



**Preliminary Interconnection
System Impact Study for
Generator Interconnection
Requests
(PISIS-2015-002)**

March 2016

(Re-post April 2016)

Generator Interconnection

Revision History

Date	Author	Change Description
3/31/2016	SPP	Report Issued (PISIS-2015-002). Stability analysis pending.
4/25/2016	SPP	Report Posted to include stability analysis.

Executive Summary

Generator Interconnection customers have requested a Preliminary Interconnection System Impact Study (PISIS) under the Generator Interconnection Procedures (GIP) in the Southwest Power Pool Open Access Transmission Tariff (OATT). The Interconnection Customers' requests have been clustered together for the following System Impact Cluster Study window which closed September 30, 2015¹. The customers will be referred to in this study as the PISIS-2015-002 Interconnection Customers. This System Impact Study analyzes the interconnecting new generation totaling approximately 200.6 MW of new generation which would be located within the transmission system of Western Area Power Administration (WAPA). The generator interconnection requests have a requested in-service dates of as listed in Appendix A². The generator interconnection requests included in this System Impact Cluster Study are listed in Appendix A by their queue number, amount, requested interconnection service, area, requested interconnection point, proposed interconnection point, and the requested in-service date.

Power flow analysis has indicated that for the power flow cases studied, 200.6 MW of nameplate generation may be interconnected with transmission system reinforcements within the SPP transmission system. Dynamic stability and power factor analysis has determined the need for reactive compensation in accordance with FERC Order #661A for wind farm interconnection requests and those requirements are listed for each interconnection request within the contents of this report. Dynamic stability analysis has determined that the transmission system will remain stable with the assigned Network Upgrades and necessary reactive compensation requirements. A short circuit analysis has been performed with available short circuit values given in the stability study for each group in the appendices of this report.

In no way does this study guarantee operation for all periods of time. This interconnection study identifies and assigns transmission reinforcements for Energy Resource Interconnection Service (ERIS) interconnection injection constraints (defined as a 20% distribution factor impact for outage based constraints and 3% distribution factor for system intact constraints) and Network Resource Interconnection Service (NRIS) constraints (defined as 3% distribution factor impact), if requested by the Customer. These thermal and voltage constraints are listed in Appendix G-T and Appendix G-V. This interconnection study does not assign transmission reinforcements for all potential transmission constraints. 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.

¹ Interconnection Requests into the WAPA/Basin Integrated System (I.S.) were allowed an extra 15 business days to make their request into the PISIS queue.

² The generation interconnection requests in-service dates will need to be deferred based on the required lead time for the Network Upgrades necessary. The Interconnection Customers that proceed to the Facility Study will be provided a new in-service date based on the Facility Study's time for completion of the Network Upgrades necessary.

The total estimated minimum cost for interconnecting the PISIS-2015-002 Interconnection Customers is estimated at \$106,722,000 as show in Appendix E and F. This total cost estimate is contingent upon higher queued customers paying for certain required network upgrades. This cost does not include any potential costs for the Fort Calhoun South Flowgate mitigation. **The in-service date for the PISIS customers will be deferred until the construction of these network upgrades can be completed.**

These costs do not include the Interconnection Customer Interconnection Facilities as defined by the SPP Open Access Transmission Tariff (OATT). This cost does not include additional network constraints in the SPP transmission system identified and shown in Appendix H-T.

Constraints listed in Appendix H-T do not require transmission reinforcement for Interconnection Service, but could require Interconnection Customer to reduce generation in operational conditions. These transmission constraints occur when this study's generation is dispatched into the SPP footprint for Energy Resource Interconnection Service (ERIS) or when this study's generation is dispatched into the interconnecting Transmission Owner's (T.O.) area for Network Resource Interconnection Service (NRIS).

It should be noted that the additional network constraints identified in Appendix H-T may also be identified by a Transmission Service Request (TSR) and may need to be verified by associated studies. With a defined source and sink in a TSR, the list of network constraints will be refined and expanded to account for all Network Upgrade requirements. The required interconnection costs listed in Appendix E and F do not include costs associated with the deliverability of the energy to load or other customers. These costs are determined by separate studies should the Customer decide to submit a Transmission Service Request through SPP's Open Access Same Time Information System (OASIS) as required by Attachment Z1 of the SPP OATT. Furthermore, this DISIS neither guarantees transmission service or deliverability of the requested resource.

