUTS TO P=0.0, Q=0.0
- SET GENERATOR POSITIVE SEQUENCE REACTANCES TO ZSORCE
- SET TRANSFORMER TAP RATIOS=1.0 PU AND PHASE SHIFT ANGLES=0.0
- SET LINE CHARGING=0.0 IN +/-0 SEQUENCES
- SET LINE/FIXED/SWITCHED SHUNTS=0.0 AND TRANSFORMER MAGNETIZING ADMITTANCE=0.0 IN +/-0 SEQUENCES
- SET LOAD=0.0 IN +/- SEQUENCES
- DC LINES AND FACTS DEVICES BLOCKED
- IMPEDANCE CORRECTIONS APPLIED TO TRANSFORMER ZERO SEQUENCE IMPEDANCES

X----- BUS -----X		THREE PHASE FAULT	
		/I+/ AMP	AN(I+) -
90051	[G19005S-TAP 161.00]	22432.9	-84.36
300040	[7FLETCH 345.00]	8045.7	-83.32
300041	[7FRANKS 345.00]	15061.1	-83.87
300042	[7HUBEN 345.00]	9604.5	-83.65
300045	[7MORGAN 345.00]	10773.7	-84.28
300047	[7SALEM 345.00]	9110.1	-83.39
300064	[5CAMDEN 161.00]	6144.4	-79.85
300070	[5CLARK 161.00]	7417.6	-79.35
300072	[5COFFMN 161.00]	11674.2	-82.28
300078	[5FRANKS 161.00]	17999.2	-84.08
300080	[5FTWOOD 161.00]	10270.6	-81.49
300088	[5HUBEN 161.00]	14950.3	-82.94
300089	[5JAMESV 161.00]	15466.6	-81.65
300092	[5LEBANN 161.00]	11284.5	-80.83
300096	[5MARIES 161.00]	14574.4	-83.01
300101	[5MORGAN 161.00]	9861.0	-77.62
300102	[5MRSHFL 161.00]	8837.8	-79.50
300109	[5PHLIPS 161.00]	13170.7	-82.81
300112	[5SALEM 161.00]	9647.0	-83.44
300118	[5STKAEC 161.00]	7869.6	-77.73
300348	[5BTLFD 161.00]	21207.7	-83.38
300651	[2LAMR 69.000]	9530.9	-75.52
300668	[2DAEVL 69.000]	5289.4	-70.53
300669	[2ELWOOD 69.000]	5146.5	-62.23
300678	[5NIXA-1 161.00]	18679.8	-82.43
300739	[7BLACKBERRY 345.00]	12183.8	-84.30
300740	[7SPORTSMAN 345.00]	23471.4	-86.86
300741	[5SPORTSMAN 161.00]	38816.6	-87.88
300774	[2EUDORA 69.000]	5305.9	-71.05
300782	[2MORGAN 69.000]	6256.0	-74.51
300794	[5LAMAR 161.00]	8249.8	-81.08
300816	[5COLLINS 161.00]	6111.1	-77.28
300827	[5SCROCKR 161.00]	7671.6	-79.06
300949	[7JASPER 345.00]	10635.1	-83.92
300950	[5JASPER 161.00]	11785.9	-85.09
301048	[2COFFMN 69.000]	5938.7	-77.52
301071	[2PBURG 69.000]	10075.3	-76.57
301077	[5WHISPR 161.00]	8345.5	-81.24
301159	[5HOLMAN 161.00]	10229.9	-80.17
301161	[5LOGAN 161.00]	14111.2	-81.07
301163	[2MRSHFL 69.000]	11729.3	-77.44
344154	[7BLAND 345.00]	19190.5	-85.11
344155	[4BLAND 138.00]	17630.2	-82.26
344224	[7CALAWY 1 345.00]	24865.6	-86.04
344327	[7LOOSECRK 345.00]	13927.9	-84.81
344885	[7LABADIE2 345.00]	37862.4	-86.72
345238	[7MARIOSIA 345.00]	10460.2	-84.66
504010	[ELMSPRGS 5 161.00]	19357.5	-81.20
504201	[GENTRY 5 161.00]	26848.0	-83.80
504202	[SILOAMSP 5 161.00]	19699.5	-80.98
505472	[TABLE R5 161.00]	14261.4	-81.53
505488	[CARTHAG5 161.00]	15718.0	-80.61

Southwest Power Pool, Inc.

505492	[SPRGFLD5	161.00]	AMP	26565.3	-83.73	
505494	[SPRGFLD2	69.000]	AMP	15459.5	-85.37	
505496	[NIXA	5	161.00]	AMP	12204.8	-81.91
505498	[STOCKTN5	161.00]	AMP	8301.1	-77.80	
505501	[NIXA	2	69.000]	AMP	9722.0	-82.83
506927	[DYESS	5	161.00]	AMP	18089.3	-81.60
506934	[FLINTCR5	161.00]	AMP	33831.4	-84.28	
506935	[FLINTCR7	345.00]	AMP	15201.9	-85.41	
506938	[LOWELL	5	161.00]	AMP	12651.3	-82.90
506944	[CHAMSPR5	161.00]	AMP	23921.5	-82.41	
506948	[SILOAM	5	161.00]	AMP	22070.0	-82.71
506952	[CENTRTN5	161.00]	AMP	14922.6	-85.35	
506957	[TONTITN5	161.00]	AMP	24086.1	-79.95	
506959	[TONTITN7	345.00]	AMP	9403.7	-83.17	
506960	[BEN279_5	161.00]	AMP	14040.6	-84.31	
506973	[SILOAM	2	69.000]	AMP	11031.1	-86.06
506978	[MATTISN5	161.00]	AMP	23647.1	-79.88	
506979	[SHIPERD7	345.00]	AMP	10207.5	-85.02	
506980	[SHIPERD5	161.00]	AMP	15389.3	-85.66	
510380	[DELAWARE7	345.00]	AMP	10934.4	-84.76	
512643	[SILMCTY5	161.00]	AMP	20072.8	-82.83	
512650	[GRDA1	7	345.00]	AMP	25902.1	-87.08
512656	[GRDA1	5	161.00]	AMP	41107.7	-86.38
512750	[TONECE7	345.00]	AMP	14962.4	-85.55	
512751	[TONECE5	161.00]	AMP	15126.3	-85.17	
512753	[TONNEC2	69.000]	AMP	4729.1	-89.35	
512865	[GREC TAP5	345.00]	AMP	25485.5	-87.08	
532780	[CANERYRV7	345.00]	AMP	9937.8	-85.55	
532793	[NEOSHO	7	345.00]	AMP	15867.5	-84.38
532937	[NEOSHO	5	161.00]	AMP	20829.2	-84.23
533021	[NEOSHO	4	138.00]	AMP	22541.5	-84.34
542981	[LACYGNE7	345.00]	AMP	25250.9	-86.93	
547478	[DAD368	5	161.00]	AMP	9688.9	-77.54
547479	[LAR382	5	161.00]	AMP	12139.5	-80.35
547480	[MON383	5	161.00]	AMP	10705.5	-79.62
547484	[DEC392	5	161.00]	AMP	15151.2	-82.02
547493	[BOL431	5	161.00]	AMP	4758.7	-77.50
547496	[NOL435	5	161.00]	AMP	9673.2	-80.67
547499	[CPK446	5	161.00]	AMP	7264.5	-78.12
547585	[DAD368	2	69.000]	AMP	8507.4	-74.67
547594	[DEC392	2	69.000]	AMP	8231.0	-80.62
549904	[JAMES RIVER	269.000]	AMP	26608.3	-83.07	
549925	[NICHOLS	269.000]	AMP	22250.3	-77.80	
549954	[JTEC	5161.00]	AMP	26168.7	-84.27	
549955	[JUNCTION	5161.00]	AMP	20301.4	-83.28	
549956	[NICHOLS	5161.00]	AMP	18516.8	-83.05	
549957	[WEST BELT	5161.00]	AMP	18285.5	-83.05	
549958	[MAIN STREETS	5161.00]	AMP	18535.5	-83.06	
549959	[BATTLEFIELD	5161.00]	AMP	25946.8	-83.62	
549960	[SW DISP PLT	5161.00]	AMP	24596.1	-83.81	
549961	[JAMES RIVER	5161.00]	AMP	15251.1	-83.75	
549962	[MILL	5161.00]	AMP	15701.2	-82.23	
549963	[MENTOR	5161.00]	AMP	14591.7	-82.22	
549966	[SUMMIT	5161.00]	AMP	12948.0	-82.54	
549969	[BROOKLINE	5161.00]	AMP	27496.6	-84.21	
549970	[CLAY	5161.00]	AMP	18109.2	-81.92	
549971	[PIC WEST	5161.00]	AMP	16693.9	-82.91	
549979	[BATTLEFIELD	269.000]	AMP	20599.6	-81.14	
549984	[BROOKLINE	7345.00]	AMP	10928.1	-85.08	

**GEN-2019-005S:**

PSS(R)E-33.7.0 ASCC SHORT CIRCUIT CURRENTS  
 2016 MDWG FINAL WITH 2015 SERIES MMWG FINAL  
 MDWG 2018S WITH MMWG 2017S

THU, AUG 29 2019 18:01

OPTIONS USED:

- SET PRE-FAULT VOLTAGE ON ALL BUSES TO 1.00 PU AT 0 PHASE SHIFT ANGLE
- SET SYNCHRONOUS/ASYNCHRONOUS MACHINE POWER OUTPUTS TO P=0.0, Q=0.0
- SET GENERATOR POSITIVE SEQUENCE REACTANCES TO ZSORCE
- SET TRANSFORMER TAP RATIOS=1.0 PU AND PHASE SHIFT ANGLES=0.0
- SET LINE CHARGING=0.0 IN +/-0 SEQUENCES
- SET LINE/FIXED/SWITCHED SHUNTS=0.0 AND TRANSFORMER MAGNETIZING ADMITTANCE=0.0 IN +/-0 SEQUENCES
- SET LOAD=0.0 IN +/- SEQUENCES
- DC LINES AND FACTS DEVICES BLOCKED
- IMPEDANCE CORRECTIONS APPLIED TO TRANSFORMER ZERO SEQUENCE IMPEDANCES

		THREE PHASE FAULT			
X-----	BUS -----X		/I+/ AMP	AN(I+) -	
90051	[G19005S-TAP	161.00]	AMP	22350.0	-84.40
300045	[7MORGAN	345.00]	AMP	10737.8	-84.31
300070	[5CLARK	161.00]	AMP	7446.1	-79.37
300089	[5JAMESV	161.00]	AMP	15360.8	-81.67
300101	[5MORGAN	161.00]	AMP	9859.2	-77.65
300108	[5OSCEOL	161.00]	AMP	6306.3	-77.24
300118	[5STKAEC	161.00]	AMP	7907.6	-77.76
300348	[5BTLFD	161.00]	AMP	21017.1	-83.40
300657	[2ASHGRV	69.000]	AMP	3816.2	-59.64
300658	[2BILLNG	69.000]	AMP	6312.6	-63.12
300659	[2BOWRML	69.000]	AMP	5811.2	-59.96
300665	[2CLEVER	69.000]	AMP	3880.3	-59.57
300668	[2DADEVL	69.000]	AMP	5289.3	-70.53
300669	[2ELWOOD	69.000]	AMP	5141.8	-62.25
300672	[2GRNFLD	69.000]	AMP	5654.9	-63.65
300676	[2LOCKWD	69.000]	AMP	3838.7	-60.24
300677	[2MTVRN	69.000]	AMP	7883.2	-69.30
300678	[5NIXA-1	161.00]	AMP	18517.6	-82.45
300680	[2VERONA	69.000]	AMP	6089.6	-71.94
300683	[2MIDWY	69.000]	AMP	4333.9	-68.46
300684	[2MIDWYTP	69.000]	AMP	7750.9	-68.79
300725	[2REEDSP	69.000]	AMP	9593.0	-77.69
300770	[2BUFFLO	69.000]	AMP	4337.4	-61.54
300774	[2EUDORA	69.000]	AMP	5304.5	-71.06
300782	[2MORGAN	69.000]	AMP	6255.0	-74.51
300785	[2PLEAST	69.000]	AMP	4107.3	-65.07
300788	[2SLAGLE	69.000]	AMP	5595.3	-65.11
300793	[5HYDERHL	161.00]	AMP	7481.9	-77.84
300797	[2ARCOLA	69.000]	AMP	4599.4	-63.35
300798	[2HYDERHL	69.000]	AMP	7775.8	-75.50
300800	[2BONA	69.000]	AMP	3220.3	-64.34
300811	[2OSCEOL	69.000]	AMP	5931.4	-73.64
300816	[5COLLINS	161.00]	AMP	6170.7	-77.33
301161	[5LOGAN	161.00]	AMP	13936.0	-81.04
301477	[5OSCEOKC	161.00]	AMP	6306.1	-77.24
505472	[TABLE R5	161.00]	AMP	14207.1	-81.58
505486	[NEO SPA5	161.00]	AMP	14932.5	-81.20
505488	[CARTHAG5	161.00]	AMP	15682.6	-80.63
505492	[SPRGFLD5	161.00]	AMP	26226.9	-83.74
505494	[SPRGFLD2	69.000]	AMP	15410.7	-85.36
505496	[NIXA 5	161.00]	AMP	12142.0	-81.93
505498	[STOCKTN5	161.00]	AMP	8344.5	-77.83
505501	[NIXA 2	69.000]	AMP	9704.3	-82.83
506934	[FLINTCR5	161.00]	AMP	31560.3	-85.73
506935	[FLINTCR7	345.00]	AMP	14541.3	-86.23
506979	[SHIPERD7	345.00]	AMP	9857.0	-85.66
512750	[TONECE7	345.00]	AMP	14370.7	-86.29
547400	[MON376J2	69.000]	AMP	3879.9	-69.80
547405	[MON352J2	69.000]	AMP	7359.4	-72.78
547425	[HER209 2	69.000]	AMP	1312.3	-59.26
547432	[BUF243J2	69.000]	AMP	3166.2	-58.08
547434	[BUF409 2	69.000]	AMP	2521.1	-59.39
547436	[CUPTAP 2	69.000]	AMP	5478.8	-67.80
547437	[CUPSUB 2	69.000]	AMP	4519.4	-62.28
547440	[EXP450T2	69.000]	AMP	5290.0	-63.78
547441	[EXP4502	69.000]	AMP	4291.2	-60.13
547449	[PRC460 2	69.000]	AMP	5403.9	-62.89

Southwest Power Pool, Inc.

547464	[BOL 73 5	161.00]	AMP	4013.3	-76.84
547468	[AUR124 5	161.00]	AMP	9333.4	-78.31
547472	[TIP292 5	161.00]	AMP	16933.4	-82.34
547473	[RDS295 5	161.00]	AMP	7362.7	-76.82
547478	[DAD368 5	161.00]	AMP	9686.6	-77.56
547479	[LAR382 5	161.00]	AMP	12120.1	-80.38
547480	[MON383 5	161.00]	AMP	10690.0	-79.65
547483	[JOP389 5	161.00]	AMP	19441.6	-83.23
547488	[BRN412 5	161.00]	AMP	9459.5	-78.76
547492	[RDS424 5	161.00]	AMP	7924.7	-77.27
547493	[BOL431 5	161.00]	AMP	4757.2	-77.51
547499	[CPK446 5	161.00]	AMP	7258.2	-78.14
547500	[RNM393 5	161.00]	AMP	13831.4	-82.08
547528	[BOL 73 2	69.000]	AMP	7085.5	-71.53
547529	[SED 80 2	69.000]	AMP	15476.5	-76.92
547536	[ASH121 2	69.000]	AMP	6835.9	-69.32
547537	[AUR124 2	69.000]	AMP	11263.5	-75.57
547540	[MON152 2	69.000]	AMP	10096.1	-74.45
547542	[NIC170 2	69.000]	AMP	22023.7	-77.74
547545	[FRP217 2	69.000]	AMP	4131.2	-63.55
547546	[BIL221 2	69.000]	AMP	6713.0	-62.26
547549	[ARC250 2	69.000]	AMP	3798.0	-67.95
547550	[GLD251 2	69.000]	AMP	3588.4	-57.55
547552	[LAW260 2	69.000]	AMP	5343.7	-67.27
547553	[ALB262 2	69.000]	AMP	7995.0	-65.86
547567	[BRT323 2	69.000]	AMP	5516.0	-62.76
547573	[HTC338 2	69.000]	AMP	6126.1	-66.55
547575	[BUF342 2	69.000]	AMP	3345.1	-56.35
547578	[AUR355 2	69.000]	AMP	8693.2	-72.25
547580	[REP359 2	69.000]	AMP	5574.0	-62.68
547584	[BOL367 2	69.000]	AMP	4723.4	-63.54
547585	[DAD368 2	69.000]	AMP	8505.2	-74.69
547586	[WIL445 2	69.000]	AMP	7002.2	-69.85
547591	[MON383 2	69.000]	AMP	11605.5	-76.48
547596	[FRG397 2	69.000]	AMP	5730.3	-61.61
547598	[LKW400 2	69.000]	AMP	3480.0	-58.87
547605	[STK418 2	69.000]	AMP	6953.5	-79.12
547606	[MTV420 2	69.000]	AMP	6558.0	-67.86
547611	[MAR437 2	69.000]	AMP	5246.0	-60.95
547612	[BOL602 2	69.000]	AMP	4421.5	-62.97
547613	[GRN614 2	69.000]	AMP	3984.7	-61.89
547616	[STK324J2	69.000]	AMP	5647.0	-76.13
547618	[CPK446 2	69.000]	AMP	8875.2	-73.05
547691	[WIL369 2	69.000]	AMP	5474.2	-69.57
549904	[JAMES RIVER269.000]	AMP	26470.0	-83.08	
549925	[NICHOLS 269.000]	AMP	22141.4	-77.81	
549954	[JTEC 5161.00]	AMP	25880.0	-84.28	
549955	[JUNCTION 5161.00]	AMP	20050.1	-83.26	
549956	[NICHOLS 5161.00]	AMP	18318.3	-83.04	
549957	[WEST BELT 5161.00]	AMP	18094.9	-83.04	
549958	[MAIN STREETS5161.00]	AMP	18342.9	-83.06	
549959	[BATTLEFIELDS5161.00]	AMP	25624.3	-83.62	
549960	[SW DISP PLT5161.00]	AMP	24334.1	-83.82	
549961	[JAMES RIVERS5161.00]	AMP	15132.2	-83.75	
549962	[MILL 5161.00]	AMP	15349.9	-82.13	
549963	[MENTOR 5161.00]	AMP	14430.4	-82.19	
549966	[SUMMIT 5161.00]	AMP	12708.3	-82.45	
549969	[BROOKLINE 5161.00]	AMP	27158.6	-84.22	
549970	[CLAY 5161.00]	AMP	17813.9	-81.87	
549971	[PIC WEST 5161.00]	AMP	16484.3	-82.88	
549979	[BATTLEFIELD269.000]	AMP	20508.1	-81.15	
549984	[BROOKLINE 7345.00]	AMP	10852.3	-85.13	

PSS(R)E-33.7.0 ASCC SHORT CIRCUIT CURRENTS  
 2016 MDWG FINAL WITH 2015 SERIES MMWG FINAL  
 MDWG 2026S WITH MMWG 2026S

THU, AUG 29 2019 18:02

OPTIONS USED:

- SET PRE-FAULT VOLTAGE ON ALL BUSES TO 1.00 PU AT 0 PHASE SHIFT ANGLE

- SET SYNCHRONOUS/ASYNCHRONOUS MACHINE POWER OUTPUTS TO P=0.0, Q=0.0
- SET GENERATOR POSITIVE SEQUENCE REACTANCES TO ZSORCE
- SET TRANSFORMER TAP RATIOS=1.0 PU AND PHASE SHIFT ANGLES=0.0
- SET LINE CHARGING=0.0 IN +/-/0 SEQUENCES
- SET LINE/FIXED/SWITCHED SHUNTS=0.0 AND TRANSFORMER MAGNETIZING ADMITTANCE=0.0 IN +/-/0 SEQUENCES
- SET LOAD=0.0 IN +/- SEQUENCES
- DC LINES AND FACTS DEVICES BLOCKED
- IMPEDANCE CORRECTIONS APPLIED TO TRANSFORMER ZERO SEQUENCE IMPEDANCES

X----- BUS -----X		THREE PHASE FAULT	
		/I+/ AMP	AN(I+)
90051	[G19005S-TAP 161.00]	22432.8	-84.36
300045	[7MORGAN 345.00]	10773.7	-84.28
300070	[5CLARK 161.00]	7417.6	-79.35
300089	[5JAMESV 161.00]	15466.6	-81.65
300101	[5MORGAN 161.00]	9861.0	-77.62
300108	[5OSCEOL 161.00]	6206.0	-77.14
300118	[5STKAEC 161.00]	7869.6	-77.73
300348	[5BTLFD 161.00]	21207.7	-83.38
300657	[2ASHGRV 69.000]	3818.5	-59.62
300658	[2BILLNG 69.000]	6315.5	-63.11
300659	[2BOWRML 69.000]	5812.2	-59.95
300665	[2CLEVER 69.000]	3881.4	-59.55
300668	[2DAEVL 69.000]	5289.4	-70.53
300669	[2ELWOOD 69.000]	5146.5	-62.23
300672	[2GRNFLD 69.000]	5653.7	-63.65
300676	[2LOCKWD 69.000]	3838.1	-60.24
300677	[2MTVRN 69.000]	7886.8	-69.29
300678	[5NIXA-1 161.00]	18679.8	-82.43
300680	[2VERONA 69.000]	6092.3	-71.93
300683	[2MIDWY 69.000]	4335.0	-68.45
300684	[2MIDWYTP 69.000]	7754.4	-68.77
300725	[2REEDSP 69.000]	9603.6	-77.66
300770	[2BUFFLO 69.000]	4337.3	-61.54
300774	[2EUDORA 69.000]	5305.9	-71.05
300782	[2MORGAN 69.000]	6256.0	-74.51
300785	[2PLEAST 69.000]	4110.9	-65.06
300788	[2SLAGLE 69.000]	5598.8	-65.10
300793	[5HYDERHL 161.00]	7448.3	-77.81
300797	[2ARCOLA 69.000]	4595.4	-63.36
300798	[2HYDERHL 69.000]	7758.8	-75.49
300800	[2BONA 69.000]	3220.3	-64.34
300811	[2OSCEOL 69.000]	5893.7	-73.61
300816	[5COLLINS 161.00]	6111.1	-77.28
301161	[5LOGAN 161.00]	14111.2	-81.07
301477	[5OSCEOKC 161.00]	6205.5	-77.14
505472	[TABLE R5 161.00]	14261.4	-81.53
505486	[NEO SPA5 161.00]	14985.0	-81.12
505488	[CARTHAG5 161.00]	15718.0	-80.61
505492	[SPRGFLD5 161.00]	26565.3	-83.73
505494	[SPRGFLD2 69.000]	15459.6	-85.37
505496	[NIXA 5 161.00]	12204.8	-81.91
505498	[STOCKTN5 161.00]	8301.1	-77.80
505501	[NIXA 2 69.000]	9722.0	-82.83
506934	[FLINTCR5 161.00]	33831.4	-84.28
506935	[FLINTCR7 345.00]	15201.9	-85.41
506979	[SHIPERD7 345.00]	10207.5	-85.02
512750	[TONECE7 345.00]	14962.4	-85.55
547400	[MON376J2 69.000]	3880.8	-69.79
547405	[MON352J2 69.000]	7362.8	-72.77
547425	[HER209 2 69.000]	1312.4	-59.25
547432	[BUF243J2 69.000]	3167.4	-58.07
547434	[BUF409 2 69.000]	2521.7	-59.38
547436	[CUPTAP 2 69.000]	5479.2	-67.79
547437	[CUPSUB 2 69.000]	4519.6	-62.28
547440	[EXP450T2 69.000]	5293.1	-63.76
547441	[EXP4502 69.000]	4293.2	-60.12
547449	[PRC460 2 69.000]	5405.8	-62.88
547464	[BOL 73 5 161.00]	4014.8	-76.83

Southwest Power Pool, Inc.

547468	[AUR124 5	161.00]	AMP	9346.0	-78.28
547472	[TIP292 5	161.00]	AMP	16971.7	-82.29
547473	[RDS295 5	161.00]	AMP	7374.4	-76.79
547478	[DAD368 5	161.00]	AMP	9688.9	-77.54
547479	[LAR382 5	161.00]	AMP	12139.5	-80.35
547480	[MON383 5	161.00]	AMP	10705.5	-79.62
547483	[JOP389 5	161.00]	AMP	19475.6	-83.19
547488	[BRN412 5	161.00]	AMP	9481.3	-78.72
547492	[RDS424 5	161.00]	AMP	7938.9	-77.23
547493	[BOL431 5	161.00]	AMP	4758.7	-77.50
547499	[CPK446 5	161.00]	AMP	7264.5	-78.12
547500	[RNM393 5	161.00]	AMP	13856.8	-82.04
547528	[BOL 73 2	69.000]	AMP	7089.0	-71.51
547529	[SED 80 2	69.000]	AMP	15523.9	-76.91
547536	[ASH121 2	69.000]	AMP	6840.1	-69.31
547537	[AUR124 2	69.000]	AMP	11271.4	-75.55
547540	[MON152 2	69.000]	AMP	10102.5	-74.43
547542	[NIC170 2	69.000]	AMP	22131.0	-77.72
547545	[FRP217 2	69.000]	AMP	4131.9	-63.55
547546	[BIL221 2	69.000]	AMP	6716.7	-62.24
547549	[ARC250 2	69.000]	AMP	3796.1	-67.95
547550	[GLD251 2	69.000]	AMP	3587.9	-57.55
547552	[LAW260 2	69.000]	AMP	5345.7	-67.26
547553	[ALB262 2	69.000]	AMP	7998.4	-65.84
547567	[BRT323 2	69.000]	AMP	5520.0	-62.74
547573	[HTC338 2	69.000]	AMP	6128.3	-66.54
547575	[BUF342 2	69.000]	AMP	3346.2	-56.34
547578	[AUR355 2	69.000]	AMP	8697.8	-72.23
547580	[REP359 2	69.000]	AMP	5577.2	-62.66
547584	[BOL367 2	69.000]	AMP	4724.6	-63.52
547585	[DAD368 2	69.000]	AMP	8507.4	-74.67
547586	[WIL445 2	69.000]	AMP	7008.9	-69.84
547591	[MON383 2	69.000]	AMP	11614.1	-76.46
547596	[FRG397 2	69.000]	AMP	5735.8	-61.59
547598	[LKW400 2	69.000]	AMP	3479.2	-58.87
547605	[STK418 2	69.000]	AMP	6943.0	-79.10
547606	[MTV420 2	69.000]	AMP	6560.4	-67.85
547611	[MAR437 2	69.000]	AMP	5247.8	-60.94
547612	[BOL602 2	69.000]	AMP	4422.5	-62.96
547613	[GRN614 2	69.000]	AMP	3983.5	-61.89
547616	[STK324J2	69.000]	AMP	5640.7	-76.12
547618	[CPK446 2	69.000]	AMP	8879.9	-73.03
547691	[WIL369 2	69.000]	AMP	5478.3	-69.56
549904	[JAMES RIVER269.000]	AMP	26608.3	-83.07	
549925	[NICHOLS 269.000]	AMP	22250.3	-77.80	
549954	[JTEC 5161.00]	AMP	26168.7	-84.27	
549955	[JUNCTION 5161.00]	AMP	20301.4	-83.28	
549956	[NICHOLS 5161.00]	AMP	18516.8	-83.05	
549957	[WEST BELT 5161.00]	AMP	18285.5	-83.05	
549958	[MAIN STREETS5161.00]	AMP	18535.5	-83.06	
549959	[BATTLEFIELD5161.00]	AMP	25946.8	-83.62	
549960	[SW DISP PLT5161.00]	AMP	24596.1	-83.81	
549961	[JAMES RIVERS5161.00]	AMP	15251.1	-83.75	
549962	[MILL 5161.00]	AMP	15701.2	-82.23	
549963	[MENTOR 5161.00]	AMP	14591.7	-82.22	
549966	[SUMMIT 5161.00]	AMP	12948.0	-82.54	
549969	[BROOKLINE 5161.00]	AMP	27496.6	-84.21	
549970	[CLAY 5161.00]	AMP	18109.2	-81.92	
549971	[PIC WEST 5161.00]	AMP	16693.9	-82.91	
549979	[BATTLEFIELD269.000]	AMP	20599.6	-81.14	
549984	[BROOKLINE 7345.00]	AMP	10928.1	-85.08	

**GEN-2019-007:**

PSS(R)E-33.7.0 ASCC SHORT CIRCUIT CURRENTS  
 2016 MDWG FINAL WITH 2015 SERIES MMWG FINAL  
 MDWG 2018S WITH MMWG 2017S

THU, AUG 29 2019 17:46



OPTIONS USED:

- SET PRE-FAULT VOLTAGE ON ALL BUSES TO 1.00 PU AT 0 PHASE SHIFT ANGLE
- SET SYNCHRONOUS/ASYNCHRONOUS MACHINE POWER OUTPUTS TO P=0.0, Q=0.0
- SET GENERATOR POSITIVE SEQUENCE REACTANCES TO ZSORCE
- SET TRANSFORMER TAP RATIOS=1.0 PU AND PHASE SHIFT ANGLES=0.0
- SET LINE CHARGING=0.0 IN +/- /0 SEQUENCES
- SET LINE/FIXED/SWITCHED SHUNTS=0.0 AND TRANSFORMER MAGNETIZING ADMITTANCE=0.0 IN +/- /0 SEQUENCES
- SET LOAD=0.0 IN +/- SEQUENCES
- DC LINES AND FACTS DEVICES BLOCKED
- IMPEDANCE CORRECTIONS APPLIED TO TRANSFORMER ZERO SEQUENCE IMPEDANCES

			THREE PHASE FAULT	
X-----	BUS -----	X	/I+/ AMP	AN(I+) -
90071	[G19007P-TAP	345.00]	16608.9	-86.91
90072	[G19007P-HV	345.00]	16608.9	-86.91
523853	[FINNEY	7345.00]	10452.8	-85.85
530554	[ATWOOD 3	115.00]	3006.5	-72.47
530555	[COLBY 3	115.00]	6066.3	-80.47
530559	[PH RUN 3	115.00]	4521.2	-77.67
530583	[POSTROCK7	345.00]	7779.5	-84.52
530584	[POSTROCK6	230.00]	10731.7	-84.68
530644	[COLBY 2	69.000]	3919.4	-84.80
530682	[SEGNTP 3	115.00]	4282.2	-75.22
530683	[SEGUIN 3	115.00]	4073.4	-76.43
531351	[BREWSTR3	115.00]	3101.3	-76.74
531353	[GOODLND3	115.00]	2654.6	-75.62
531412	[GRINNEL3	115.00]	3702.0	-77.20
531416	[CTYSERT3	115.00]	10008.4	-84.60
531429	[MINGO 3	115.00]	12472.9	-85.43
531433	[SCOTCTY3	115.00]	8981.1	-83.66
531448	[HOLCOMB3	115.00]	21668.3	-87.50
531449	[HOLCOMB7	345.00]	10547.9	-85.87
531451	[MINGO 7	345.00]	6218.8	-84.90
531464	[SETAB 3	115.00]	10645.9	-85.33
531465	[SETAB 7	345.00]	7151.8	-85.25
531469	[SPERVIL7	345.00]	14326.0	-83.23
531501	[BUCKNER7	345.00]	9944.4	-85.15
560062	[G15-088-TAP	345.00]	10997.4	-85.14
560075	[G16-023-TAP	345.00]	5246.5	-87.22
560082	[G16-050-TAP	345.00]	6920.4	-84.87
560134	[ROSEMONT	115.00]	6250.6	-73.86
584650	[GEN-2015-023345.00]	AMP	7008.8	-85.79
585020	[GEN-2015-064115.00]	AMP	9838.9	-84.13
585030	[GEN-2015-065345.00]	AMP	5685.1	-84.78
585240	[GEN-2015-088345.00]	AMP	10576.7	-84.90
587350	[GEN-2016-050345.00]	AMP	6226.2	-84.78
587450	[GEN-2016-067345.00]	AMP	5685.1	-84.78
587680	[GEN-2016-074345.00]	AMP	6378.3	-84.23
587780	[GEN-2016-096345.00]	AMP	10965.4	-85.10
587850	[GEN-2016-106345.00]	AMP	8503.9	-85.55
587874	[G16-110-TAP	345.00]	6070.5	-87.41
588220	[GEN-2016-147115.00]	AMP	4056.1	-83.72
588340	[GEN-2016-165345.00]	AMP	6096.6	-85.86
588344	[G16-165-TAP	345.00]	7278.7	-86.07
640050	[AINSWND7	115.00]	3613.7	-76.60
640051	[AINSWRT7	115.00]	3346.9	-75.04
640063	[AURORA_7	115.00]	6895.3	-79.52
640065	[AXTELL 3	345.00]	9270.9	-84.82
640066	[AXTELL 7	115.00]	13960.3	-84.53
640082	[BEVERLY7	115.00]	4584.2	-80.66
640083	[BEVERLY8	69.000]	4217.7	-83.80
640089	[BROKENB7	115.00]	5479.5	-78.81
640091	[BRULE 7	115.00]	5371.4	-76.65
640093	[C.CREEK4	230.00]	6871.2	-83.26
640094	[C.CREEK7	115.00]	7080.2	-84.70
640096	[CALAMS 7	115.00]	3362.4	-75.24
640098	[CALAWAY7	115.00]	3836.9	-74.92
640100	[CAMBRIG7	115.00]	4010.7	-77.15



Southwest Power Pool, Inc.

640101	[CAMBRIG8	69.000]	AMP	2190.7	-82.44
640102	[CANADAY4	230.00]	AMP	6009.6	-83.19
640103	[CANADAY7	115.00]	AMP	12961.7	-81.62
640107	[CENCITY7	115.00]	AMP	5023.7	-73.19
640131	[COLMB.W4	230.00]	AMP	9366.4	-84.38
640133	[COLMBUS4	230.00]	AMP	10796.5	-84.81
640139	[COOPER 3	345.00]	AMP	25287.7	-85.87
640161	[ELMCRK_7	115.00]	AMP	5823.6	-74.60
640167	[ENDERS 7	115.00]	AMP	3688.1	-77.76
640168	[ENDERS 8	69.000]	AMP	3000.4	-83.24
640178	[GENEVA 7	115.00]	AMP	9668.9	-78.79
640183	[GENTLMN3	345.00]	AMP	16608.9	-86.91
640184	[GENTLMN4	230.00]	AMP	18905.3	-87.37
640194	[GOSPER 7	115.00]	AMP	4217.6	-77.20
640196	[GOTHNBG7	115.00]	AMP	4248.1	-75.06
640200	[GR ISLD4	230.00]	AMP	16136.3	-84.91
640201	[GR ISLD7	115.00]	AMP	22291.6	-84.08
640214	[HASTING4	230.00]	AMP	7164.4	-84.55
640215	[HASTING7	115.00]	AMP	18497.7	-82.72
640222	[HILDRTH7	115.00]	AMP	4174.2	-75.98
640224	[HOLDREG7	115.00]	AMP	5979.0	-78.76
640238	[JEFFREY7	115.00]	AMP	5915.9	-79.10
640240	[JOHN.1 7	115.00]	AMP	8032.8	-77.39
640242	[JOHN.2 7	115.00]	AMP	11983.0	-80.27
640248	[KEAR.NE7	115.00]	AMP	8941.4	-80.23
640250	[KEARNEY7	115.00]	AMP	11433.8	-80.98
640252	[KEYSTON3	345.00]	AMP	10974.5	-86.28
640253	[KEYSTON7	115.00]	AMP	15044.8	-86.42
640255	[KINGSLY7	115.00]	AMP	9159.9	-82.57
640261	[LOWELL 7	115.00]	AMP	7931.1	-77.72
640265	[MALONEY7	115.00]	AMP	11054.3	-80.15
640267	[MAXWELS7	115.00]	AMP	6581.0	-81.40
640269	[MCCOOK 7	115.00]	AMP	7500.2	-79.02
640270	[MCCOOK 8	69.000]	AMP	4229.2	-84.21
640271	[MCCOOL 3	345.00]	AMP	10156.6	-84.52
640272	[MCCOOL 7	115.00]	AMP	13860.0	-84.04
640273	[MCCOOL	869.000]	AMP	5443.5	-87.18
640275	[MINDEN 7	115.00]	AMP	7041.8	-80.53
640277	[MOORE 3	345.00]	AMP	20767.0	-85.25
640278	[SHELDON7	115.00]	AMP	30271.0	-85.22
640286	[N.PLATT4	230.00]	AMP	12830.1	-84.87
640287	[N.PLATT7	115.00]	AMP	18020.5	-84.78
640288	[N.PLATT8	69.000]	AMP	4886.8	-87.38
640302	[OGALALA4	230.00]	AMP	7673.0	-85.00
640304	[OGALALANPPD7	115.00]	AMP	14655.8	-85.05
640310	[ORLEANS7	115.00]	AMP	2343.6	-70.68
640312	[PAULINE3	345.00]	AMP	7902.7	-84.35
640313	[PAULINE7	115.00]	AMP	15923.8	-81.91
640314	[PAULINE8	69.000]	AMP	4697.0	-86.91
640325	[REDWILO3	345.00]	AMP	6119.7	-84.47
640326	[REDWILO7	115.00]	AMP	10245.4	-80.84
640330	[RIVERDL4	230.00]	AMP	6893.4	-83.20
640331	[RIVERDL7	115.00]	AMP	11669.4	-81.64
640353	[ST.LIB 7	115.00]	AMP	9414.7	-76.48
640359	[STAPLETON	7115.00]	AMP	4121.2	-82.10
640360	[STAPLETON	869.000]	AMP	3158.9	-85.23
640365	[STOCKVL7	115.00]	AMP	4394.7	-74.68
640366	[STOCKVL8	69.000]	AMP	3226.9	-82.16
640370	[SUTHLND7	115.00]	AMP	5378.6	-77.20
640374	[SWEET W3	345.00]	AMP	10679.9	-85.27
640381	[THEDFRD7	115.00]	AMP	9092.1	-85.49
640383	[TOWER 7	115.00]	AMP	8641.8	-81.68
640413	[YORK SW7	115.00]	AMP	7953.2	-80.37
640448	[HOLDREGE	869.000]	AMP	3644.9	-84.91
640500	[THEDFORD3	345.00]	AMP	5693.0	-85.07
640510	[HOLT.CO3	345.00]	AMP	7658.2	-85.88
640530	[STEGALL7	115.00]	AMP	7807.9	-86.69
641088	[HASTCTY7	115.00]	AMP	18497.7	-82.72
641244	[ATHEY 7	115.00]	AMP	3016.7	-77.25

Southwest Power Pool, Inc.

642071	[SUB-D 7 115.00]	AMP	16523.3	-80.85
642072	[SUB-E 7 115.00]	AMP	16218.6	-83.19
650114	[NW68HOLDRG3 345.00]	AMP	16073.7	-85.00
650189	[103&ROKEBY3 345.00]	AMP	19231.5	-85.08
652532	[GR PRAIRIE 3345.00]	AMP	7279.5	-86.07
652832	[GRPRAR1-LNX3345.00]	AMP	7279.5	-86.07
653571	[GR ISLD3 345.00]	AMP	12009.1	-84.96
653572	[SIDNEY 7 115.00]	AMP	4156.6	-84.19
653871	[GR ISLD-LNX3345.00]	AMP	12009.1	-84.96
659133	[SIDNEY 3 345.00]	AMP	6149.6	-85.93
659134	[SIDNEY 4 230.00]	AMP	6242.9	-85.61
659135	[STEGALL3 345.00]	AMP	4847.2	-86.15
659206	[STGXFMR4 230.00]	AMP	5373.5	-86.35
659210	[SIDXFMR4 230.00]	AMP	6700.1	-86.11
659425	[SIDNEY1-LNX3345.00]	AMP	6149.6	-85.93
659426	[SIDNEY2-LNX3345.00]	AMP	6149.6	-85.93
659800	[GRANTNB7 115.00]	AMP	6225.4	-79.12
659801	[OGALALA7 115.00]	AMP	14655.8	-85.05
659809	[ROSCOE 7 115.00]	AMP	6306.7	-80.75
659810	[SPCREEK7 115.00]	AMP	4328.0	-77.74
659817	[COLTON 7 115.00]	AMP	3647.7	-81.02
659824	[MCONGHY7 115.00]	AMP	5346.3	-77.35

PSS(R)E-33.7.0 ASCC SHORT CIRCUIT CURRENTS THU, AUG 29 2019 17:46  
 2016 MDWG FINAL WITH 2015 SERIES MMWG FINAL  
 MDWG 2026S WITH MMWG 2026S

OPTIONS USED:

- SET PRE-FAULT VOLTAGE ON ALL BUSES TO 1.00 PU AT 0 PHASE SHIFT ANGLE
- SET SYNCHRONOUS/ASYNCHRONOUS MACHINE POWER OUTPUTS TO P=0.0, Q=0.0
- SET GENERATOR POSITIVE SEQUENCE REACTANCES TO ZSORCE
- SET TRANSFORMER TAP RATIOS=1.0 PU AND PHASE SHIFT ANGLES=0.0
- SET LINE CHARGING=0.0 IN +/-0 SEQUENCES
- SET LINE/FIXED/SWITCHED SHUNTS=0.0 AND TRANSFORMER MAGNETIZING ADMITTANCE=0.0 IN +/-0 SEQUENCES
- SET LOAD=0.0 IN +/- SEQUENCES
- DC LINES AND FACTS DEVICES BLOCKED
- IMPEDANCE CORRECTIONS APPLIED TO TRANSFORMER ZERO SEQUENCE IMPEDANCES

		THREE PHASE FAULT		
X-----	BUS -----X		/I+/ AN(I+)	
90071	[G19007P-TAP 345.00]	AMP	16728.2	-86.91
90072	[G19007P-HV 345.00]	AMP	16728.2	-86.91
523853	[FINNEY 7345.00]	AMP	10579.1	-85.87
530554	[ATWOOD 3 115.00]	AMP	3009.0	-72.46
530555	[COLBY 3 115.00]	AMP	6078.2	-80.47
530559	[PH RUN 3 115.00]	AMP	4527.9	-77.66
530583	[POSTROCK7 345.00]	AMP	7802.1	-84.51
530584	[POSTROCK6 230.00]	AMP	10772.2	-84.65
530644	[COLBY 2 69.000]	AMP	3921.4	-84.80
530682	[SEGNTP 3 115.00]	AMP	4287.4	-75.22
530683	[SEGUIN 3 115.00]	AMP	4078.2	-76.43
531351	[BREWSTR3 115.00]	AMP	3105.0	-76.73
531353	[GOODLND3 115.00]	AMP	2657.2	-75.62
531412	[GRINNEL3 115.00]	AMP	3706.4	-77.20
531416	[CTYSERT3 115.00]	AMP	10081.5	-84.59
531429	[MINGO 3 115.00]	AMP	12537.3	-85.45
531433	[SCOTCTY3 115.00]	AMP	9058.5	-83.66
531448	[HOLCOMB3 115.00]	AMP	22578.1	-87.41
531449	[HOLCOMB7 345.00]	AMP	10677.7	-85.88
531451	[MINGO 7 345.00]	AMP	6278.6	-84.93
531464	[SETAB 3 115.00]	AMP	10729.8	-85.33
531465	[SETAB 7 345.00]	AMP	7219.0	-85.27
531469	[SPERVIL7 345.00]	AMP	14375.5	-83.22
531501	[BUCKNER7 345.00]	AMP	9996.0	-85.15
560062	[G15-088-TAP 345.00]	AMP	11055.1	-85.14
560075	[G16-023-TAP 345.00]	AMP	5248.3	-87.22
560082	[G16-050-TAP 345.00]	AMP	6938.2	-84.87
560134	[ROSEMONT 115.00]	AMP	6304.9	-73.81
584650	[GEN-2015-023345.00]	AMP	7021.6	-85.80

Southwest Power Pool, Inc.