When applicable, affected system thermal and voltage constraints are listed in Appendix H-T-AS and Appendix H-V-AS. Affected System constraints could require an affects system impact study review by the affected party or affected system parties. The affected system impact study could result in identifying additional affected transmission system reinforcement network upgrades required for interconnection.

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1 Introduction

Pursuant to the Southwest Power Pool (SPP) Open Access Transmission Tariff (OATT), SPP has conducted this Preliminary Interconnection System Impact Study (PISIS) for certain generator interconnection requests in the SPP Generator Interconnection Queue. These interconnection requests have been clustered together for the following System Impact Study window which closed September 30, 2015³. The customers will be referred to in this study as the PISIS-2015-002 Interconnection Customers. This PISIS analyzes interconnecting a generator interconnection request associated with new generation totaling 200.6 MW which would be located within the transmission system of Western Area Power Administration (WAPA). The interconnection requests have a requested in-service date as listed in Appendix A⁴. The generator interconnection requests included in this System Impact Study are listed in Appendix A by their queue number, amount, requested interconnection service, area, requested interconnection point, proposed interconnection point, and the requested in-service date.

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

³ Interconnection Requests into the WAPA/Basin Integrated System (I.S.) were allowed an extra 15 business days to make their request into the PISIS queue.

⁴ The generation interconnection requests in-service dates will need to be deferred based on the required lead time for the Network Upgrades necessary. The Interconnection Customers that proceed to the Facility Study will be provided a new in-service date based on the completion of the Facility Study.

2 Model Development (Study Assumptions)

2.1.1 Interconnection Requests Included in the Cluster

SPP included all interconnection requests that submitted a Preliminary Interconnection System Impact Study Agreement no later than September 30, 2015 and were subsequently accepted by Southwest Power Pool under the terms of the Generator Interconnection Procedures (GIP). The interconnection requests that are included in this study are listed in Appendix A.

2.1.2 Affected System Interconnection Request

There were no Affected Systems to include in this Preliminary Interconnection System Impact Study. The Affected System Interconnection Requests have been given the designations with the “ASGI” prefix. These requests are listed in Appendix A. Affected System Interconnection Requests are only studied in “cluster” scenarios.

2.1.3 Previously Queued Interconnection Requests

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

2.2 Development of Base Cases

2.2.1 Power Flow

The 2015 series Integrated Transmission Planning models (used in the 2016 ITPNT) including the 2016 winter peak (16WP) season, the 2017 spring (17G) and 2017 summer peak (17SP) seasons, the 2020 (light load, summer and winter peak seasons), and the 2025 (summer peak season) scenario 0 cases are used for this study.

2.2.2 Dynamic Stability

The 2015 series SPP Model Development Working Group (MDWG) Models 2016 winter peak (16WP) season, 2017 summer peak (17SP) season and the 2025 summer peak (25SP) season cases were used as starting points for this study.

2.2.3 Short Circuit

The 2017 and 2025 summer peak stability case was used for this analysis.

2.2.4 Base Case Upgrades

The following facilities are part of the 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 PISIS-2015-002 Interconnection Customers have not been assigned acceleration costs for the below listed projects. The PISIS-2015-002 Interconnection Customers’ Generation Facilities in service dates may need to be delayed until the completion of the following

upgrades. If the Interconnection Request proceeds into the DISIS Queue, it may be determined that the Interconnection Request may only go into service with Limited Operation. If for some reason, construction on these projects is discontinued, additional restudies will be needed to determine the interconnection needs of the DISIS Interconnection Customers.