585020	[GEN-2015-064115.00]	AMP	9876.5	-84.14
585030	[GEN-2015-065345.00]	AMP	5734.0	-84.81
585240	[GEN-2015-088345.00]	AMP	10629.5	-84.91
587350	[GEN-2016-050345.00]	AMP	6240.4	-84.77
587450	[GEN-2016-067345.00]	AMP	5734.0	-84.81
587680	[GEN-2016-074345.00]	AMP	6396.6	-84.23
587780	[GEN-2016-096345.00]	AMP	11022.7	-85.10
587850	[GEN-2016-106345.00]	AMP	8527.8	-85.54
587874	[G16-110-TAP 345.00]	AMP	6072.4	-87.41
588220	[GEN-2016-147115.00]	AMP	4057.7	-83.72
588340	[GEN-2016-165345.00]	AMP	6098.6	-85.86
588344	[G16-165-TAP 345.00]	AMP	7281.5	-86.07
640050	[AINSWND7 115.00]	AMP	3614.0	-76.60
640051	[AINSWRT7 115.00]	AMP	3347.2	-75.04
640063	[AURORA_7 115.00]	AMP	6953.8	-79.53
640065	[AXTELL 3 345.00]	AMP	9312.8	-84.82
640066	[AXTELL 7 115.00]	AMP	14007.7	-84.52
640082	[BEVERLY7 115.00]	AMP	4678.6	-80.82
640083	[BEVERLY8 69.000]	AMP	4264.8	-83.92
640089	[BROKENB7 115.00]	AMP	5485.7	-78.79
640091	[BRULE 7 115.00]	AMP	5376.2	-76.64
640093	[C.CREEK4 230.00]	AMP	6899.2	-83.24
640094	[C.CREEK7 115.00]	AMP	7094.1	-84.69
640096	[CALAMS 7 115.00]	AMP	3362.9	-75.23
640098	[CALAWAY7 115.00]	AMP	3839.5	-74.91
640100	[CAMBRIG7 115.00]	AMP	4090.4	-77.25
640101	[CAMBRIG8 69.000]	AMP	2204.5	-82.51
640102	[CANADAY4 230.00]	AMP	6032.3	-83.17
640103	[CANADAY7 115.00]	AMP	13020.5	-81.59
640107	[CENCITY7 115.00]	AMP	5050.9	-73.14
640131	[COLMB.W4 230.00]	AMP	9397.2	-84.37
640133	[COLMBUS4 230.00]	AMP	10833.7	-84.80
640139	[COOPER 3 345.00]	AMP	25336.8	-85.86
640161	[ELMCRK_7 115.00]	AMP	5834.5	-74.57
640167	[ENDERS 7 115.00]	AMP	3710.8	-77.78
640168	[ENDERS 8 69.000]	AMP	3009.3	-83.26
640178	[GENEVA 7 115.00]	AMP	9915.6	-79.07
640183	[GENTLMN3 345.00]	AMP	16728.2	-86.91
640184	[GENTLMN4 230.00]	AMP	18993.5	-87.36
640194	[GOSPER 7 115.00]	AMP	4274.3	-77.25
640196	[GOTHNBG7 115.00]	AMP	4253.6	-75.04
640200	[GR ISLD4 230.00]	AMP	16489.6	-85.02
640201	[GR ISLD7 115.00]	AMP	23197.5	-84.23
640214	[HASTING4 230.00]	AMP	7223.0	-84.57
640215	[HASTING7 115.00]	AMP	18658.9	-82.70
640222	[HILDRTH7 115.00]	AMP	4179.5	-75.96
640224	[HOLDREG7 115.00]	AMP	5988.9	-78.74
640238	[JEFFREY7 115.00]	AMP	5925.3	-79.09
640240	[JOHN.1 7 115.00]	AMP	8056.9	-77.36
640242	[JOHN.2 7 115.00]	AMP	12040.7	-80.25
640248	[KEAR.NE7 115.00]	AMP	8972.0	-80.20
640250	[KEARNEY7 115.00]	AMP	11479.2	-80.96
640252	[KEYSTON3 345.00]	AMP	11023.4	-86.28
640253	[KEYSTON7 115.00]	AMP	15083.5	-86.42
640255	[KINGSLY7 115.00]	AMP	9173.1	-82.56
640261	[LOWELL 7 115.00]	AMP	7954.1	-77.69
640265	[MALONEY7 115.00]	AMP	11080.8	-80.12
640267	[MAXWELS7 115.00]	AMP	6588.8	-81.39
640269	[MCCOOK 7 115.00]	AMP	8310.6	-79.93
640270	[MCCOOK 8 69.000]	AMP	4371.0	-84.67
640271	[MCCOOL 3 345.00]	AMP	10260.2	-84.56
640272	[MCCOOL 7 115.00]	AMP	14006.3	-84.08
640273	[MCCOOL 869.000]	AMP	5456.9	-87.20
640275	[MINDEN 7 115.00]	AMP	7056.8	-80.51
640277	[MOORE 3 345.00]	AMP	21030.9	-85.28
640278	[SHELDON7 115.00]	AMP	31076.0	-85.23
640286	[N.PLATT4 230.00]	AMP	12884.8	-84.86
640287	[N.PLATT7 115.00]	AMP	18092.3	-84.75
640288	[N.PLATT8 69.000]	AMP	4890.0	-87.37

Southwest Power Pool, Inc.

640302	[OGALALA4	230.00]	AMP	7691.1	-84.99
640304	[OGALALANPPD7	115.00]	AMP	14700.0	-85.04
640310	[ORLEANS7	115.00]	AMP	2345.1	-70.67
640312	[PAULINE3	345.00]	AMP	7941.1	-84.34
640313	[PAULINE7	115.00]	AMP	16029.8	-81.85
640314	[PAULINE8	69.000]	AMP	4702.6	-86.91
640325	[REDWILO3	345.00]	AMP	6282.2	-84.57
640326	[REDWILO7	115.00]	AMP	10954.7	-81.28
640330	[RIVERDL4	230.00]	AMP	6933.7	-83.19
640331	[RIVERDL7	115.00]	AMP	11730.4	-81.62
640353	[ST.LIB 7	115.00]	AMP	9604.9	-76.49
640359	[STAPLETON	7115.00]	AMP	4123.8	-82.09
640360	[STAPLETON	869.000]	AMP	3159.8	-85.22
640365	[STOCKVL7	115.00]	AMP	4458.7	-74.67
640366	[STOCKVL8	69.000]	AMP	3247.2	-82.20
640370	[SUTHLND7	115.00]	AMP	5384.6	-77.18
640374	[SWEET W3	345.00]	AMP	10737.8	-85.27
640381	[THEDFRD7	115.00]	AMP	9100.6	-85.49
640383	[TOWER 7	115.00]	AMP	8670.1	-81.66
640413	[YORK SW7	115.00]	AMP	7997.6	-80.36
640448	[HOLDREGE	869.000]	AMP	5396.8	-82.94
640500	[THEDFORD3	345.00]	AMP	5703.5	-85.07
640510	[HOLT.CO3	345.00]	AMP	7673.7	-85.88
640530	[STEGALL7	115.00]	AMP	7809.8	-86.69
641088	[HASTCTY7	115.00]	AMP	18658.9	-82.70
641244	[ATHEY 7	115.00]	AMP	3029.8	-77.26
642071	[SUB-D 7	115.00]	AMP	17170.9	-81.01
642072	[SUB-E 7	115.00]	AMP	17257.6	-83.54
650114	[NW68HOLDRG3	345.00]	AMP	16269.2	-85.03
650189	[103&ROKEBY3	345.00]	AMP	19450.8	-85.11
652532	[GR PRAIRIE	3345.00]	AMP	7281.3	-86.07
652832	[GRPRAR1-LNX3	345.00]	AMP	7281.3	-86.07
653571	[GR ISLD3	345.00]	AMP	12189.9	-85.05
653572	[SIDNEY 7	115.00]	AMP	4158.3	-84.19
653871	[GR ISLD-LNX3	345.00]	AMP	12189.9	-85.05
659133	[SIDNEY 3	345.00]	AMP	6157.2	-85.93
659134	[SIDNEY 4	230.00]	AMP	6249.4	-85.61
659135	[STEGALL3	345.00]	AMP	4849.4	-86.15
659206	[STGXFMR4	230.00]	AMP	5375.3	-86.34
659210	[SIDXFMR4	230.00]	AMP	6707.2	-86.10
659425	[SIDNEY1-LNX3	345.00]	AMP	6157.2	-85.93
659426	[SIDNEY2-LNX3	345.00]	AMP	6157.2	-85.93
659800	[GRANTNB7	115.00]	AMP	6245.1	-79.11
659801	[OGALALA7	115.00]	AMP	14700.0	-85.04
659809	[ROSCOE 7	115.00]	AMP	6314.9	-80.74
659810	[SPCREEK7	115.00]	AMP	4339.3	-77.73
659817	[COLTON 7	115.00]	AMP	3649.1	-81.02
659824	[MCONGHY7	115.00]	AMP	5352.0	-77.34

**GEN-2019-008P:**

PSS(R)E-33.7.0 ASCC SHORT CIRCUIT CURRENTS THU, AUG 29 2019 17:47  
 2016 MDWG FINAL WITH 2015 SERIES MMWG FINAL  
 MDWG 2018S WITH MMWG 2017S

OPTIONS USED:

- SET PRE-FAULT VOLTAGE ON ALL BUSES TO 1.00 PU AT 0 PHASE SHIFT ANGLE
- SET SYNCHRONOUS/ASYNCHRONOUS MACHINE POWER OUTPUTS TO P=0.0, Q=0.0
- SET GENERATOR POSITIVE SEQUENCE REACTANCES TO ZSORCE
- SET TRANSFORMER TAP RATIOS=1.0 PU AND PHASE SHIFT ANGLES=0.0
- SET LINE CHARGING=0.0 IN +/-0 SEQUENCES
- SET LINE/FIXED/SWITCHED SHUNTS=0.0 AND TRANSFORMER MAGNETIZING ADMITTANCE=0.0 IN +/-0 SEQUENCES
- SET LOAD=0.0 IN +/- SEQUENCES
- DC LINES AND FACTS DEVICES BLOCKED
- IMPEDANCE CORRECTIONS APPLIED TO TRANSFORMER ZERO SEQUENCE IMPEDANCES

THREE PHASE FAULT

Southwest Power Pool, Inc.

X-----	BUS -----X		/I+/ AN(I+)
90081	[G19008S-TAP 115.00]	AMP	9574.5 -82.61
90082	[G19008S-HV 115.00]	AMP	9574.5 -82.61
90086	[G19008S-TAP 115.00]	AMP	4109.1 -78.89
523961	[POTTER_CO 7345.00]	AMP	10071.9 -86.24
524768	[PLSNT_HILL 3115.00]	AMP	9749.2 -80.88
524770	[PLSNT_HILL 6230.00]	AMP	6096.2 -81.76
524797	[PERIMETER 3115.00]	AMP	6287.3 -78.50
524863	[FE-CHZPLT 3115.00]	AMP	7568.3 -78.67
524874	[OASIS 3115.00]	AMP	9470.2 -81.75
524875	[OASIS 6230.00]	AMP	7325.7 -81.91
524885	[SN_JUAN_TAP6230.00]	AMP	4689.0 -83.02
524889	[SN_JUAN_WND6230.00]	AMP	4495.5 -83.09
524909	[ROSEVELT_N 6230.00]	AMP	8849.9 -82.04
524911	[ROSEVELT_S 6230.00]	AMP	8849.9 -82.04
524915	[SW_4K33 6230.00]	AMP	8849.9 -82.04
524924	[PORTALES 3115.00]	AMP	7181.0 -78.86
525543	[TOLK_TAP 6230.00]	AMP	29867.7 -85.87
525549	[TOLK 7345.00]	AMP	15267.3 -86.44
527455	[RSWL_SLRCOL3115.00]	AMP	6253.5 -83.16
527470	[CHVS_SLRCOL3115.00]	AMP	5983.4 -83.05
527482	[CHAVES_CNTY3115.00]	AMP	6315.7 -83.18
527483	[CHAVES_CNTY6230.00]	AMP	4091.5 -82.12
527501	[URTON 3115.00]	AMP	5337.4 -81.39
527508	[PRICE 3115.00]	AMP	4422.7 -80.61
527509	[PRICE_TAP 3115.00]	AMP	4958.8 -81.49
527522	[ROSWELL_CTY3115.00]	AMP	5063.7 -80.81
527534	[BRASHER_TP 3115.00]	AMP	5257.3 -80.98
527541	[CAPITAN 3115.00]	AMP	4445.8 -80.29
527546	[SAMSON 3115.00]	AMP	5066.9 -80.80
527563	[ROSWLL_INT 269.000]	AMP	3537.9 -84.85
527564	[ROSWLL_INT 3115.00]	AMP	5291.3 -81.02
527597	[TWEEDY 3115.00]	AMP	4920.2 -80.44
527654	[RSVLT_CC_W 7345.00]	AMP	7220.0 -84.98
527655	[RSVLT_CC_E 7345.00]	AMP	8103.3 -85.06
527656	[CROSSROADS 7345.00]	AMP	9061.5 -85.17
527701	[ARTESIA 269.000]	AMP	3809.4 -85.47
527707	[ARTESIA 3115.00]	AMP	6483.1 -79.50
527710	[EAGLE_CREEK269.000]	AMP	2300.5 -86.28
527711	[EAGLE_CREEK3115.00]	AMP	7023.0 -79.74
527715	[NAVAJO_2TP 3115.00]	AMP	6708.6 -79.46
527717	[NAVAJO_2 3115.00]	AMP	6633.0 -79.38
527720	[NAVAJO_3 3115.00]	AMP	6671.6 -79.42
527733	[NAVAJO_1 269.000]	AMP	2157.1 -84.99
527736	[NAVAJO_5TP 3115.00]	AMP	6671.6 -79.42
527739	[NAVAJO_4 3115.00]	AMP	6656.9 -79.41
527743	[NAVAJO_5 3115.00]	AMP	6658.8 -79.41
527785	[ATOKA 269.000]	AMP	2341.8 -85.76
527786	[ATOKA 3115.00]	AMP	6754.3 -79.38
527793	[EDDY_STH 3115.00]	AMP	10608.0 -83.39
527798	[EDDY_NTH 3115.00]	AMP	10608.0 -83.39
527799	[EDDY_NORTH 6230.00]	AMP	7897.1 -83.65
527802	[EDDY_CNTY 7345.00]	AMP	5490.9 -84.09
527809	[CV-8_MILE 3115.00]	AMP	5172.1 -84.21
527811	[CV-KEWAN_TP3115.00]	AMP	2856.4 -80.09
527821	[CV-DAYTON +3115.00]	AMP	6671.3 -79.27
527822	[CV-TURKYTRK3115.00]	AMP	3350.3 -80.96
527864	[CUNNINHAM 3115.00]	AMP	25751.2 -83.85
527865	[CUNNIGHM_N 6230.00]	AMP	14966.0 -86.52
527867	[CUNNIGHM_S 6230.00]	AMP	14966.0 -86.52
527891	[HOBBS_INT 3115.00]	AMP	29349.6 -85.71
527894	[HOBBS_INT 6230.00]	AMP	15452.2 -86.53
527930	[PCA 3115.00]	AMP	10288.0 -79.43
527961	[POTASH_JCT 269.000]	AMP	8451.7 -85.77
527962	[POTASH_JCT 3115.00]	AMP	13230.2 -82.68
527963	[POTASH_JCT 6230.00]	AMP	6605.9 -83.60
527965	[KIOWA 7345.00]	AMP	4739.6 -83.55
527966	[KIOWA 3115.00]	AMP	13128.5 -82.82
527999	[INTREPDW_TP3115.00]	AMP	11286.2 -81.06

Southwest Power Pool, Inc.

528003	[CV-DAGGR&IH269.000]	AMP	1623.4	-77.99
528025	[RDRUNNER 3115.00]	AMP	7958.5	-81.71
528027	[RDRUNNER 7345.00]	AMP	3404.8	-83.23
528070	[CV-AZMESA 3115.00]	AMP	6920.2	-79.17
528076	[CV-WALTCYN 3115.00]	AMP	4337.0	-76.71
528093	[7-RIVERS 269.000]	AMP	2365.6	-86.25
528094	[7-RIVERS 3115.00]	AMP	7726.6	-81.37
528095	[7-RIVERS 6230.00]	AMP	5658.1	-82.74
528109	[CV-LAKEWOOD3115.00]	AMP	6100.3	-78.90
528116	[CV-IRISHHL+3115.00]	AMP	6119.0	-78.76
528132	[OCOTILLO 3115.00]	AMP	5751.2	-73.48
528137	[N_CANAL 3115.00]	AMP	7865.5	-78.46
528151	[FIESTA 3115.00]	AMP	8760.3	-78.48
528159	[CARLSBAD 269.000]	AMP	4735.0	-85.34
528160	[CARLSBAD 3115.00]	AMP	9930.9	-79.17
528178	[PECOS 3115.00]	AMP	10381.7	-80.17
528179	[PECOS 6230.00]	AMP	5904.1	-83.01
528182	[NORTH_LOVNG3115.00]	AMP	7677.6	-83.32
528185	[N_LOVING 7345.00]	AMP	3867.5	-83.40
528223	[CHINA_DRAW 7345.00]	AMP	3246.7	-83.36
528226	[HOPI_SUB 3115.00]	AMP	5883.1	-79.31
528348	[BUCKEYE_TP 3115.00]	AMP	8062.2	-81.68
528355	[MADDOX 3115.00]	AMP	24499.7	-84.73
528394	[QUAHADA 3115.00]	AMP	7831.4	-76.68
528568	[MONUMNT_TP 3115.00]	AMP	9617.1	-76.74
528604	[ANDREWS 6230.00]	AMP	6318.3	-84.47
560022	[CRAWFISH_DR 345.00]	AMP	15101.0	-85.88
560059	[G1579&G1580T230.00]	AMP	8815.6	-83.44
583960	[G14034G14035115.00]	AMP	5983.4	-83.05
584620	[GEN-2015-020115.00]	AMP	9235.1	-81.71
584940	[GEN-2015-056345.00]	AMP	7392.7	-84.98
587470	[GEN-2016-069115.00]	AMP	6121.6	-83.17
588000	[GEN-2016-123345.00]	AMP	8919.6	-85.16
599960	[EPTNP-D6 230.00]	AMP	7897.1	-83.65

PSS(R)E-33.7.0 ASCC SHORT CIRCUIT CURRENTS THU, AUG 29 2019 17:47  
 2016 MDWG FINAL WITH 2015 SERIES MMWG FINAL  
 MDWG 2026S WITH MMWG 2026S

OPTIONS USED:

- SET PRE-FAULT VOLTAGE ON ALL BUSES TO 1.00 PU AT 0 PHASE SHIFT ANGLE
- SET SYNCHRONOUS/ASYNCHRONOUS MACHINE POWER OUTPUTS TO P=0.0, Q=0.0
- SET GENERATOR POSITIVE SEQUENCE REACTANCES TO ZSORCE
- SET TRANSFORMER TAP RATIOS=1.0 PU AND PHASE SHIFT ANGLES=0.0
- SET LINE CHARGING=0.0 IN +/-0 SEQUENCES
- SET LINE/FIXED/SWITCHED SHUNTS=0.0 AND TRANSFORMER MAGNETIZING ADMITTANCE=0.0 IN +/-0 SEQUENCES
- SET LOAD=0.0 IN +/- SEQUENCES
- DC LINES AND FACTS DEVICES BLOCKED
- IMPEDANCE CORRECTIONS APPLIED TO TRANSFORMER ZERO SEQUENCE IMPEDANCES

		THREE PHASE FAULT	
X-----	BUS -----X	/I+/ AN(I+)	
90081	[G19008S-TAP 115.00]	AMP	9415.0 -82.69
90082	[G19008S-HV 115.00]	AMP	9415.0 -82.69
90086	[G19008S-TAP 115.00]	AMP	4082.7 -78.95
523961	[POTTER_CO 7345.00]	AMP	11724.8 -86.04
524768	[PLSNT_HILL 3115.00]	AMP	9921.5 -80.81
524770	[PLSNT_HILL 6230.00]	AMP	6130.3 -81.78
524797	[PERIMETER 3115.00]	AMP	6321.9 -78.46
524863	[FE-CHZPLT 3115.00]	AMP	7624.8 -78.63
524874	[OASIS 3115.00]	AMP	9527.3 -81.70
524875	[OASIS 6230.00]	AMP	7348.0 -81.91
524885	[SN_JUAN_TAP6230.00]	AMP	4678.2 -83.04
524889	[SN_JUAN_WND6230.00]	AMP	4486.0 -83.11
524909	[ROSEVELT_N 6230.00]	AMP	8866.6 -82.04
524911	[ROSEVELT_S 6230.00]	AMP	8866.6 -82.04
524915	[SW_4K33 6230.00]	AMP	8866.6 -82.04
524924	[PORTALES 3115.00]	AMP	7214.2 -78.81
525543	[TOLK_TAP 6230.00]	AMP	29413.9 -85.80

Southwest Power Pool, Inc.

525549	[TOLK 7345.00]	AMP	15257.0	-86.39
527455	[RSWL_SLRCOL3115.00]	AMP	6205.3	-83.20
527470	[CHVS_SLRCOL3115.00]	AMP	5939.2	-83.09
527482	[CHAVES_CNTY3115.00]	AMP	6266.5	-83.23
527483	[CHAVES_CNTY6230.00]	AMP	4052.6	-82.17
527501	[URTON 3115.00]	AMP	5305.6	-81.45
527508	[PRICE 3115.00]	AMP	4398.1	-80.65
527509	[PRICE_TAP 3115.00]	AMP	4927.8	-81.54
527522	[ROSWELL_CTY3115.00]	AMP	5040.9	-80.88
527529	[RIACBRSH_TP3115.00]	AMP	4900.0	-79.95
527541	[CAPITAN 3115.00]	AMP	4421.3	-80.34
527546	[SAMSON 3115.00]	AMP	5035.5	-80.86
527563	[ROSWLL_INT 269.000]	AMP	3529.1	-84.86
527564	[ROSWLL_INT 3115.00]	AMP	5259.1	-81.08
527597	[TWEEDY 3115.00]	AMP	4890.9	-80.50
527654	[RSVLT_CC_W 7345.00]	AMP	7196.2	-84.98
527655	[RSVLT_CC_E 7345.00]	AMP	8071.9	-85.07
527656	[CROSSROADS 7345.00]	AMP	9020.6	-85.18
527701	[ARTESIA 269.000]	AMP	3789.1	-85.48
527707	[ARTESIA 3115.00]	AMP	6386.6	-79.60
527710	[EAGLE_CREEK269.000]	AMP	2293.1	-86.28
527711	[EAGLE_CREEK3115.00]	AMP	6909.9	-79.85
527715	[NAVAJO_2TP 3115.00]	AMP	6605.4	-79.56
527717	[NAVAJO_2 3115.00]	AMP	6532.1	-79.49
527720	[NAVAJO_3 3115.00]	AMP	6569.5	-79.53
527733	[NAVAJO_1 269.000]	AMP	2150.5	-84.99
527736	[NAVAJO_5TP 3115.00]	AMP	6569.5	-79.53
527739	[NAVAJO_4 3115.00]	AMP	6555.2	-79.51
527743	[NAVAJO_5 3115.00]	AMP	6557.1	-79.52
527785	[ATOKA 269.000]	AMP	2334.1	-85.76
527786	[ATOKA 3115.00]	AMP	6648.8	-79.49
527793	[EDDY_STH 3115.00]	AMP	10356.3	-83.47
527798	[EDDY_NTH 3115.00]	AMP	10356.3	-83.47
527799	[EDDY_NORTH 6230.00]	AMP	7619.7	-83.76
527802	[EDDY_CNTY 7345.00]	AMP	5343.9	-84.18
527809	[CV-8_MILE 3115.00]	AMP	5111.5	-84.24
527811	[CV-KEWAN_TP3115.00]	AMP	2837.9	-80.13
527821	[CV-DAYTON +3115.00]	AMP	6568.6	-79.38
527822	[CV-TURKYTRK3115.00]	AMP	3324.9	-81.01
527864	[CUNNINHAM 3115.00]	AMP	24704.4	-83.86
527865	[CUNNIGHM_N 6230.00]	AMP	12424.3	-85.98
527867	[CUNNIGHM_S 6230.00]	AMP	12424.3	-85.98
527891	[HOBBS_INT 3115.00]	AMP	28067.8	-85.65
527894	[HOBBS_INT 6230.00]	AMP	13492.0	-86.33
527930	[PCA 3115.00]	AMP	10051.0	-79.60
527961	[POTASH_JCT 269.000]	AMP	8350.9	-85.79
527962	[POTASH_JCT 3115.00]	AMP	12825.7	-82.84
527963	[POTASH_JCT 6230.00]	AMP	6308.4	-83.70
527965	[KIOWA 7345.00]	AMP	4612.7	-83.71
527966	[KIOWA 3115.00]	AMP	12733.0	-82.98
527999	[INTREPDW_TP3115.00]	AMP	11042.4	-81.73
528003	[CV-DAGGR&IH269.000]	AMP	1619.5	-78.01
528025	[RDRUNNER 3115.00]	AMP	7863.8	-82.23
528027	[RDRUNNER 7345.00]	AMP	3340.9	-83.48
528070	[CV-AZMESA 3115.00]	AMP	6804.0	-79.29
528076	[CV-WALTCYN 3115.00]	AMP	4291.3	-76.81
528093	[7-RIVERS 269.000]	AMP	2357.3	-86.25
528094	[7-RIVERS 3115.00]	AMP	7581.1	-81.45
528095	[7-RIVERS 6230.00]	AMP	5492.5	-82.85
528109	[CV-LAKEWOOD3115.00]	AMP	6011.9	-79.01
528116	[CV-IRISHHL+3115.00]	AMP	6031.0	-78.87
528132	[OCOTILLO 3115.00]	AMP	5672.5	-73.65
528137	[N_CANAL 3115.00]	AMP	7716.8	-78.61
528151	[FIESTA 3115.00]	AMP	8578.9	-78.64
528159	[CARLSBAD 269.000]	AMP	4707.0	-85.35
528160	[CARLSBAD 3115.00]	AMP	9697.9	-79.34
528178	[PECOS 3115.00]	AMP	10123.2	-80.32
528179	[PECOS 6230.00]	AMP	5697.7	-83.13
528182	[NORTH_LOVNG3115.00]	AMP	7559.3	-83.42



528185	[N_LOVING 7345.00]	AMP	3781.6	-83.54
528223	[CHINA_DRAW 7345.00]	AMP	3185.8	-83.49
528226	[HOPI_SUB 3115.00]	AMP	5806.4	-79.42
528348	[BUCKEYE_TP 3115.00]	AMP	7963.4	-81.70
528355	[MADDOX 3115.00]	AMP	23809.4	-84.80
528394	[QUAHADA 3115.00]	AMP	7711.1	-76.80
528568	[MONUMNT_TP 3115.00]	AMP	9622.0	-78.90
528604	[ANDREWS 6230.00]	AMP	6068.0	-84.62
560022	[CRAWFISH_DR 345.00]	AMP	15280.9	-86.01
560059	[G1579&G1580T230.00]	AMP	8485.8	-83.55
583960	[G14034G14035115.00]	AMP	5939.2	-83.09
584620	[GEN-2015-020115.00]	AMP	9289.4	-81.66
584940	[GEN-2015-056345.00]	AMP	7365.7	-84.98
587470	[GEN-2016-069115.00]	AMP	6075.4	-83.21
588000	[GEN-2016-123345.00]	AMP	8880.5	-85.16
599960	[EPTNP-D6 230.00]	AMP	7619.7	-83.76

**GEN-2019-008S:**

PSS(R)E-33.7.0 ASCC SHORT CIRCUIT CURRENTS THU, AUG 29 2019 18:22  
 2016 MDWG FINAL WITH 2015 SERIES MMWG FINAL  
 MDWG 2018S WITH MMWG 2017S

OPTIONS USED:

- SET PRE-FAULT VOLTAGE ON ALL BUSES TO 1.00 PU AT 0 PHASE SHIFT ANGLE
- SET SYNCHRONOUS/ASYNCHRONOUS MACHINE POWER OUTPUTS TO P=0.0, Q=0.0
- SET GENERATOR POSITIVE SEQUENCE REACTANCES TO ZSORCE
- SET TRANSFORMER TAP RATIOS=1.0 PU AND PHASE SHIFT ANGLES=0.0
- SET LINE CHARGING=0.0 IN +/-0 SEQUENCES
- SET LINE/FIXED/SWITCHED SHUNTS=0.0 AND TRANSFORMER MAGNETIZING ADMITTANCE=0.0 IN +/-0 SEQUENCES
- SET LOAD=0.0 IN +/- SEQUENCES
- DC LINES AND FACTS DEVICES BLOCKED
- IMPEDANCE CORRECTIONS APPLIED TO TRANSFORMER ZERO SEQUENCE IMPEDANCES

X----- BUS -----X		THREE PHASE FAULT		
			/I+/ AN(I+)	
90081	[G19008S-TAP 115.00]	AMP	9574.4	-82.61
90082	[G19008S-HV 115.00]	AMP	4109.3	-78.89
90086	[G19008S-TAP 115.00]	AMP	4109.3	-78.89
523961	[POTTER_CO 7345.00]	AMP	10071.9	-86.24
524768	[PLSNT_HILL 3115.00]	AMP	9749.2	-80.88
524770	[PLSNT_HILL 6230.00]	AMP	6096.2	-81.76
524797	[PERIMETER 3115.00]	AMP	6287.3	-78.50
524863	[FE-CHZPLT 3115.00]	AMP	7568.3	-78.67
524874	[OASIS 3115.00]	AMP	9470.2	-81.75
524875	[OASIS 6230.00]	AMP	7325.7	-81.91
524885	[SN_JUAN_TAP6230.00]	AMP	4689.0	-83.02
524889	[SN_JUAN_WND6230.00]	AMP	4495.5	-83.09
524909	[ROSEVELT_N 6230.00]	AMP	8849.9	-82.04
524911	[ROSEVELT_S 6230.00]	AMP	8849.9	-82.04
524915	[SW_4K33 6230.00]	AMP	8849.9	-82.04
524924	[PORTALES 3115.00]	AMP	7181.0	-78.86
525543	[TOLK_TAP 6230.00]	AMP	29867.7	-85.87
525549	[TOLK 7345.00]	AMP	15267.3	-86.44
527455	[RSWL_SLRCOL3115.00]	AMP	6253.6	-83.16
527470	[CHVS_SLRCOL3115.00]	AMP	5983.4	-83.05
527482	[CHAVES_CNTY3115.00]	AMP	6315.7	-83.18
527483	[CHAVES_CNTY6230.00]	AMP	4091.5	-82.12
527501	[URTON 3115.00]	AMP	5337.4	-81.39
527508	[PRICE 3115.00]	AMP	4422.7	-80.61
527509	[PRICE_TAP 3115.00]	AMP	4958.8	-81.49
527522	[ROSWELL_CTY3115.00]	AMP	5063.7	-80.81
527534	[BRASHER_TP 3115.00]	AMP	5257.3	-80.98
527541	[CAPITAN 3115.00]	AMP	4445.8	-80.29
527546	[SAMSON 3115.00]	AMP	5067.0	-80.80
527563	[ROSWLL_INT 269.000]	AMP	3537.9	-84.85
527564	[ROSWLL_INT 3115.00]	AMP	5291.3	-81.02



Southwest Power Pool, Inc.

527597	[TWEEDY 3115.00]	AMP	4920.2	-80.44
527654	[RSVLT_CC_W 7345.00]	AMP	7220.0	-84.98
527655	[RSVLT_CC_E 7345.00]	AMP	8103.3	-85.06
527656	[CROSSROADS 7345.00]	AMP	9061.5	-85.17
527701	[ARTESIA 269.000]	AMP	3809.4	-85.47
527707	[ARTESIA 3115.00]	AMP	6483.1	-79.50
527710	[EAGLE_CREEK269.000]	AMP	2300.5	-86.28
527711	[EAGLE_CREEK3115.00]	AMP	7023.0	-79.74
527715	[NAVAJO_2TP 3115.00]	AMP	6708.6	-79.46
527717	[NAVAJO_2 3115.00]	AMP	6633.0	-79.38
527720	[NAVAJO_3 3115.00]	AMP	6671.6	-79.42
527733	[NAVAJO_1 269.000]	AMP	2157.1	-84.99
527736	[NAVAJO_5TP 3115.00]	AMP	6671.6	-79.42
527739	[NAVAJO_4 3115.00]	AMP	6656.9	-79.41
527743	[NAVAJO_5 3115.00]	AMP	6658.8	-79.41
527785	[ATOKA 269.000]	AMP	2341.8	-85.76
527786	[ATOKA 3115.00]	AMP	6754.3	-79.38
527793	[EDDY_STH 3115.00]	AMP	10608.0	-83.39
527798	[EDDY_NTH 3115.00]	AMP	10608.0	-83.39
527799	[EDDY_NORTH 6230.00]	AMP	7897.1	-83.65
527802	[EDDY_CNTY 7345.00]	AMP	5490.9	-84.09
527809	[CV-8_MILE 3115.00]	AMP	5172.1	-84.21
527811	[CV-KEWAN_TP3115.00]	AMP	2856.4	-80.09
527821	[CV-DAYTON +3115.00]	AMP	6671.3	-79.27
527822	[CV-TURKYTRK3115.00]	AMP	3350.3	-80.96
527864	[CUNNINHAM 3115.00]	AMP	25751.2	-83.85
527865	[CUNNIGHM_N 6230.00]	AMP	14966.0	-86.52
527867	[CUNNIGHM_S 6230.00]	AMP	14966.0	-86.52
527891	[HOBBS_INT 3115.00]	AMP	29349.6	-85.71
527894	[HOBBS_INT 6230.00]	AMP	15452.2	-86.53
527930	[PCA 3115.00]	AMP	10288.0	-79.43
527961	[POTASH_JCT 269.000]	AMP	8451.7	-85.77
527962	[POTASH_JCT 3115.00]	AMP	13230.2	-82.68
527963	[POTASH_JCT 6230.00]	AMP	6605.9	-83.60
527965	[KIOWA 7345.00]	AMP	4739.6	-83.55
527966	[KIOWA 3115.00]	AMP	13128.5	-82.82
527999	[INTREPDW_TP3115.00]	AMP	11286.2	-81.06
528003	[CV-DAGGR&IH269.000]	AMP	1623.4	-77.99
528025	[RDRUNNER 3115.00]	AMP	7958.5	-81.71
528027	[RDRUNNER 7345.00]	AMP	3404.8	-83.23
528070	[CV-AZMESA 3115.00]	AMP	6920.3	-79.17
528076	[CV-WALTCYN 3115.00]	AMP	4337.0	-76.71
528093	[7-RIVERS 269.000]	AMP	2365.6	-86.25
528094	[7-RIVERS 3115.00]	AMP	7726.6	-81.37
528095	[7-RIVERS 6230.00]	AMP	5658.1	-82.74
528109	[CV-LAKEWOOD3115.00]	AMP	6100.3	-78.90
528116	[CV-IRISHHL+3115.00]	AMP	6119.0	-78.76
528132	[OCOTILLO 3115.00]	AMP	5751.2	-73.48
528137	[N_CANAL 3115.00]	AMP	7865.5	-78.46
528151	[FIESTA 3115.00]	AMP	8760.3	-78.48
528159	[CARLSBAD 269.000]	AMP	4735.0	-85.34
528160	[CARLSBAD 3115.00]	AMP	9930.9	-79.17
528178	[PECOS 3115.00]	AMP	10381.7	-80.17
528179	[PECOS 6230.00]	AMP	5904.1	-83.01
528182	[NORTH_LOVNG3115.00]	AMP	7677.6	-83.32
528185	[N_LOVING 7345.00]	AMP	3867.5	-83.40
528223	[CHINA_DRAW 7345.00]	AMP	3246.7	-83.36
528226	[HOPI_SUB 3115.00]	AMP	5883.1	-79.31
528348	[BUCKEYE_TP 3115.00]	AMP	8062.2	-81.68
528355	[MADDOX 3115.00]	AMP	24499.7	-84.73
528394	[QUAHADA 3115.00]	AMP	7831.4	-76.68
528568	[MONUMNT_TP 3115.00]	AMP	9617.1	-76.74
528604	[ANDREWS 6230.00]	AMP	6318.3	-84.47
560022	[CRAWFISH_DR 345.00]	AMP	15101.0	-85.88
560059	[G1579&G1580T230.00]	AMP	8815.6	-83.44
583960	[G14034G14035115.00]	AMP	5983.4	-83.05
584620	[GEN-2015-020115.00]	AMP	9235.1	-81.71
584940	[GEN-2015-056345.00]	AMP	7392.7	-84.98
587470	[GEN-2016-069115.00]	AMP	6121.6	-83.17

Southwest Power Pool, Inc.

588000 [GEN-2016-123345.00] AMP 8919.6 -85.16  
 599960 [EPTNP-D6 230.00] AMP 7897.1 -83.65

PSS(R)E-33.7.0 ASCC SHORT CIRCUIT CURRENTS THU, AUG 29 2019 18:22  
 2016 MDWG FINAL WITH 2015 SERIES MMWG FINAL  
 MDWG 2026S WITH MMWG 2026S

OPTIONS USED:

- SET PRE-FAULT VOLTAGE ON ALL BUSES TO 1.00 PU AT 0 PHASE SHIFT ANGLE
- SET SYNCHRONOUS/ASYNCHRONOUS MACHINE POWER OUTPUTS TO P=0.0, Q=0.0
- SET GENERATOR POSITIVE SEQUENCE REACTANCES TO ZSORCE
- SET TRANSFORMER TAP RATIOS=1.0 PU AND PHASE SHIFT ANGLES=0.0
- SET LINE CHARGING=0.0 IN +/- /0 SEQUENCES
- SET LINE/FIXED/SWITCHED SHUNTS=0.0 AND TRANSFORMER MAGNETIZING ADMITTANCE=0.0 IN +/- /0 SEQUENCES
- SET LOAD=0.0 IN +/- SEQUENCES
- DC LINES AND FACTS DEVICES BLOCKED
- IMPEDANCE CORRECTIONS APPLIED TO TRANSFORMER ZERO SEQUENCE IMPEDANCES

		THREE PHASE FAULT	
X-----	BUS -----X	/I+/ AMP	AN(I+) ANGLE
90081	[G19008S-TAP 115.00]	9414.9	-82.69
90082	[G19008S-HV 115.00]	4082.8	-78.95
90086	[G19008S-TAP 115.00]	4082.8	-78.95
523961	[POTTER_CO 7345.00]	11724.8	-86.04
524768	[PLSNT_HILL 3115.00]	9921.5	-80.81
524770	[PLSNT_HILL 6230.00]	6130.3	-81.78
524797	[PERIMETER 3115.00]	6321.9	-78.46
524863	[FE-CHZPLT 3115.00]	7624.8	-78.63
524874	[OASIS 3115.00]	9527.3	-81.70
524875	[OASIS 6230.00]	7348.0	-81.91
524885	[SN_JUAN_TAP6230.00]	4678.2	-83.04
524889	[SN_JUAN_WND6230.00]	4486.0	-83.11
524909	[ROSEVELT_N 6230.00]	8866.6	-82.04
524911	[ROSEVELT_S 6230.00]	8866.6	-82.04
524915	[SW_4K33 6230.00]	8866.6	-82.04
524924	[PORTALES 3115.00]	7214.2	-78.81
525543	[TOLK_TAP 6230.00]	29413.9	-85.80
525549	[TOLK 7345.00]	15257.0	-86.39
527455	[RSWL_SLRCOL3115.00]	6205.3	-83.20
527470	[CHVS_SLRCOL3115.00]	5939.2	-83.09
527482	[CHAVES_CNTY3115.00]	6266.5	-83.23
527483	[CHAVES_CNTY6230.00]	4052.6	-82.17
527501	[URTON 3115.00]	5305.6	-81.45
527508	[PRICE 3115.00]	4398.1	-80.65
527509	[PRICE_TAP 3115.00]	4927.8	-81.54
527522	[ROSWELL_CTY3115.00]	5041.0	-80.88
527529	[RIACBRSH_TP3115.00]	4900.1	-79.95
527541	[CAPITAN 3115.00]	4421.3	-80.34
527546	[SAMSON 3115.00]	5035.6	-80.86
527563	[ROSWLL_INT 269.000]	3529.2	-84.86
527564	[ROSWLL_INT 3115.00]	5259.2	-81.08
527597	[TWEEDY 3115.00]	4891.0	-80.50
527654	[RSVLT_CC_W 7345.00]	7196.2	-84.98
527655	[RSVLT_CC_E 7345.00]	8071.9	-85.07
527656	[CROSSROADS 7345.00]	9020.6	-85.18
527701	[ARTESIA 269.000]	3789.1	-85.48
527707	[ARTESIA 3115.00]	6386.6	-79.60
527710	[EAGLE_CREEK269.000]	2293.1	-86.28
527711	[EAGLE_CREEK3115.00]	6909.9	-79.85
527715	[NAVAJO_2TP 3115.00]	6605.4	-79.56
527717	[NAVAJO_2 3115.00]	6532.1	-79.49
527720	[NAVAJO_3 3115.00]	6569.5	-79.53
527733	[NAVAJO_1 269.000]	2150.5	-84.99
527736	[NAVAJO_5TP 3115.00]	6569.5	-79.53
527739	[NAVAJO_4 3115.00]	6555.2	-79.51
527743	[NAVAJO_5 3115.00]	6557.1	-79.52
527785	[ATOKA 269.000]	2334.1	-85.76
527786	[ATOKA 3115.00]	6648.8	-79.49
527793	[EDDY_STH 3115.00]	10356.3	-83.47