- 2012 Integrated Transmission Plan (2012 ITP10) Projects
 - Woodward-Tatonga-Mathewson-Cimarron 345kV transmission line circuit #2, scheduled for 2021 in-service⁵
 - Chisholm – Gracemont 345kV transmission line, and Chisholm 345/230kV transformer circuit #1, scheduled for 3/1/2018 in-service⁶
- 2015 Integrated Transmission Plan Near Term (2015 ITPNT) Projects
 - China Draw 115kV Reactive Power Support
 - 200Mvar Capacitive and 50Mvar Inductive Static Var Compensator (SVC)
 - Road Runner 115kV Reactive Power Support
 - 200Mvar Capacitive and 50Mvar Inductive Static Var Compensator (SVC)
 - Potash Junction – Intrepid – IMC #1 – Livingston Ridge 115kV rebuild
 - National Enrichment Plant – Targa – Cardinal 115kV circuit #1 rebuild
- Gentleman – Thedford (Cherry County) – Holt County 345kV circuit #1 scheduled for 2018 in-service⁷
- Hoskins – Neligh East 345/115 kV Project⁸
 - Neligh East 345/115 kV substation and transformer
 - Neligh East Area 115 kV upgrades to support new station
 - Hoskins – Neligh East 345 kV circuit #1
- High Priority Incremental Loads (HPILs) Projects⁹:
 - TUCO Interchange – Yoakum – Hobbs Interchange 345/230 kV Project
 - TUCO Interchange – Yoakum – Hobbs Interchange 345 kV circuit #1 and associated terminal equipment upgrades
 - Hobbs 345/230/13 kV transformer circuit #1
 - Yoakum 345/230/13 kV transformer circuit #1
 - Battle Axe – Road Runner 115 kV circuit #1
 - Chaves County – Price – CV Pines – Capitan 115 kV circuit #1
 - China Draw – Yeso Hills 115 kV circuit #1
 - Dollarhide – Toboso Flats 115 kV circuit #1
 - Hobbs Interchange – Kiowa 345 kV circuit #1
 - Kiowa – North Loving – China Draw 345/115 kV Projects
 - Kiowa – North Loving – China Draw circuit #1 and associated terminal equipment upgrades
 - China Draw 345/115/13 kV transformer circuit #1
 - North Loving 345/115/13 kV transformer circuit #1

⁵ SPP Notification to Construct (NTC) 200223

⁶ SPP Notification to Construct (NTC) 200240 and 200255

⁷ SPP Notification to Construct (NTC) 200220

⁸ SPP Regional Reliability 2012 ITP 10 Project Per SPP-NTC-200220

⁹ Per Network Upgrades assigned in High Priority Incremental Loads (HPILs) study, Including Direct Assigned Upgrades, Projects in SPP-NTC-200256 and SPP-NTC-200283.

- Kiowa – Road Runner 345/230/115 kV Projects
 - Kiowa 345/230 kV transformer circuit #1
 - Road Runner 345/115/13 kV transformer circuit #1
- Livingston Ridge – Sage Brush – Lagarto – Cardinal 115 kV circuit #1
- North Loving – South Loving 115 kV circuit #1
- Ponderosa – Ponderosa Tap 115 kV circuit #1
- Potash 230/115/13kV Transformer circuit #1 replacement
- Nebraska City – Mullin Creek – Sibley 345kV circuit #1 build, scheduled for 12/31/2016 in-service¹⁰
- Viola 345/138kV Project¹¹
 - Clearwater – Viola 138kV circuit #1
 - Gill – Viola 138kV circuit #1
 - Sumner County – Viola 138kV circuit #1
 - Viola 345/138/13kV transformer circuit #1

2.2.5 Contingent Upgrades

The following facilities do not yet have approval. These facilities have been assigned to higher queued interconnection customers. These facilities have been included in the models for the PISIS-2015-002 study and are assumed to be in service. This list may not be all inclusive. The PISIS-2015-002 Interconnection Customer, at this time, does not have responsibility for these facilities but may later be assigned the cost of these facilities if higher queued customers terminate their Generator Interconnection Agreement or withdraw from the interconnection queue. The PISIS-2015-002 Interconnection Customer Generation Facilities in-service dates may need to be delayed until the completion of the following upgrades.