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527798	[EDDY_NTH 3115.00]	AMP	10356.3	-83.47
527799	[EDDY_NORTH 6230.00]	AMP	7619.7	-83.76
527802	[EDDY_CNTY 7345.00]	AMP	5343.9	-84.18
527809	[CV-8_MILE 3115.00]	AMP	5111.5	-84.24
527811	[CV-KEWAN_TP3115.00]	AMP	2837.9	-80.13
527821	[CV-DAYTON +3115.00]	AMP	6568.6	-79.38
527822	[CV-TURKYTRK3115.00]	AMP	3324.9	-81.01
527864	[CUNNINHAM 3115.00]	AMP	24704.4	-83.86
527865	[CUNNIGHM_N 6230.00]	AMP	12424.3	-85.98
527867	[CUNNIGHM_S 6230.00]	AMP	12424.3	-85.98
527891	[HOBBS_INT 3115.00]	AMP	28067.8	-85.65
527894	[HOBBS_INT 6230.00]	AMP	13492.0	-86.33
527930	[PCA 3115.00]	AMP	10051.0	-79.60
527961	[POTASH_JCT 269.000]	AMP	8350.9	-85.79
527962	[POTASH_JCT 3115.00]	AMP	12825.7	-82.84
527963	[POTASH_JCT 6230.00]	AMP	6308.4	-83.70
527965	[KIOWA 7345.00]	AMP	4612.7	-83.71
527966	[KIOWA 3115.00]	AMP	12733.0	-82.98
527999	[INTREPDW_TP3115.00]	AMP	11042.4	-81.73
528003	[CV-DAGGR&IH269.000]	AMP	1619.5	-78.01
528025	[RDRUNNER 3115.00]	AMP	7863.8	-82.23
528027	[RDRUNNER 7345.00]	AMP	3340.9	-83.48
528070	[CV-AZMESA 3115.00]	AMP	6804.0	-79.29
528076	[CV-WALTCYN 3115.00]	AMP	4291.4	-76.81
528093	[7-RIVERS 269.000]	AMP	2357.3	-86.25
528094	[7-RIVERS 3115.00]	AMP	7581.1	-81.45
528095	[7-RIVERS 6230.00]	AMP	5492.5	-82.85
528109	[CV-LAKEWOOD3115.00]	AMP	6011.9	-79.01
528116	[CV-IRISHHL+3115.00]	AMP	6031.0	-78.87
528132	[OCOTILLO 3115.00]	AMP	5672.5	-73.65
528137	[N_CANAL 3115.00]	AMP	7716.8	-78.61
528151	[FIESTA 3115.00]	AMP	8578.9	-78.64
528159	[CARLSBAD 269.000]	AMP	4707.0	-85.35
528160	[CARLSBAD 3115.00]	AMP	9697.9	-79.34
528178	[PECOS 3115.00]	AMP	10123.2	-80.32
528179	[PECOS 6230.00]	AMP	5697.7	-83.13
528182	[NORTH_LOVNG3115.00]	AMP	7559.3	-83.42
528185	[N_LOVING 7345.00]	AMP	3781.6	-83.54
528223	[CHINA_DRAW 7345.00]	AMP	3185.8	-83.49
528226	[HOPI_SUB 3115.00]	AMP	5806.4	-79.42
528348	[BUCKEYE_TP 3115.00]	AMP	7963.4	-81.70
528355	[MADDOX 3115.00]	AMP	23809.4	-84.80
528394	[QUAHADA 3115.00]	AMP	7711.1	-76.80
528568	[MONUMNT_TP 3115.00]	AMP	9622.0	-78.90
528604	[ANDREWS 6230.00]	AMP	6068.0	-84.62
560022	[CRAWFISH_DR 345.00]	AMP	15280.9	-86.01
560059	[G1579&G1580T230.00]	AMP	8485.8	-83.55
583960	[G14034G14035115.00]	AMP	5939.2	-83.09
584620	[GEN-2015-020115.00]	AMP	9289.4	-81.66
584940	[GEN-2015-056345.00]	AMP	7365.7	-84.98
587470	[GEN-2016-069115.00]	AMP	6075.4	-83.21
588000	[GEN-2016-123345.00]	AMP	8880.5	-85.16
599960	[EPTNP-D6 230.00]	AMP	7619.7	-83.76

**GEN-2019-043:**

PSS(R)E-33.7.0 ASCC SHORT CIRCUIT CURRENTS THU, AUG 29 2019 17:48  
 2016 MDWG FINAL WITH 2015 SERIES MMWG FINAL  
 MDWG 2018S WITH MMWG 2017S

OPTIONS USED:

- SET PRE-FAULT VOLTAGE ON ALL BUSES TO 1.00 PU AT 0 PHASE SHIFT ANGLE
- SET SYNCHRONOUS/ASYNCHRONOUS MACHINE POWER OUTPUTS TO P=0.0, Q=0.0
- SET GENERATOR POSITIVE SEQUENCE REACTANCES TO ZSORCE
- SET TRANSFORMER TAP RATIOS=1.0 PU AND PHASE SHIFT ANGLES=0.0
- SET LINE CHARGING=0.0 IN +/-0 SEQUENCES
- SET LINE/FIXED/SWITCHED SHUNTS=0.0 AND TRANSFORMER MAGNETIZING ADMITTANCE=0.0 IN +/-0 SEQUENCES

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- SET LOAD=0.0 IN +/- SEQUENCES
- DC LINES AND FACTS DEVICES BLOCKED
- IMPEDANCE CORRECTIONS APPLIED TO TRANSFORMER ZERO SEQUENCE IMPEDANCES

X----- BUS -----X		THREE PHASE FAULT	
		/I+/ AMP	AN(I+) -
90431	[G19043P-TAP 230.00]	2764.1	-83.33
90432	[G19043P-HV 230.00]	2764.1	-83.33
585340	[GEN-2015-098230.00]	3715.9	-83.46
652200	[GLENDDIVE7 115.00]	6691.9	-82.09
652213	[FALLON 8 69.000]	1031.0	-85.98
652394	[TERRY TAP 115.00]	2741.3	-77.23
652395	[SHIRLEY TAP 115.00]	2868.7	-79.18
652401	[CIRCLE 7 115.00]	2149.9	-69.92
652403	[DAWSONC4 230.00]	4017.4	-83.52
652404	[DAWSONC7 115.00]	7389.4	-82.50
652405	[FTPECK 4 230.00]	2091.3	-84.01
652406	[FTPECK 7 115.00]	2939.4	-81.67
652407	[FALLON 7 115.00]	3023.6	-77.00
652409	[WOLFPT 7 115.00]	2995.1	-77.95
652411	[MI CTYE4 230.00]	2632.8	-83.17
652412	[MI CTYE7 115.00]	3637.2	-83.46
652413	[MEDORA 4 230.00]	4965.1	-84.10
652425	[BELFELD4 230.00]	8971.1	-85.41
652451	[RICHLND7 115.00]	5379.0	-77.16
652616	[MINGUSVILLE4230.00]	3792.8	-83.75
659263	[LTLMISS7 115.00]	1785.9	-87.13
659265	[LTLMISS4 230.00]	3127.3	-83.53
659266	[RHAME 4 230.00]	3805.7	-83.97
659267	[RHAME 7 115.00]	3017.8	-86.74
659339	[BOWMAN 4 230.00]	3338.3	-83.73
659340	[BOWMAN 7 115.00]	3205.3	-81.11
659448	[DAGLUM 4230.00]	6086.8	-85.09
659450	[BRADYWND 4230.00]	3406.9	-85.35
659535	[BEAVERHILL 4230.00]	3792.8	-83.75
659536	[BEAVERHILL 7115.00]	3312.0	-86.26
659542	[REDWATER MC7115.00]	2149.9	-69.92
661004	[BAKER 4 230.00]	2965.8	-83.37
661005	[BAKER 7 115.00]	3283.6	-83.24
661032	[GLENDDCT7 115.00]	6090.6	-82.02
661033	[CABINCR7 115.00]	2980.7	-79.73
661034	[KPS14-BAK7 115.00]	3036.0	-81.04
661047	[HETINGR4 230.00]	3123.7	-83.55
661056	[LEWIS 7 115.00]	5422.1	-78.04
910007	[G12_012IST 115.00]	2347.5	-73.67

PSS(R)E-33.7.0 ASCC SHORT CIRCUIT CURRENTS THU, AUG 29 2019 17:48  
 2016 MDWG FINAL WITH 2015 SERIES MMWG FINAL  
 MDWG 2026S WITH MMWG 2026S

OPTIONS USED:

- SET PRE-FAULT VOLTAGE ON ALL BUSES TO 1.00 PU AT 0 PHASE SHIFT ANGLE
- SET SYNCHRONOUS/ASYNCHRONOUS MACHINE POWER OUTPUTS TO P=0.0, Q=0.0
- SET GENERATOR POSITIVE SEQUENCE REACTANCES TO ZSORCE
- SET TRANSFORMER TAP RATIOS=1.0 PU AND PHASE SHIFT ANGLES=0.0
- SET LINE CHARGING=0.0 IN +/- /0 SEQUENCES
- SET LINE/FIXED/SWITCHED SHUNTS=0.0 AND TRANSFORMER MAGNETIZING ADMITTANCE=0.0 IN +/- /0 SEQUENCES
- SET LOAD=0.0 IN +/- SEQUENCES
- DC LINES AND FACTS DEVICES BLOCKED
- IMPEDANCE CORRECTIONS APPLIED TO TRANSFORMER ZERO SEQUENCE IMPEDANCES

X----- BUS -----X		THREE PHASE FAULT	
		/I+/ AMP	AN(I+) -
90431	[G19043P-TAP 230.00]	2765.0	-83.33
90432	[G19043P-HV 230.00]	2765.0	-83.33
585340	[GEN-2015-098230.00]	3718.1	-83.45
652111	[COALHILL4 230.00]	2095.4	-83.96
652200	[GLENDDIVE7 115.00]	6693.8	-82.08
652213	[FALLON 8 69.000]	1031.1	-85.98



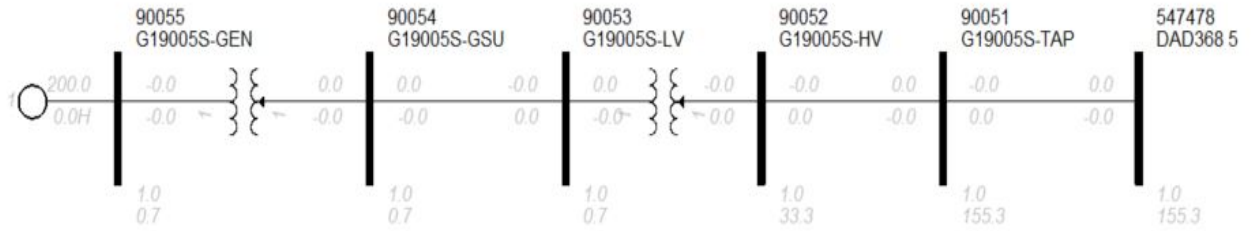


Figure 2: GEN-2019-005 Secondary Point of Interconnection

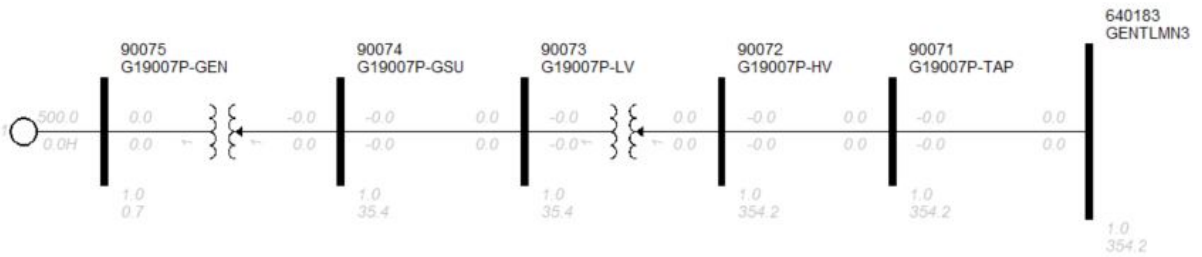


Figure 3: GEN-2019-007 Primary Point of Interconnection

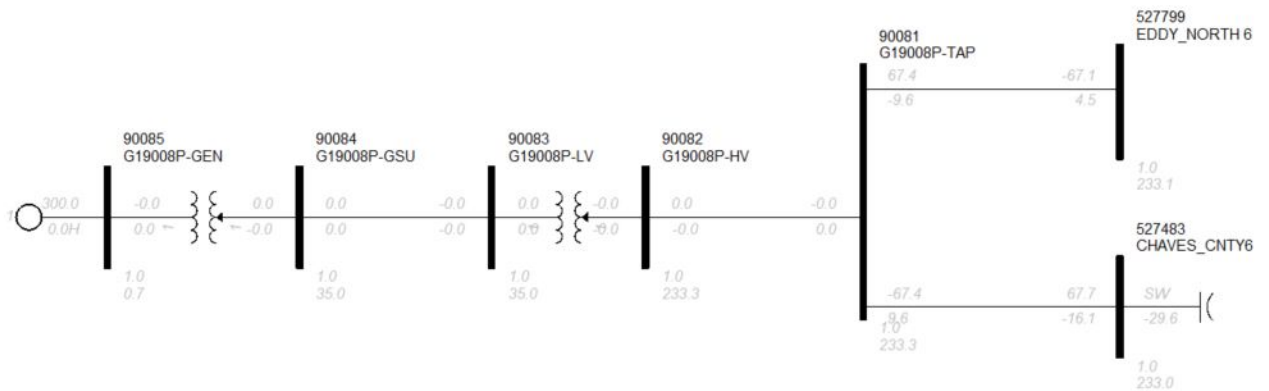


Figure 4: GEN-2019-008 Primary Point of Interconnection

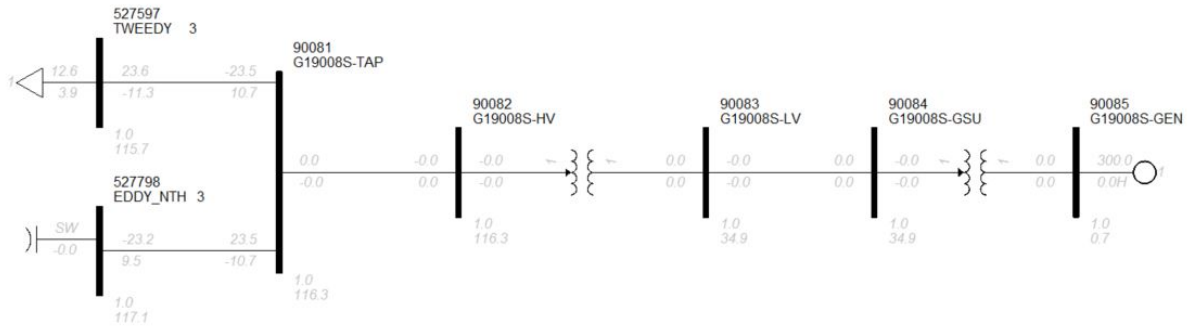


Figure 5: GEN-2019-008 Secondary Point of Interconnection

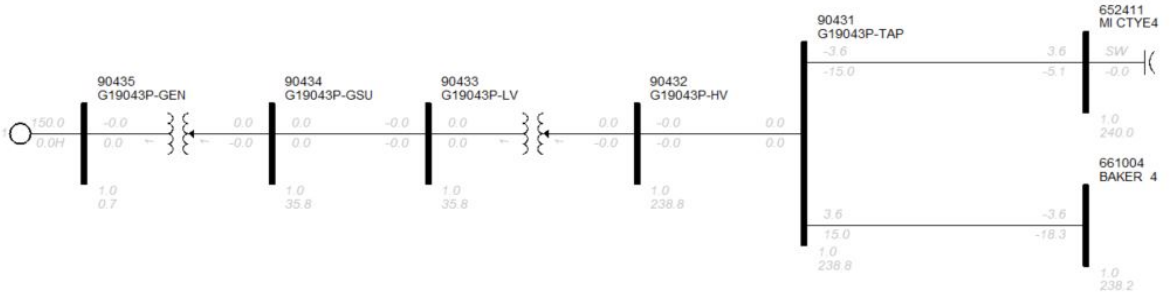


Figure 6: GEN-2019-043 Primary Point of Interconnection

*APPENDIX F*  
ERIS Constraints



Group	Season	Source	Monitored Element	TDF	Rating	Contingency Loading (%)	Contingent Element
06ALL	17WP	G19_008 P	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.25768	314.4	142.2404	'3297'
06ALL	18G	G19_008 P	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.25598	317.3	153.0709	'3297'
06ALL	18SP	G19_008 P	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.2548	316.3	140.4806	'3297'
06ALL	17WP	G19_008 P	'EDDY_NORTH 6230.00 - G19008P-TAP 230.00 230KV CKT 1'	0.58275	328.9	105.4196	'3258'
06ALL	21SP	G19_008 P	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.20645	315.4	111.8057	'3297'
06ALL	21WP	G19_008 P	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.2052	318.7	102.9055	'3297'
06ALL	17WP	G19_008 P	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.26007	314.4	147.9711	'3585'
06ALL	18G	G19_008 P	'EDDY_NORTH 6230.00 - G19008P-TAP 230.00 230KV CKT 1'	0.58271	318.7	113.465	'3258'
06ALL	18G	G19_008 P	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.25789	317.3	159.3971	'3585'
06ALL	18SP	G19_008 P	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.25725	316.3	149.4072	'3585'
06ALL	17WP	G19_008 P	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.26022	314.4	145.9179	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'
06ALL	18G	G19_008 P	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.25843	317.3	156.4857	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'
06ALL	18SP	G19_008 P	'EDDY_NORTH 6230.00 - G19008P-TAP 230.00 230KV CKT 1'	0.58229	318.6	104.704	'3258'
06ALL	21L	G19_008 P	'EDDY_NORTH 6230.00 - G19008P-TAP 230.00 230KV CKT 1'	0.58095	317.9	128.4948	'3258'
06ALL	18SP	G19_008 P	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.25737	316.3	143.4116	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'
06ALL	21L	G19_008 P	'CUNNINGHAM STATION - EDDY_NORTH 6230.00 230KV CKT 1'	0.20021	319	102.9665	'3585'
06ALL	21SP	G19_008 P	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.20987	315.4	117.3624	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'
06ALL	21WP	G19_008 P	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.20832	318.7	110.3847	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'
06ALL	21SP	G19_008 P	'EDDY_NORTH 6230.00 - G19008P-TAP 230.00 230KV CKT 1'	0.5812	318.2	102.9101	'3258'
06ALL	18G	G19_008 P	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.43224	317.3	101.0312	'EDDY_NORTH 6230.00 - G19008P-TAP 230.00 230KV CKT 1'
06ALL	21L	G19_008 P	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.42411	315.7	114.3595	'EDDY_NORTH 6230.00 - G19008P-TAP 230.00 230KV CKT 1'
06ALL	21WP	G19_008 P	'EDDY_NORTH 6230.00 - G19008P-TAP 230.00 230KV CKT 1'	0.58116	329	104.1483	'3258'
06ALL	17WP	G19_008 P	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.2596	318.2	147.0396	'3585'
06ALL	17WP	G19_008 P	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.26002	318.2	144.8479	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'
06ALL	17WP	G19_008 P	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.25724	318.2	141.0974	'3297'
06ALL	17WP	G19_008 P	'EDDY_NORTH 6230.00 - G19008P-TAP 230.00 230KV CKT 1'	0.58275	329	105.6915	'3258'
06ALL	18G	G19_008 P	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.25732	318.3	159.7851	'3585'
06ALL	18G	G19_008 P	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.25818	318.3	156.6302	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'
06ALL	18G	G19_008 P	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.25548	318.3	153.1712	'3297'
06ALL	18G	G19_008 P	'EDDY_NORTH 6230.00 - G19008P-TAP 230.00 230KV CKT 1'	0.58271	318.6	113.6576	'3258'
06ALL	18G	G19_008 P	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.43203	318.3	100.7568	'EDDY_NORTH 6230.00 - G19008P-TAP 230.00 230KV CKT 1'
06ALL	18SP	G19_008 P	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.25683	318.7	149.1839	'3585'
06ALL	18SP	G19_008 P	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.25719	318.7	143.005	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'
06ALL	18SP	G19_008 P	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.2544	318.7	139.9498	'3297'
06ALL	18SP	G19_008 P	'EDDY_NORTH 6230.00 - G19008P-TAP 230.00 230KV CKT 1'	0.5823	318.6	105.0188	'3258'
06ALL	21L	G19_008 P	'EDDY_NORTH 6230.00 - G19008P-TAP 230.00 230KV CKT 1'	0.58094	318.1	128.7589	'3258'
06ALL	21L	G19_008 P	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.42381	318.2	113.0556	'EDDY_NORTH 6230.00 - G19008P-TAP 230.00 230KV CKT 1'
06ALL	21L	G19_008 P	'CUNNINGHAM STATION - EDDY_NORTH 6230.00 230KV CKT 1'	0.2007	318.9	104.0169	'3585'
06ALL	21SP	G19_008 P	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.20928	318.5	116.6041	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'
06ALL	21SP	G19_008 P	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.20525	318.5	110.4474	'3297'
06ALL	21SP	G19_008 P	'EDDY_NORTH 6230.00 - G19008P-TAP 230.00 230KV CKT 1'	0.58119	318.7	103.1243	'3258'
06ALL	21WP	G19_008 P	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.20759	318.4	111.582	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'
06ALL	21WP	G19_008 P	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.20381	318.4	103.7509	'3297'
06ALL	21WP	G19_008 P	'EDDY_NORTH 6230.00 - G19008P-TAP 230.00 230KV CKT 1'	0.58115	329	104.2082	'3258'
09ALL	17WP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08417	716.3	122.2651	'5006'
09ALL	17WP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08417	716.3	122.2651	'5002'
09ALL	17WP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08417	716.3	122.2651	'4335'
09ALL	17WP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08417	716.3	122.2651	'4336'
09ALL	17WP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08417	716.3	122.2512	'FTTHOM2-LNX3345.00 - GRPRAR2-LNX3345.00 345KV CKT 1'
09ALL	17WP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08417	716.3	122.2512	'GRPRAR2-LNX3345.00 - YANKTON 345KV CKT Z'
09ALL	17WP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08417	716.3	121.3856	'4316'
09ALL	17WP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08418	716.3	121.3723	'4422'
09ALL	18G	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08483	716.6	118.9946	'5002'
09ALL	18G	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08483	716.6	118.9946	'5006'
09ALL	18G	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08484	716.6	118.9953	'4335'
09ALL	18G	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08484	716.6	118.9953	'4336'
09ALL	18G	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08483	716.6	118.9946	'GRPRAR2-LNX3345.00 - YANKTON 345KV CKT Z'
09ALL	18G	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08483	716.6	118.9946	'FTTHOM2-LNX3345.00 - GRPRAR2-LNX3345.00 345KV CKT 1'
09ALL	18G	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08483	716.6	118.2968	'4316'
09ALL	18G	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08485	716.6	118.2843	'4422'
09ALL	18SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08159	713.1	123.0255	'5006'
09ALL	18SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08159	713.1	123.0255	'5002'
09ALL	18SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08159	713.1	123.0255	'4335'
09ALL	18SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08159	713.1	123.0255	'4336'
09ALL	18SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08159	713.1	123.0255	'GRPRAR2-LNX3345.00 - YANKTON 345KV CKT Z'
09ALL	18SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08159	713.1	123.0255	'FTTHOM2-LNX3345.00 - GRPRAR2-LNX3345.00 345KV CKT 1'
09ALL	18SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08159	713.1	122.731	'4316'
09ALL	18SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.0816	713.1	122.6897	'4422'
09ALL	18SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.07341	713.1	112.3131	'2068'
09ALL	18SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.06365	713.1	110.521	'2051'
09ALL	18SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.0706	713.1	111.2186	'2067'
09ALL	18SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.06266	713.1	108.1097	'4322'
09ALL	18SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.05478	713.1	104.3879	'GERALD GENTLEMAN STATION - SWEETWATER 345KV CKT 1'
09ALL	18SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.04474	713.1	102.2956	'2064'
09ALL	18SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.04914	713.1	102.1554	'GERALD GENTLEMAN STATION - SWEETWATER 345KV CKT 2'
09ALL	18SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.05058	713.1	102.018	'2069'
09ALL	18SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.03119	713.1	101.1212	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'
09ALL	18SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.04389	713.1	101.2824	'3847'
09ALL	18SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.04389	713.1	101.2824	'3849'
09ALL	18SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.04389	713.1	101.2824	'3772'
09ALL	21L	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.0853	719.5	115.3231	'4335'
09ALL	21L	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.0853	719.5	115.3231	'4336'
09ALL	21L	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.0853	719.5	115.3231	'5006'
09ALL	21L	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.0853	719.5	115.3231	'5002'
09ALL	21L	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.0853	719.5	115.3231	'GRPRAR2-LNX3345.00 - YANKTON 345KV CKT Z'
09ALL	21L	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.0853	719.5	115.3231	'FTTHOM2-LNX3345.00 - GRPRAR2-LNX3345.00 345KV CKT 1'
09ALL	21L	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08532	719.5	114.3238	'4422'
09ALL	21L	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.0853	719.5	114.3224	'4316'
09ALL	21SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.0805	715.4	126.286	'5002'
09ALL	21SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.0805	715.4	126.286	'5006'
09ALL	21SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08051	715.4	126.2867	'4335'
09ALL	21SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08051	715.4	126.2867	'4336'
09ALL	21SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.0805	715.4	126.286	'FTTHOM2-LNX3345.00 - GRPRAR2-LNX3345.00 345KV CKT 1'
09ALL	21SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.0805	715.4	126.286	'GRPRAR2-LNX3345.00 - YANKTON 345KV CKT Z'
09ALL	21SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.0805	715.4	125.9365	'4316'
09ALL	21SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08052	715.4	125.896	'4422'
09ALL	21SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.07163	715.4	115.6856	'2068'

09ALL	21SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.06886	715.4	114.4856	'2067'
09ALL	21SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.06195	715.4	112.8564	'2051'
09ALL	21SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.06105	715.4	111.0742	'4322'
09ALL	21SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.05319	715.4	106.8766	'GERALD GENTLEMAN STATION - SWEETWATER 345KV CKT 1'
09ALL	21SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.04763	715.4	104.4052	'GERALD GENTLEMAN STATION - SWEETWATER 345KV CKT 2'
09ALL	21SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.04902	715.4	104.3626	'2069'
09ALL	21SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.04327	715.4	103.8489	'2064'
09ALL	21SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.04242	715.4	102.7831	'3847'
09ALL	21SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.04242	715.4	102.7831	'3849'
09ALL	21SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.04242	715.4	102.7831	'3772'
09ALL	21WP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08137	718.3	126.3657	'5006'
09ALL	21WP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08137	718.3	126.3657	'5002'
09ALL	21WP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08137	718.3	126.3657	'4336'
09ALL	21WP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08137	718.3	126.3657	'4335'
09ALL	21WP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08137	718.3	126.3518	'GRPRAR2-LNX3345.00 - YANKTON 345KV CKT Z'
09ALL	21WP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08137	718.3	126.3518	'FTTHOM2-LNX3345.00 - GRPRAR2-LNX3345.00 345KV CKT 1'
09ALL	21WP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08137	718.3	125.4051	'4316'
09ALL	21WP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08138	718.3	125.3919	'4422'
09ALL	26SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08078	715.3	124.8973	'5006'
09ALL	26SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08078	715.3	124.8973	'5002'
09ALL	26SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08079	715.3	124.8979	'4336'
09ALL	26SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08079	715.3	124.8979	'4335'
09ALL	26SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08078	715.3	124.8973	'FTTHOM2-LNX3345.00 - GRPRAR2-LNX3345.00 345KV CKT 1'
09ALL	26SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08078	715.3	124.8973	'GRPRAR2-LNX3345.00 - YANKTON 345KV CKT Z'
09ALL	26SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.08078	715.3	124.5617	'4316'
09ALL	26SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.0808	715.3	124.5352	'4422'
09ALL	26SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.06225	715.3	112.0963	'2051'
09ALL	26SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.07187	715.3	113.7614	'2068'
09ALL	26SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.0691	715.3	112.5751	'2067'
09ALL	26SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.06125	715.3	109.2304	'4322'
09ALL	26SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.05342	715.3	105.7472	'GERALD GENTLEMAN STATION - SWEETWATER 345KV CKT 1'
09ALL	26SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.04349	715.3	103.3475	'2064'
09ALL	26SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.04784	715.3	103.358	'GERALD GENTLEMAN STATION - SWEETWATER 345KV CKT 2'
09ALL	26SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.04923	715.3	103.2035	'2069'
09ALL	26SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.03004	715.3	101.946	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'
09ALL	26SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.04265	715.3	102.2823	'3849'
09ALL	26SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.04265	715.3	102.2823	'3847'
09ALL	26SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT Z'	0.04265	715.3	102.2823	'3772'
09ALL	17WP	G19_007 P	'G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	0.79365	272.3	145.7308	System Intact
09ALL	18G	G19_007 P	'G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	0.79365	272.3	145.7308	System Intact
09ALL	18SP	G19_007 P	'G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	0.79365	272.3	145.7308	System Intact
09ALL	21L	G19_007 P	'G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	0.79365	272.3	145.7308	System Intact
09ALL	21SP	G19_007 P	'G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	0.79365	272.3	145.7308	System Intact
09ALL	21WP	G19_007 P	'G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	0.79365	272.3	145.7308	System Intact
09ALL	26SP	G19_007 P	'G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	0.79365	272.3	145.7308	System Intact
09ALL	17WP	G19_007 P	'G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	0.79365	272.3	145.7308	System Intact
09ALL	18G	G19_007 P	'G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	0.79365	272.3	145.7308	System Intact
09ALL	18SP	G19_007 P	'G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	0.79365	272.3	145.7308	System Intact
09ALL	21L	G19_007 P	'G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	0.79365	272.3	145.7308	System Intact
09ALL	21SP	G19_007 P	'G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	0.79365	272.3	145.7308	System Intact
09ALL	21WP	G19_007 P	'G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	0.79365	272.3	145.7308	System Intact
09ALL	26SP	G19_007 P	'G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	0.79365	272.3	145.7308	System Intact
06ALL	17WP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.33556	731.7	122.3682	'3258'
06ALL	17WP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.26797	731.7	117.3419	'G16171_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1'
06ALL	17WP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.24351	731.7	113.8654	'TOLK STATION (ABXNL844501) 345/230/13.2KV TRANSFORMER CKT 1'
06ALL	17WP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.24351	731.7	113.8654	'3459'
06ALL	17WP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.26797	731.7	115.1416	'G16171_T 230.00 - HOBBS INTERCHANGE 230KV CKT 1'
06ALL	17WP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.23627	731.7	112.6392	'2977'
06ALL	17WP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.23586	731.7	111.8024	'CV-8_MILE 3115.00 - EDDY COUNTY INTERCHANGE 115KV CKT 1'
06ALL	17WP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.23616	731.7	111.596	'2976'
06ALL	17WP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.23587	731.7	111.5568	'3616'
06ALL	17WP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.23586	731.7	111.529	'CV-LUSK_TP 3115.00 - PCA INTERCHANGE 115KV CKT 1'
06ALL	17WP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.25002	731.7	111.7269	'3235'
06ALL	17WP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.24487	731.7	111.4064	'NEEDMORE 230.00 - TOLK STATION WEST 230KV CKT 1'
06ALL	17WP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.24292	731.7	111.1488	'3624'
06ALL	17WP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.23586	731.7	110.709	'3189'
06ALL	17WP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.23586	731.7	110.6954	'3619'
06ALL	17WP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.23606	731.7	110.6489	'3050'
06ALL	17WP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.23586	731.7	110.545	'3133'
06ALL	17WP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.23586	731.7	110.545	'3586'
06ALL	17WP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.23586	731.7	110.545	'DCP_ZIA TP 3115.00 - QUAHADA 3115.00 115KV CKT 1'
06ALL	17WP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.23586	731.7	110.545	'3184'
06ALL	17WP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.23586	731.7	108.864	System Intact
06ALL	18G	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.33232	710.2	132.9057	'3258'
06ALL	18G	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.26547	710.2	126.266	'G16171_T 230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1'
06ALL	18G	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.26547	710.2	124.0131	'G16171_T 230.00 - HOBBS INTERCHANGE 230KV CKT 1'
06ALL	18G	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.23348	710.2	121.0707	'2977'
06ALL	18G	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.24145	710.2	121.0413	'NEEDMORE 230.00 - TOLK STATION WEST 230KV CKT 1'
06ALL	18G	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.23307	710.2	120.0959	'CV-8_MILE 3115.00 - EDDY COUNTY INTERCHANGE 115KV CKT 1'
06ALL	18G	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.24653	710.2	120.9883	'3235'
06ALL	18G	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.23307	710.2	119.8002	'3616'
06ALL	18G	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.23307	710.2	119.7298	'CV-LUSK_TP 3115.00 - PCA INTERCHANGE 115KV CKT 1'
06ALL	18G	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.23337	710.2	119.6298	'2976'
06ALL	18G	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.23995	710.2	119.9782	'3459'
06ALL	18G	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.23995	710.2	119.9782	'TOLK STATION (ABXNL844501) 345/230/13.2KV TRANSFORMER CKT 1'
06ALL	18G	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.23978	710.2	119.9147	'3624'
06ALL	18G	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.23307	710.2	119.0258	'3133'
06ALL	18G	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.23307	710.2	119.0258	'3586'
06ALL	18G	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.23307	710.2	119.0117	'3189'
06ALL	18G	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.2334	710.2	118.9693	'3151'
06ALL	18G	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.23307	710.2	118.9272	'3619'

06ALL	18G	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.23307	710.2	118.6878	'3184'
06ALL	18G	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.23307	710.2	118.6878	'DCP_ZIA TP 3115.00 - QUAHADA 3115.00 115KV CKT 1'
06ALL	18G	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.23307	710.2	117.0827	'System Intact'
06ALL	18SP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.33112	710.5	124.72	'3258'
06ALL	18SP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.263	710.5	117.9592	'G16171_T 230.00 - INK_BASIN 6230.00 230KV CKT 1'
06ALL	18SP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.23351	710.5	115.4051	'2977'
06ALL	18SP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.2405	710.5	115.8128	'3459'
06ALL	18SP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.2405	710.5	115.8128	'TOLK STATION (ABBXNL844501) 345/230/13.2KV TRANSFORMER CKT 1'
06ALL	18SP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.24759	710.5	115.141	'3235'
06ALL	18SP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.24034	710.5	114.5816	'3624'
06ALL	18SP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.263	710.5	115.8902	'G16171_T 230.00 - HOBBS INTERCHANGE 230KV CKT 1'
06ALL	18SP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.23338	710.5	114.0625	'2976'
06ALL	18SP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.2331	710.5	113.8958	'CV-8 MILE 3115.00 - EDDY COUNTY INTERCHANGE 115KV CKT 1'
06ALL	18SP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.2331	710.5	113.7832	'3616'
06ALL	18SP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.2331	710.5	113.544	'CV-LUSK_TP 3115.00 - PCA INTERCHANGE 115KV CKT 1'
06ALL	18SP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.24247	710.5	113.9115	'NEEDMORE 230.00 - TOLK STATION WEST 230KV CKT 1'
06ALL	18SP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.25671	710.5	114.6957	'INK_BASIN 6230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1'
06ALL	18SP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.2331	710.5	113.164	'3133'
06ALL	18SP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.2331	710.5	113.164	'3586'
06ALL	18SP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.2331	710.5	113.0373	'3619'
06ALL	18SP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.23311	710.5	112.8125	'3151'
06ALL	18SP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.2331	710.5	112.7558	'3189'
06ALL	18SP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.23401	710.5	112.6816	'3620'
06ALL	18SP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.2331	710.5	110.8417	'System Intact'
06ALL	21L	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.24543	714.9	134.3865	'3258'
06ALL	21L	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.17426	714.9	120.2935	'System Intact'
06ALL	21SP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.26453	714.1	117.7929	'3258'
06ALL	21SP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.21725	714.1	113.3	'3298'
06ALL	21SP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.21771	714.1	110.8687	'3299'
06ALL	21SP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.19058	714.1	107.1382	'System Intact'
06ALL	21WP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.26117	740.3	110.8674	'3258'
06ALL	21WP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.21285	740.3	107.8151	'3298'
06ALL	21WP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.21376	740.3	105.3395	'3299'
06ALL	21WP	G19_008 S	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'	0.18755	740.3	101.4541	'System Intact'
06ALL	18G	G19_008 S	'EDDY COUNTY INTERCHANGE - G19008S-TAP 115.00 115KV CKT 1'	0.6383	174.7	109.5535	'G19008S-TAP 115.00 - TWEEDY SUB 115KV CKT 1'
06ALL	18G	G19_008 S	'EDDY COUNTY INTERCHANGE - G19008S-TAP 115.00 115KV CKT 1'	0.6383	174.7	102.6274	'ROSWELL INTERCHANGE - TWEEDY SUB 115KV CKT 1'
06ALL	18SP	G19_008 S	'EDDY COUNTY INTERCHANGE - G19008S-TAP 115.00 115KV CKT 1'	0.6383	174.4	109.742	'G19008S-TAP 115.00 - TWEEDY SUB 115KV CKT 1'
06ALL	18SP	G19_008 S	'EDDY COUNTY INTERCHANGE - G19008S-TAP 115.00 115KV CKT 1'	0.6383	174.4	101.3131	'ROSWELL INTERCHANGE - TWEEDY SUB 115KV CKT 1'
06ALL	21L	G19_008 S	'EDDY COUNTY INTERCHANGE - G19008S-TAP 115.00 115KV CKT 1'	0.3845	174.3	106.2823	'3238'
06ALL	21L	G19_008 S	'EDDY COUNTY INTERCHANGE - G19008S-TAP 115.00 115KV CKT 1'	0.6383	174.3	109.6902	'G19008S-TAP 115.00 - TWEEDY SUB 115KV CKT 1'
06ALL	21L	G19_008 S	'EDDY COUNTY INTERCHANGE - G19008S-TAP 115.00 115KV CKT 1'	0.6383	174.3	107.0511	'ROSWELL INTERCHANGE - TWEEDY SUB 115KV CKT 1'
06ALL	21L	G19_008 S	'EDDY COUNTY INTERCHANGE - G19008S-TAP 115.00 115KV CKT 1'	0.35419	174.3	100.7212	'3258'
06ALL	21SP	G19_008 S	'EDDY COUNTY INTERCHANGE - G19008S-TAP 115.00 115KV CKT 1'	0.6383	174.5	109.6791	'G19008S-TAP 115.00 - TWEEDY SUB 115KV CKT 1'
06ALL	21SP	G19_008 S	'EDDY COUNTY INTERCHANGE - G19008S-TAP 115.00 115KV CKT 1'	0.6383	174.5	101.0258	'ROSWELL INTERCHANGE - TWEEDY SUB 115KV CKT 1'
06ALL	26SP	G19_008 S	'EDDY COUNTY INTERCHANGE - G19008S-TAP 115.00 115KV CKT 1'	0.6383	174.4	109.742	'G19008S-TAP 115.00 - TWEEDY SUB 115KV CKT 1'
06ALL	18G	G19_008 S	'G19008S-TAP 115.00 - TWEEDY SUB 115KV CKT 1'	0.6383	174.6	109.6163	'EDDY COUNTY INTERCHANGE - G19008S-TAP 115.00 115KV CKT 1'
06ALL	18SP	G19_008 S	'G19008S-TAP 115.00 - TWEEDY SUB 115KV CKT 1'	0.6383	174.3	109.8049	'EDDY COUNTY INTERCHANGE - G19008S-TAP 115.00 115KV CKT 1'
06ALL	21L	G19_008 S	'G19008S-TAP 115.00 - TWEEDY SUB 115KV CKT 1'	0.6383	174.3	109.6902	'EDDY COUNTY INTERCHANGE - G19008S-TAP 115.00 115KV CKT 1'
06ALL	21SP	G19_008 S	'G19008S-TAP 115.00 - TWEEDY SUB 115KV CKT 1'	0.6383	174.4	109.742	'EDDY COUNTY INTERCHANGE - G19008S-TAP 115.00 115KV CKT 1'
06ALL	26SP	G19_008 S	'G19008S-TAP 115.00 - TWEEDY SUB 115KV CKT 1'	0.6383	174.4	109.742	'EDDY COUNTY INTERCHANGE - G19008S-TAP 115.00 115KV CKT 1'
06ALL	17WP	G19_008 S	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.26756	314.4	148.6858	'3585'
06ALL	17WP	G19_008 S	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.2687	314.4	146.7271	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'
06ALL	17WP	G19_008 S	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.26611	314.4	143.0449	'3297'
06ALL	18G	G19_008 S	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.26539	317.3	160.1062	'3585'
06ALL	18G	G19_008 S	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.2669	317.3	157.2865	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'
06ALL	18G	G19_008 S	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.26442	317.3	153.8689	'3297'
06ALL	18SP	G19_008 S	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.26439	316.3	150.0844	'3585'
06ALL	18SP	G19_008 S	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.26545	316.3	144.178	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'
06ALL	18SP	G19_008 S	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.26284	316.3	141.2431	'3297'
06ALL	21L	G19_008 S	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.20811	315.7	143.7545	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'
06ALL	21L	G19_008 S	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.20491	315.7	139.2376	'3297'
06ALL	21SP	G19_008 S	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.20728	315.4	118.2891	'3585'
06ALL	21SP	G19_008 S	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.21871	315.4	118.2032	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'
06ALL	21SP	G19_008 S	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.21519	315.4	112.637	'3297'
06ALL	21WP	G19_008 S	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.21716	318.7	111.2482	'CROSSROADS 7345.00 - TOLK STATION 345KV CKT 1'
06ALL	21WP	G19_008 S	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.20597	318.7	106.7119	'3585'
06ALL	21WP	G19_008 S	'OASIS INTERCHANGE - SAN JUAN MESA TAP 230KV CKT 1'	0.21394	318.7	103.791	'3297'
06ALL	17WP	G19_008 S	'ROSWELL INTERCHANGE - TWEEDY SUB 115KV CKT 1'	0.6383	159.2	112.2425	'EDDY COUNTY INTERCHANGE - G19008S-TAP 115.00 115KV CKT 1'
06ALL	18G	G19_008 S	'ROSWELL INTERCHANGE - TWEEDY SUB 115KV CKT 1'	0.6383	159.3	112.5487	'EDDY COUNTY INTERCHANGE - G19008S-TAP 115.00 115KV CKT 1'
06ALL	18SP	G19_008 S	'ROSWELL INTERCHANGE - TWEEDY SUB 115KV CKT 1'	0.6383	159	111.1258	'EDDY COUNTY INTERCHANGE - G19008S-TAP 115.00 115KV CKT 1'
06ALL	21L	G19_008 S	'ROSWELL INTERCHANGE - TWEEDY SUB 115KV CKT 1'	0.6383	158.9	117.4261	'EDDY COUNTY INTERCHANGE - G19008S-TAP 115.00 115KV CKT 1'
06ALL	21SP	G19_008 S	'ROSWELL INTERCHANGE - TWEEDY SUB 115KV CKT 1'	0.6383	159.1	110.8045	'EDDY COUNTY INTERCHANGE - G19008S-TAP 115.00 115KV CKT 1'
06ALL	21WP	G19_008 S	'ROSWELL INTERCHANGE - TWEEDY SUB 115KV CKT 1'	0.6383	159.2	111.9284	'EDDY COUNTY INTERCHANGE - G19008S-TAP 115.00 115KV CKT 1'
06ALL	26SP	G19_008 S	'ROSWELL INTERCHANGE - TWEEDY SUB 115KV CKT 1'	0.6383	159.1	109.5475	'EDDY COUNTY INTERCHANGE - G19008S-TAP 115.00 115KV CKT 1'

*APPENDIX G*  
NRIS Constraints



Group	Season	Source	Monitored Element	TDF	Rating	Contingency Loading (%)	Contingent Element
00NR	18SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT 2'	0.03949	717.6	100.4661	'ANTELOPE 3345.00 - YANKTON 345KV CKT 1'
00NR	18SP	G19_007 P	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	0.03949	720	100.1312	'ANTELOPE 3345.00 - YANKTON 345KV CKT 1'
00NR	21SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT 2'	0.04011	718.5	101.302	'ANTELOPE 3345.00 - YANKTON 345KV CKT 1'
00NR	21SP	G19_007 P	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	0.04011	720	101.091	'ANTELOPE 3345.00 - YANKTON 345KV CKT 1'
00NR	26SP	G19_007 P	'GR ISLD-LNX3345.00 - GR ISLD3 345.00 345KV CKT 2'	0.04247	717.8	100.1024	'ANTELOPE 3345.00 - YANKTON 345KV CKT 1'
00NR	17WP	G19_005 P	'BROOKLINE (BRKLT2) 345/161/13.2KV TRANSFORMER CKT 2'	0.49879	399.5	131.9044	'BROOKLINE (BRKLT1) 345/161/13.2KV TRANSFORMER CKT 1'
00NR	17WP	G19_005 P	'BROOKLINE (BRKLT2) 345/161/13.2KV TRANSFORMER CKT 2'	0.49879	400	131.8145	'BROOKLINE (BRKLT1) 345/161/13.2KV TRANSFORMER CKT 1'
00NR	17WP	G19_005 P	'NEOSHO - SUB 452 - RIVERTON 161KV CKT 1'	0.03326	221.7	103.5868	'4587'
00NR	17WP	G19_005 P	'NEOSHO - SUB 452 - RIVERTON 161KV CKT 1'	0.03324	221.7	103.134	'1200'
00NR	17WP	G19_005 P	'BROOKLINE (BRKLT1) 345/161/13.2KV TRANSFORMER CKT 1'	0.50047	459.5	115.0368	'BROOKLINE (BRKLT2) 345/161/13.2KV TRANSFORMER CKT 2'
00NR	17WP	G19_005 P	'BROOKLINE (BRKLT1) 345/161/13.2KV TRANSFORMER CKT 1'	0.50047	460	114.9987	'BROOKLINE (BRKLT2) 345/161/13.2KV TRANSFORMER CKT 2'
00NR	18SP	G19_005 P	'BROOKLINE (BRKLT1) 345/161/13.2KV TRANSFORMER CKT 1'	0.48817	397.6	122.7198	'BROOKLINE (BRKLT2) 345/161/13.2KV TRANSFORMER CKT 2'
00NR	18SP	G19_005 P	'BROOKLINE (BRKLT2) 345/161/13.2KV TRANSFORMER CKT 2'	0.48654	397.5	122.3165	'BROOKLINE (BRKLT1) 345/161/13.2KV TRANSFORMER CKT 1'
00NR	18SP	G19_005 P	'BROOKLINE (BRKLT1) 345/161/13.2KV TRANSFORMER CKT 1'	0.48817	399.3	122.1222	'BROOKLINE (BRKLT2) 345/161/13.2KV TRANSFORMER CKT 2'
00NR	18SP	G19_005 P	'BROOKLINE (BRKLT2) 345/161/13.2KV TRANSFORMER CKT 2'	0.48654	399.2	121.7204	'BROOKLINE (BRKLT1) 345/161/13.2KV TRANSFORMER CKT 1'
00NR	21WP	G19_005 P	'SUB 73 - BOLIVAR BURNS (BOL-BURN) 161/69/12.5KV TRANSFORMER CKT 1'	0.04055	72.6	100.7025	'2829'
00NR	21WP	G19_005 P	'SUB 73 - BOLIVAR BURNS (BOL-BURN) 161/69/12.5KV TRANSFORMER CKT 1'	0.04055	72.6	100.7025	'2831'
00NR	21WP	G19_005 P	'SUB 73 - BOLIVAR BURNS (BOL-BURN) 161/69/12.5KV TRANSFORMER CKT 1'	0.04055	72.6	100.7025	'2833'
00NR	21WP	G19_005 P	'SUB 73 - BOLIVAR BURNS (BOL-BURN) 161/69/12.5KV TRANSFORMER CKT 1'	0.04055	72.6	100.7025	'2834'
00NR	21WP	G19_005 P	'SUB 73 - BOLIVAR BURNS (BOL-BURN) 161/69/12.5KV TRANSFORMER CKT 1'	0.04055	72.6	100.7025	'2830'
00NR	21WP	G19_005 P	'SUB 73 - BOLIVAR BURNS (BOL-BURN) 161/69/12.5KV TRANSFORMER CKT 1'	0.04055	72.6	100.7025	'2832'
00NR	21WP	G19_005 P	'SUB 73 - BOLIVAR BURNS (BOL-BURN) 161/69/12.5KV TRANSFORMER CKT 1'	0.04055	72.6	100.7025	'2835'
00NR	21WP	G19_005 P	'BROOKLINE - MORGAN 161KV CKT 1'	0.28985	207.1	101.4341	'2833'
00NR	21WP	G19_005 P	'BROOKLINE - MORGAN 161KV CKT 1'	0.28985	207.1	101.4341	'2835'
00NR	21WP	G19_005 P	'BROOKLINE - MORGAN 161KV CKT 1'	0.28985	207.1	101.4341	'2834'
00NR	21WP	G19_005 P	'BROOKLINE - MORGAN 161KV CKT 1'	0.28985	207.1	101.4341	'2832'
00NR	21WP	G19_005 P	'BROOKLINE - MORGAN 161KV CKT 1'	0.28985	207.1	101.4341	'2831'
00NR	21WP	G19_005 P	'BROOKLINE - MORGAN 161KV CKT 1'	0.28985	207.1	101.4341	'2830'
00NR	21WP	G19_005 P	'BROOKLINE - MORGAN 161KV CKT 1'	0.28985	207.1	101.4341	'2829'
00NR	21WP	G19_005 P	'SUB 73 - BOLIVAR BURNS (BOL-BURN) 161/69/12.5KV TRANSFORMER CKT 1'	0.0409	72.5	101.0759	'2831'
00NR	21WP	G19_005 P	'SUB 73 - BOLIVAR BURNS (BOL-BURN) 161/69/12.5KV TRANSFORMER CKT 1'	0.0409	72.5	101.0759	'2833'
00NR	21WP	G19_005 P	'SUB 73 - BOLIVAR BURNS (BOL-BURN) 161/69/12.5KV TRANSFORMER CKT 1'	0.0409	72.5	101.0759	'2830'
00NR	21WP	G19_005 P	'SUB 73 - BOLIVAR BURNS (BOL-BURN) 161/69/12.5KV TRANSFORMER CKT 1'	0.0409	72.5	101.0759	'2835'
00NR	21WP	G19_005 P	'SUB 73 - BOLIVAR BURNS (BOL-BURN) 161/69/12.5KV TRANSFORMER CKT 1'	0.0409	72.5	101.0759	'2829'
00NR	21WP	G19_005 P	'SUB 73 - BOLIVAR BURNS (BOL-BURN) 161/69/12.5KV TRANSFORMER CKT 1'	0.0409	72.5	101.0759	'2834'
00NR	21WP	G19_005 P	'SUB 73 - BOLIVAR BURNS (BOL-BURN) 161/69/12.5KV TRANSFORMER CKT 1'	0.0409	72.5	101.0759	'2832'
00NR	21WP	G19_005 P	'BROOKLINE - MORGAN 161KV CKT 1'	0.2888	207.4	101.379	'2833'
00NR	21WP	G19_005 P	'BROOKLINE - MORGAN 161KV CKT 1'	0.2888	207.4	101.379	'2830'
00NR	21WP	G19_005 P	'BROOKLINE - MORGAN 161KV CKT 1'	0.2888	207.4	101.379	'2834'
00NR	21WP	G19_005 P	'BROOKLINE - MORGAN 161KV CKT 1'	0.2888	207.4	101.379	'2832'
00NR	21WP	G19_005 P	'BROOKLINE - MORGAN 161KV CKT 1'	0.2888	207.4	101.379	'2835'
00NR	21WP	G19_005 P	'BROOKLINE - MORGAN 161KV CKT 1'	0.2888	207.4	101.379	'2831'
00NR	21WP	G19_005 P	'BROOKLINE - MORGAN 161KV CKT 1'	0.2888	207.4	101.379	'2829'
00NR	21SP	G19_043 P	'GROTON (GROTON KU2A) 345/115/13.8KV TRANSFORMER CKT 1'	0.03851	256.7	106.3017	'G09_001IST 345.00 - WATERTOWN 345KV CKT 1'
00NR	21SP	G19_043 P	'GROTON (GROTON KU2A) 345/115/13.8KV TRANSFORMER CKT 1'	0.03823	256.7	105.5452	'G09_001IST 345.00 - WATERTOWN 345KV CKT 1'
00NR	21SP	G19_043 P	'GROTON (GROTON KU2A) 345/115/13.8KV TRANSFORMER CKT 1'	0.03823	256.7	105.5452	'4385'
00NR	21SP	G19_043 P	'GROTON (GROTON KU2A) 345/115/13.8KV TRANSFORMER CKT 1'	0.03823	256.7	105.5452	'4367'
00NR	21SP	G19_043 P	'GROTON (GROTON KU2A) 345/115/13.8KV TRANSFORMER CKT 1'	0.03823	256.7	105.5452	'4401'
00NR	21SP	G19_043 P	'GROTON (GROTON KU2A) 345/115/13.8KV TRANSFORMER CKT 1'	0.03823	256.7	105.5452	'4387'
00NR	21SP	G19_043 P	'GROTON (GROTON KU2A) 345/115/13.8KV TRANSFORMER CKT 1'	0.03823	256.7	105.5452	'4402'
00NR	21SP	G19_043 P	'GROTON (GROTON KU2A) 345/115/13.8KV TRANSFORMER CKT 1'	0.03823	256.7	105.5452	'4386'
00NR	21SP	G19_043 P	'GROTON (GROTON KU2A) 345/115/13.8KV TRANSFORMER CKT 1'	0.03823	256.7	105.5452	'4384'
00NR	21SP	G19_043 P	'GROTON (GROTON KU2A) 345/115/13.8KV TRANSFORMER CKT 1'	0.03823	256.7	105.5452	'4368'
00NR	21SP	G19_043 P	'GROTON (GROTON KU2A) 345/115/13.8KV TRANSFORMER CKT 1'	0.03823	256.7	105.5452	'4366'
00NR	21SP	G19_043 P	'GROTON (GROTON KU2A) 345/115/13.8KV TRANSFORMER CKT 1'	0.03823	256.7	105.5452	'4385'
00NR	21SP	G19_043 P	'GROTON (GROTON KU2A) 345/115/13.8KV TRANSFORMER CKT 1'	0.03823	256.7	105.5452	'4386'
00NR	21SP	G19_043 P	'GROTON (GROTON KU2A) 345/115/13.8KV TRANSFORMER CKT 1'	0.03823	256.7	105.5452	'4366'
00NR	18SP	G19_007 P	'G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	1	272.3	183.621	System Intact
00NR	21SP	G19_007 P	'G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	1	272.3	183.621	System Intact
00NR	21WP	G19_007 P	'G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	1	272.3	183.621	System Intact
00NR	26SP	G19_007 P	'G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	1	272.3	183.621	System Intact
00NR	17WP	G19_007 P	'G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	1	272.3	183.621	System Intact
00NR	18SP	G19_007 P	'G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	1	272.3	183.621	System Intact
00NR	21SP	G19_007 P	'G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	1	272.3	183.621	System Intact
00NR	21WP	G19_007 P	'G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	1	272.3	183.621	System Intact
00NR	26SP	G19_007 P	'G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	1	272.3	183.621	System Intact
00NR	21SP	G19_008 P	'LUBBOCK POWER & LIGHT-SOUTHEAST - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1'	0.03436	129.8	136.4468	'JONES STATION - LUBBOCK POWER & LIGHT-HOLLY PLANT 230KV CKT 1'
00NR	21SP	G19_008 P	'LUBBOCK POWER & LIGHT-SOUTHEAST - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1'	0.03436	129.8	136.3698	'LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1'
00NR	21SP	G19_008 P	'LUBBOCK POWER & LIGHT-SOUTHEAST - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1'	0.03436	129.8	136.3698	'3230'
00NR	21SP	G19_008 P	'LUBBOCK POWER & LIGHT-SOUTHEAST - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1'	0.03036	129.8	130.4376	'LUBBOCK EAST INTERCHANGE - LUBBOCK POWER & LIGHT-WADSWORTH 230KV CKT 1'
00NR	21SP	G19_008 P	'LUBBOCK POWER & LIGHT-SOUTHEAST - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1'	0.03036	129.8	130.3605	'3251'
00NR	21SP	G19_008 P	'LUBBOCK POWER & LIGHT-SOUTHEAST - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1'	0.03036	129.8	130.3605	'3398'
00NR	21SP	G19_008 P	'LUBBOCK POWER & LIGHT-SOUTHEAST - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1'	0.03036	129.8	130.3605	'LUBBOCK POWER & LIGHT-WADSWORTH (SHIH T101038) 230/69/13.5KV TRANSFORMER CKT 1'
00NR	26SP	G19_008 P	'LUBBOCK POWER & LIGHT-SOUTHEAST - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1'	0.0337	129.7	156.5999	'JONES STATION - LUBBOCK POWER & LIGHT-HOLLY PLANT 230KV CKT 1'
00NR	26SP	G19_008 P	'LUBBOCK POWER & LIGHT-SOUTHEAST - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1'	0.0337	129.7	156.5227	'3230'
00NR	26SP	G19_008 P	'LUBBOCK POWER & LIGHT-SOUTHEAST - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1'	0.0337	129.7	156.5227	'3394'
00NR	26SP	G19_008 P	'LUBBOCK POWER & LIGHT-SOUTHEAST - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1'	0.0337	129.7	156.5227	'LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1'
00NR	26SP	G19_008 P	'JONES STATION - LUBBOCK POWER & LIGHT-HOLLY PLANT 230KV CKT 1'	0.03586	191.2	105.3128	'LUBBOCK POWER & LIGHT-SOUTHEAST - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1'
00NR	26SP	G19_008 P	'JONES STATION - LUBBOCK POWER & LIGHT-HOLLY PLANT 230KV CKT 1'	0.03586	191.2	105.2605	'3257'
00NR	21SP	G19_005 P	'MORGAN - SUB 368 - DADEVILLE EAST 161KV CKT 1'	0.141	221.2	108.906	'2832'
00NR	21SP	G19_005 P	'MORGAN - SUB 368 - DADEVILLE EAST 161KV CKT 1'	0.141	221.2	108.906	'2834'
00NR	21SP	G19_005 P	'MORGAN - SUB 368 - DADEVILLE EAST 161KV CKT 1'	0.141	221.2	108.906	'2831'
00NR	21SP	G19_005 P	'MORGAN - SUB 368 - DADEVILLE EAST 161KV CKT 1'	0.141	221.2	108.906	'2829'
00NR	21SP	G19_005 P	'MORGAN - SUB 368 - DADEVILLE EAST 161KV CKT 1'	0.141	221.2	108.906	'2830'
00NR	21SP	G19_005 P	'MORGAN - SUB 368 - DADEVILLE EAST 161KV CKT 1'	0.141	221.2	108.906	'2835'
00NR	21SP	G19_005 P	'MORGAN - SUB 368 - DADEVILLE EAST 161KV CKT 1'	0.141	221.2	108.906	'2833'
00NR	21SP	G19_005 P	'MORGAN - SUB 368 - DADEVILLE EAST 161KV CKT 1'	0.13665	221.2	105.981	'BROOKLINE - G19005P-TAP 345.00 345KV CKT 1'
00NR	21WP	G19_005 P	'MORGAN - SUB 368 - DADEVILLE EAST 161KV CKT 1'	0.14083	221.7	115.5462	'2832'
00NR	21WP	G19_005 P	'MORGAN - SUB 368 - DADEVILLE EAST 161KV CKT 1'	0.14083	221.7	115.5462	'2830'
00NR	21WP	G19_005 P	'MORGAN - SUB 368 - DADEVILLE EAST 161KV CKT 1'	0.14083	221.7	115.5462	'2833'
00NR	21WP	G19_005 P	'MORGAN - SUB 368 - DADEVILLE EAST 161KV CKT 1'	0.14083	221.7	115.5462	'2829'
00NR	21WP	G19_005 P	'MORGAN - SUB 368 - DADEVILLE EAST 161KV CKT 1'	0.14083	221.7	115.5462	'2835'
00NR	21WP	G19_005 P	'MORGAN - SUB 368 - DADEVILLE EAST 161KV CKT 1'	0.14083	221.7	115.5462	'2834'
00NR	21WP	G19_005 P	'MORGAN - SUB 368 - DADEVILLE EAST 161KV CKT 1'	0.14083	221.7	115.5462	'2831'
00NR	21WP	G19_005 P	'MORGAN - SUB 368 - DADEVILLE EAST 161KV CKT 1'	0.13635	221.7	111.9847	'BROOKLINE - G19005P-TAP 345.00 345KV CKT 1'
00NR	21WP	G19_005 P	'MORGAN - SUB 368 - DADEVILLE EAST 161KV CKT 1'	0.07269	221.7	106.1967	'4592'
00NR	21WP	G19_005 P	'MORGAN - SUB 368 - DADEVILLE EAST 161KV CKT 1'	0.07019	221.7	103.4452	'1201'
00NR	21WP	G19_005 P	'MORGAN - SUB 368 - DADEVILLE EAST 161KV CKT 1'	0.06791	221.7	102.0668	

00NR	26SP	G19_008 P	'POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1'	0.09803	557.4	105.4914	'STATELINE INTERCHANGE - STLN-DEMARC6 230KV CKT 1'
00NR	26SP	G19_008 P	'POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1'	0.09803	559	105.0642	'STLN-DEMARC6 - SWEETWATER 230KV CKT 1'
00NR	26SP	G19_008 P	'POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1'	0.09803	559	105.0642	'STATELINE INTERCHANGE - STLN-DEMARC6 230KV CKT 1'
00NR	26SP	G19_008 P	'POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1'	0.09803	559	105.0642	'3267'
00NR	26SP	G19_008 P	'POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1'	0.09336	557.4	101.1137	'3268'
00NR	26SP	G19_008 P	'POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1'	0.05208	557.4	100.5066	'3585'
00NR	26SP	G19_008 P	'POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1'	0.09336	559	100.717	'3268'
00NR	26SP	G19_008 P	'POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1'	0.05208	559	100.1116	'3585'
00NR	17WP	G19_043 P	'BEULAH - COYOTE 115KV CKT 1'	0.04694	122.5	211.707	'CENTER - COYOTE 345KV CKT 1'
00NR	18SP	G19_043 P	'BEULAH - COYOTE 115KV CKT 1'	0.04594	101.8	254.4116	'CENTER - COYOTE 345KV CKT 1'
00NR	21SP	G19_043 P	'BEULAH - COYOTE 115KV CKT 1'	0.04601	101.9	267.2242	'CENTER - COYOTE 345KV CKT 1'
00NR	21WP	G19_043 P	'BEULAH - COYOTE 115KV CKT 1'	0.04605	122.7	232.117	'CENTER - COYOTE 345KV CKT 1'
00NR	26SP	G19_043 P	'BEULAH - COYOTE 115KV CKT 1'	0.04586	102	210.8618	'CENTER - COYOTE 345KV CKT 1'
00NR	17WP	G19_043 P	'BEULAH - COYOTE 115KV CKT 1'	0.04694	122.5	211.707	'CENTER - COYOTE 345KV CKT 1'
00NR	18SP	G19_043 P	'BEULAH - COYOTE 115KV CKT 1'	0.04594	101.8	254.3134	'CENTER - COYOTE 345KV CKT 1'
00NR	21SP	G19_043 P	'BEULAH - COYOTE 115KV CKT 1'	0.04601	101.9	267.2242	'CENTER - COYOTE 345KV CKT 1'
00NR	21WP	G19_043 P	'BEULAH - COYOTE 115KV CKT 1'	0.04605	122.7	232.117	'CENTER - COYOTE 345KV CKT 1'
00NR	26SP	G19_043 P	'BEULAH - COYOTE 115KV CKT 1'	0.04586	102	210.7637	'CENTER - COYOTE 345KV CKT 1'
00NR	21SP	G19_043 P	'HESKETT - WISHEK 230KV CKT 1'	0.03739	256.7	100.0033	'CENTER - JAMESTOWN 345KV CKT 1'
06NR	21L	G19_008 P	'EDDY_NORTH 6230.00 - G19008P-TAP 230.00 230KV CKT 1'	0.7426	318.7	101.9705	'EDDY_NORTH 6230.00 - G19008P-TAP 230.00 230KV CKT 2'
06NR	21L	G19_008 P	'EDDY_NORTH 6230.00 - G19008P-TAP 230.00 230KV CKT 2'	0.7426	318.6	102.0025	'EDDY_NORTH 6230.00 - G19008P-TAP 230.00 230KV CKT 1'
09NR	18G	G19_007 P	'G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	1	272.3	183.621	'System Intact
09NR	21L	G19_007 P	'G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	1	272.3	183.621	'System Intact
09NR	18G	G19_007 P	'G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	1	272.3	183.621	'System Intact
09NR	21L	G19_007 P	'G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	1	272.3	183.621	'System Intact
16NR	18G	G19_043 P	'BEULAH - COYOTE 115KV CKT 1'	0.0476	101.8	121.4538	'CENTER - COYOTE 345KV CKT 1'
16NR	21L	G19_043 P	'BEULAH - COYOTE 115KV CKT 1'	0.04779	101.2	123.7831	'CENTER - COYOTE 345KV CKT 1'
16NR	18G	G19_043 P	'BEULAH - COYOTE 115KV CKT 1'	0.0476	101.8	121.4538	'CENTER - COYOTE 345KV CKT 1'
16NR	21L	G19_043 P	'BEULAH - COYOTE 115KV CKT 1'	0.04779	101.2	123.7831	'CENTER - COYOTE 345KV CKT 1'
00NR	17WP	G19_005 S	'NEOSHO (NSES TX-5) 161/138/13.2KV TRANSFORMER CKT 1'	0.0883	155.6	113.1491	'4684'
00NR	17WP	G19_005 S	'NEOSHO (NSES TX-5) 161/138/13.2KV TRANSFORMER CKT 1'	0.0883	155.7	113.0764	'4684'
00NR	17WP	G19_005 S	'NEOSHO - SUB 452 - RIVERTON 161KV CKT 1'	0.17211	221.7	116.1579	'4587'
00NR	17WP	G19_005 S	'NEOSHO - SUB 452 - RIVERTON 161KV CKT 1'	0.1724	221.7	115.733	'1200'
00NR	17WP	G19_005 S	'NEOSHO (NSES TX-4) 161/138/13.2KV TRANSFORMER CKT 1'	0.06184	117.1	105.2673	'4684'
00NR	17WP	G19_005 S	'NEOSHO (NSES TX-4) 161/138/13.2KV TRANSFORMER CKT 1'	0.06184	117.2	105.1775	'4684'
00NR	17WP	G19_005 S	'NEOSHO - SUB 452 - RIVERTON 161KV CKT 1'	0.11231	221.7	104.8543	'BLACKBERRY - NEOSHO 345KV CKT 1'
00NR	17WP	G19_005 S	'NEOSHO - SUB 452 - RIVERTON 161KV CKT 1'	0.13774	221.7	104.5774	'1331'
00NR	17WP	G19_005 S	'NEOSHO - SUB 452 - RIVERTON 161KV CKT 1'	0.14245	221.7	104.2355	'BAKER - NEOSHO 161KV CKT 1'
00NR	17WP	G19_005 S	'NEOSHO - SUB 452 - RIVERTON 161KV CKT 1'	0.14245	221.7	104.1001	'4557'
00NR	17WP	G19_005 S	'NEOSHO - SUB 452 - RIVERTON 161KV CKT 1'	0.14245	221.7	103.8746	'BAKER - LITCHFIELD 161KV CKT 1'
00NR	17WP	G19_005 S	'NEOSHO - SUB 452 - RIVERTON 161KV CKT 1'	0.13887	221.7	103.7321	'1324'
00NR	17WP	G19_005 S	'NEOSHO - SUB 452 - RIVERTON 161KV CKT 1'	0.13774	221.7	103.4497	'AFTON - KETCHUM5 161.00 161KV CKT 1'
00NR	17WP	G19_005 S	'NEOSHO - SUB 452 - RIVERTON 161KV CKT 1'	0.11821	221.7	102.6351	'2831'
00NR	17WP	G19_005 S	'NEOSHO - SUB 452 - RIVERTON 161KV CKT 1'	0.11821	221.7	102.6351	'2832'
00NR	17WP	G19_005 S	'NEOSHO - SUB 452 - RIVERTON 161KV CKT 1'	0.11821	221.7	102.6351	'2835'
00NR	17WP	G19_005 S	'NEOSHO - SUB 452 - RIVERTON 161KV CKT 1'	0.11821	221.7	102.6351	'2834'
00NR	17WP	G19_005 S	'NEOSHO - SUB 452 - RIVERTON 161KV CKT 1'	0.11821	221.7	102.6351	'2829'
00NR	17WP	G19_005 S	'NEOSHO - SUB 452 - RIVERTON 161KV CKT 1'	0.11821	221.7	102.6351	'2830'
00NR	17WP	G19_005 S	'NEOSHO - SUB 452 - RIVERTON 161KV CKT 1'	0.11821	221.7	102.6351	'2833'
00NR	17WP	G19_005 S	'NEOSHO - SUB 452 - RIVERTON 161KV CKT 1'	0.12572	221.7	101.9594	'1410'
00NR	17WP	G19_005 S	'NEOSHO - SUB 452 - RIVERTON 161KV CKT 1'	0.13378	221.7	101.3333	'347'
00NR	17WP	G19_005 S	'NEOSHO - SUB 452 - RIVERTON 161KV CKT 1'	0.13699	221.7	101.0816	'AFTON - MIAMI 161KV CKT 1'
00NR	17WP	G19_005 S	'NEOSHO - SUB 452 - RIVERTON 161KV CKT 1'	0.1489	221.7	101.1186	'1210'
00NR	17WP	G19_007 P	'G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	1	272.3	183.621	'System Intact
00NR	17WP	G19_043 P	'BEULAH - COYOTE 115KV CKT 1'	0.04694	122.5	212.2784	'CENTER - COYOTE 345KV CKT 1'
00NR	18SP	G19_007 P	'G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	1	272.3	183.621	'System Intact
00NR	18SP	G19_043 P	'BEULAH - COYOTE 115KV CKT 1'	0.04593	101.8	255.2942	'CENTER - COYOTE 345KV CKT 1'
00NR	21SP	G19_005 S	'SUB 446 - CHESAPEAKE (CHESPEAK) 161/69/12.5KV TRANSFORMER CKT 1'	0.06727	71.8	108.7103	'1186'
00NR	21SP	G19_005 S	'SUB 446 - CHESAPEAKE (CHESPEAK) 161/69/12.5KV TRANSFORMER CKT 1'	0.06727	73.5	106.7401	'1186'
00NR	21SP	G19_005 S	'BILLINGS - SUB 446 - CHESAPEAKE 69KV CKT 1'	0.03207	45.3	102.4592	'1186'
00NR	21SP	G19_007 P	'G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	1	272.3	183.621	'System Intact
00NR	21SP	G19_008 S	'LUBBOCK POWER & LIGHT-SOUTHEAST - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1'	0.03435	129.8	136.4445	'JONES STATION - LUBBOCK POWER & LIGHT-HOLLY PLANT 230KV CKT 1'
00NR	21SP	G19_008 S	'LUBBOCK POWER & LIGHT-SOUTHEAST - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1'	0.03435	129.8	136.3675	'LUBBOCK POWER & LIGHT-HOLLY PLANT (SHIH T101039) 230/69/13.5KV TRANSFORMER CKT 1'
00NR	21SP	G19_008 S	'LUBBOCK POWER & LIGHT-SOUTHEAST - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1'	0.03435	129.8	136.3675	'3394'
00NR	21SP	G19_008 S	'LUBBOCK POWER & LIGHT-SOUTHEAST - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1'	0.03435	129.8	136.3675	'3230'
00NR	21SP	G19_008 S	'LUBBOCK POWER & LIGHT-SOUTHEAST - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1'	0.03036	129.8	130.4376	'LUBBOCK EAST INTERCHANGE - LUBBOCK POWER & LIGHT-WADSWORTH 230KV CKT 1'
00NR	21SP	G19_008 S	'LUBBOCK POWER & LIGHT-SOUTHEAST - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1'	0.03036	129.8	130.3605	'3251'
00NR	21SP	G19_008 S	'LUBBOCK POWER & LIGHT-SOUTHEAST - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1'	0.03036	129.8	130.3605	'3398'
00NR	21SP	G19_008 S	'LUBBOCK POWER & LIGHT-SOUTHEAST - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1'	0.03036	129.8	130.3605	'LUBBOCK POWER & LIGHT-WADSWORTH (SHIH T101038) 230/69/13.5KV TRANSFORMER CKT 1'
00NR	21SP	G19_043 P	'BEULAH - COYOTE 115KV CKT 1'	0.04601	101.9	268.3037	'CENTER - COYOTE 345KV CKT 1'
00NR	21SP	G19_043 P	'GROTON (GROTON KU2A) 345/115/13.8KV TRANSFORMER CKT 1'	0.03856	256.5	108.3758	'G09_001IST 345.00 - WATERTOWN 345KV CKT 1'
00NR	21SP	G19_043 P	'GROTON (GROTON KU2A) 345/115/13.8KV TRANSFORMER CKT 1'	0.03856	256.5	108.3758	'G09_001IST 345.00 - WATERTOWN 345KV CKT 1'
00NR	21SP	G19_043 P	'GROTON (GROTON KU2A) 345/115/13.8KV TRANSFORMER CKT 1'	0.03827	256.5	107.4232	'4386'
00NR	21SP	G19_043 P	'GROTON (GROTON KU2A) 345/115/13.8KV TRANSFORMER CKT 1'	0.03827	256.5	107.4232	'4385'
00NR	21SP	G19_043 P	'GROTON (GROTON KU2A) 345/115/13.8KV TRANSFORMER CKT 1'	0.03827	256.5	107.4232	'4387'
00NR	21SP	G19_043 P	'GROTON (GROTON KU2A) 345/115/13.8KV TRANSFORMER CKT 1'	0.03827	256.5	107.4232	'4384'
00NR	21SP	G19_043 P	'GROTON (GROTON KU2A) 345/115/13.8KV TRANSFORMER CKT 1'	0.03827	256.5	107.4232	'4401'
00NR	21SP	G19_043 P	'GROTON (GROTON KU2A) 345/115/13.8KV TRANSFORMER CKT 1'	0.03827	256.5	107.4232	'4368'
00NR	21SP	G19_043 P	'GROTON (GROTON KU2A) 345/115/13.8KV TRANSFORMER CKT 1'	0.03827	256.5	107.4232	'4367'
00NR	21SP	G19_043 P	'GROTON (GROTON KU2A) 345/115/13.8KV TRANSFORMER CKT 1'	0.03827	256.5	107.4232	'4366'
00NR	21SP	G19_043 P	'GROTON (GROTON KU2A) 345/115/13.8KV TRANSFORMER CKT 1'	0.03827	256.5	107.4232	'4402'
00NR	21SP	G19_043 P	'GROTON (GROTON KU2A) 345/115/13.8KV TRANSFORMER CKT 1'	0.03827	256.5	107.4232	'4387'
00NR	21SP	G19_043 P	'GROTON (GROTON KU2A) 345/115/13.8KV TRANSFORMER CKT 1'	0.03827	256.5	107.4232	'4402'
00NR	21SP	G19_043 P	'GROTON (GROTON KU2A) 345/115/13.8KV TRANSFORMER CKT 1'	0.03827	256.5	107.4232	'4386'
00NR	21SP	G19_043 P	'GROTON (GROTON KU2A) 345/115/13.8KV TRANSFORMER CKT 1'	0.03827	256.5	107.4232	'4384'
00NR	21SP	G19_043 P	'GROTON (GROTON KU2A) 345/115/13.8KV TRANSFORMER CKT 1'	0.03827	256.5	107.4232	'4368'
00NR	21SP	G19_043 P	'GROTON (GROTON KU2A) 345/115/13.8KV TRANSFORMER CKT 1'	0.03827	256.5	107.4232	'4366'
00NR	21SP	G19_043 P	'GROTON (GROTON KU2A) 345/115/13.8KV TRANSFORMER CKT 1'	0.03827	256.5	107.4232	'4385'
00NR	21SP	G19_043 P	'GROTON (GROTON KU2A) 345/115/13.8KV TRANSFORMER CKT 1'	0.03827	256.5	107.4232	'4401'
00NR	21SP	G19_043 P	'GROTON (GROTON KU2A) 345/115/13.8KV TRANSFORMER CKT 1'	0.03827	256.5	107.4232	'4367'
00NR	21SP	G19_043 P	'HESKETT - WISHEK 230KV CKT 1'	0.03747	256.8	103.3569	'CENTER - JAMESTOWN 345KV CKT 1'
00NR	21SP	G19_043 P	'HESKETT - WISHEK 230KV CKT 1'	0.03681	256.8	101.4492	'BUFFALO - JAMESTOWN 345KV CKT 1'
00NR	21WP	G19_005 S	'NEOSHO (NSES TX-5) 161/138/13.2KV TRANSFORMER CKT 1'	0.09604	155.8	110.9166	'4684'
00NR	21WP	G19_005 S	'NEOSHO (NSES TX-5) 161/138/13.2KV TRANSFORMER CKT 1'	0.09604	156	110.7744	'4684'
00NR	21WP	G19_005 S	'NEOSHO - SUB 452 - RIVERTON 161KV CKT 1'	0.19262	241.7	105.223	'4587'
00NR	21WP	G19_005 S	'NEOSHO - SUB 452 - RIVERTON 161KV CKT 1'	0.19288	241.7	104.9135	'1200'
00NR	21WP	G19_005 S	'NEOSHO (NSES TX-4) 161/138/13.2KV TRANSFORMER CKT 1'	0.06725	117.3	103.1969	'4684'
00NR	21WP	G19_005 S	'NEOSHO (NSES TX-4) 161/138/13.2KV TRANSFORMER CKT 1'	0.06725	117.4	103.109	'4684'
00NR	21WP	G19_007 P	'G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	1	272.3	183.621	'System Intact
00NR	21WP	G19_043 P	'BEULAH - COYOTE 115KV CKT 1'	0.04605	122.7	232.769	'CENTER - COYOTE 345KV CKT 1'
00NR	21WP	G19_043 P	'GROTON (GROTON KU2A) 345/115/13.8KV TRANSFORMER CKT 1'	0.03788	257	100.1097	'G09_001IST 345.00 - WATERTOWN 345KV CKT 1'
00NR	21WP	G19_043 P	'GROTON (GROTON KU2A) 345/115/13.8KV TRANSFORMER CKT 1'	0.03788	257	100.1097	'G09_001IST 345.00 - WATERTOWN 345KV CKT 1'
00NR	26SP	G19_005 S	'SUB 446 - CHESAPEAKE (CHESPEAK) 161/69/12.5KV TRANSFORMER CKT 1'	0.06727	70	113.0771	'1186'
00NR	26SP	G19_005 S	'SUB 446 - CHESAPEAKE (CHESPEAK) 161/69/12.5KV TRANSFORMER CKT 1'	0.06727	71.4	110.2997	'1186'
00NR	26SP	G19_005 S	'BILLINGS - SUB 446 - CHESAPEAKE 69KV CKT 1'	0.03207	45.3	104.2252	'1186'
00NR	26SP	G19_007 P	'G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	1	272.3	183.621	'System Intact
00NR	26SP	G19_008 S	'LUBBOCK POWER & LIGHT-SOUTHEAST - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1'	0.0337	129.7	156.5999	'JONES STATION - LUBBOCK POWER & LIGHT-HOLLY PLANT 230KV CKT 1'
00NR	26SP	G19_008 S	'LUBBOCK POWER & LIGHT-SOUTHEAST - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1'	0.0337	129.7	156.5227	'3230'
00NR	26SP	G19_008 S	'LUBBOCK POWER & LIGHT-SOUTHEAST - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1'	0.0337	129.7	156.5227	'3394'

09NR	18G	G19_007 P	G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	1	272.3	183.621	System Intact
09NR	21L	G19_007 P	MONOLITH 7 115.00 - SHELDON 115KV CKT 1'	0.08326	338.9	134.3258	MONOLITH 3 345.00 - MOORE 345KV CKT 1'
09NR	21L	G19_007 P	G15088 T 345.00 - MOORE 345KV CKT 1'	0.16289	955.4	111.9369	'4397'
09NR	21L	G19_007 P	G15088 T 345.00 - MOORE 345KV CKT 1'	0.16289	955.4	111.9369	'4360'
09NR	21L	G19_007 P	G15088 T 345.00 - MOORE 345KV CKT 1'	0.16289	955.4	111.9369	'4413'
09NR	21L	G19_007 P	G15088 T 345.00 - MOORE 345KV CKT 1'	0.16289	955.4	111.9369	'4411'
09NR	21L	G19_007 P	G15088 T 345.00 - MOORE 345KV CKT 1'	0.16289	955.4	111.9369	'4396'
09NR	21L	G19_007 P	G15088 T 345.00 - MOORE 345KV CKT 1'	0.16289	955.4	111.9369	'4359'
09NR	21L	G19_007 P	G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	1	272.3	183.621	System Intact
09NR	21L	G19_007 P	GRPRAR2-LNX3345.00 - YANKTON 345KV CKT Z'	0.08158	719.8	101.6657	'4338'
09NR	21L	G19_007 P	GRPRAR2-LNX3345.00 - YANKTON 345KV CKT Z'	0.08158	719.8	101.6657	'4340'
09NR	21L	G19_007 P	GRPRAR2-LNX3345.00 - YANKTON 345KV CKT Z'	0.08158	719.8	101.6657	'4347'
09NR	21L	G19_007 P	GRPRAR2-LNX3345.00 - YANKTON 345KV CKT Z'	0.08158	719.8	101.6657	'4418'
09NR	21L	G19_007 P	GRPRAR2-LNX3345.00 - YANKTON 345KV CKT Z'	0.08158	719.8	101.6657	'4341'
09NR	21L	G19_007 P	GRPRAR2-LNX3345.00 - YANKTON 345KV CKT Z'	0.08158	719.8	101.6657	'4416'
09NR	21L	G19_007 P	GRPRAR2-LNX3345.00 - YANKTON 345KV CKT Z'	0.08158	719.8	101.6657	'4352'
09NR	21L	G19_007 P	GRPRAR2-LNX3345.00 - YANKTON 345KV CKT Z'	0.08158	719.8	101.6657	'4415'
09NR	21L	G19_007 P	GRPRAR2-LNX3345.00 - YANKTON 345KV CKT Z'	0.08158	719.8	101.6657	'4423'
09NR	21L	G19_007 P	GRPRAR2-LNX3345.00 - YANKTON 345KV CKT Z'	0.08158	719.8	101.6657	'4351'
09NR	21L	G19_007 P	GRPRAR2-LNX3345.00 - YANKTON 345KV CKT Z'	0.08158	719.8	101.6657	'4354'
09NR	21L	G19_007 P	MOORE (MOORE T1) 345/115/13.8KV TRANSFORMER CKT 1'	0.04676	282.4	101.8343	MONOLITH 3 345.00 - MOORE 345KV CKT 1'
00NR	17WP	G19_007 P	G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	1	272.3	183.621	System Intact
00NR	17WP	G19_043 P	BEULAH - COYOTE 115KV CKT 1'	0.04694	122.5	211.707	CENTER - COYOTE 345KV CKT 1'
00NR	18SP	G19_007 P	G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	1	272.3	183.621	System Intact
00NR	18SP	G19_043 P	BEULAH - COYOTE 115KV CKT 1'	0.04594	101.8	254.3134	CENTER - COYOTE 345KV CKT 1'
00NR	21SP	G19_007 P	G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	1	272.3	183.621	System Intact
00NR	21SP	G19_043 P	BEULAH - COYOTE 115KV CKT 1'	0.04601	101.9	267.2242	CENTER - COYOTE 345KV CKT 1'
00NR	21WP	G19_007 P	G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	1	272.3	183.621	System Intact
00NR	21WP	G19_043 P	BEULAH - COYOTE 115KV CKT 1'	0.04605	122.7	232.117	CENTER - COYOTE 345KV CKT 1'
00NR	26SP	G19_007 P	G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	1	272.3	183.621	System Intact
00NR	26SP	G19_043 P	BEULAH - COYOTE 115KV CKT 1'	0.04586	102	210.7637	CENTER - COYOTE 345KV CKT 1'
09NR	18G	G19_007 P	G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	1	272.3	183.621	System Intact
09NR	21L	G19_007 P	G19007P-HV 345.00 345/34.5KV TRANSFORMER CKT 1'	1	272.3	183.621	System Intact