- Upgrades assigned to DISIS-2010-002 Interconnection Customers:
 - Twin Church – Dixon County 230 kV circuit #1, rerate (320 MVA)
 - Buckner – Spearville 345 kV circuit #1, terminal equipment
- Upgrades assigned to DISIS-2011-001 Interconnection Customers:
 - Hoskins – Dixon County – Twin Church 230 kV circuit #1, conductor clearance increase
 - (NRIS only) Woodward District EHV Phase Shifting Transformer
- Upgrades assigned to DISIS-2012-002 Interconnection Customers:
 - Associated Electric Cooperatives Inc. (AECI) Fairfax 138/69 kV transformer, replacement
 - Lake Creek – Lone Wolf 69 kV circuit #1, reset CT
 - Remington – Fairfax 138 kV circuit #1, conductor clearance increase
 - (NRIS only) Arkansas City – Paris – Creswell – Oak – Rainbow – City of Winfield 69kV circuit #1, rebuild
 - (NRIS only) Creswell 138/69/13kV Transformer circuit #1 and #2, replacements
- Upgrades assigned to DISIS-2013-002 Interconnection Customers:
 - Battle Creek – County Line – Neligh East 115kV circuit #1, rebuild

¹⁰ SPP Notification to Construct (NTC) 20097 and 20098

¹¹ SPP Notification to Construct (NTC) 200228 and 200296

- Upgrades assigned to DISIS-2014-002 Interconnection Customers:
 - Arnold – Ransom 115kV circuit #1, terminal equipment, replacement
 - Tolk – Plant X 230kV circuit #1 and circuit #2, re-conductor
 - Tucu 345/230/13kV Transformer circuit #1, replacement
- Upgrades assigned to DISIS 2015-001 Interconnection Customers
 - Altus SW – Navajo – Snyder 69kV circuit #1, rebuild
 - Anadarko – Sequoyah – Cornville Tap – Naples Tap – Payne 138kV circuit #1, rebuild
 - Beach – GEN-2010-048 Tap circuit #1, replace terminal equipment
 - Cimarron River Tap – Kismet – Cudahy – Crooked Creek 115kV circuit #1, rebuild
 - Greenburg – Shooting Star 115kV circuit #1, rebuild
 - Kress Interchange – Swisher 115kV circuit #1, replace terminal equipment
 - Oklaunion 345kV Reactive Power Support
 - Install two (2) -130Mvar Capacitor Bank(s) at Oklaunion
 - Stateline – Sweetwater 230kV circuit #1, replace terminal equipment
 - (NRIS Only) Bushland – Potter County 230kV circuit #1, replace terminal equipment
 - (NRIS Only) Carlisle – LP-Doug 115kV circuit #1, replace terminal equipment
 - (NRIS Only) Carlisle 230/115/13kV Transformer circuit #1, replacement
 - (NRIS Only) Cox Interchange – Hale County 115kV circuit #1, rebuild
 - (NRIS Only) Crawfish Draw – TUCO Interchange 230kV circuit #1, replace terminal equipment
 - (NRIS Only) Crawfish Draw Substation 345/230kV
 - Build new 345/230kV substation along TUCO – Border 345kV and TUCO – Swisher 230kV. Tie in and Terminate TUCO 345kV, Border 345kV, TUCO 230kV, and Swisher 230kV at TUCO 2.
 - Build 345/230/13kV transformer circuit #1
 - (NRIS Only) Crawfish Draw (TUCO 2) 230/115/13kV Transformer circuit #1, build
 - (NRIS Only) Kress Interchange – Swisher 115kV circuit #2, build
 - (NRIS Only) Potter County Interchange 345/230/13kV Transformer circuit #2, build
 - (NRIS Only) Renfrow – Renfrow 138kV circuit #1, rebuild
 - (NRIS Only) Sundown 230/115/13kV Transformer circuit #1, replacement
 - (NRIS Only) TUCO Interchange – Jones 230kV circuit #1, replace terminal equipment
 - (NRIS Only) Wolfforth – Terry County 115kV circuit #1, replace terminal equipment
 - (NRIS Only) Wolfforth – 230/115/13kV Transformer circuit #1, replacement
- Upgrades assigned to DISIS-2015-002 Interconnection Customers:
 - Antelope 345/115/13kV Transformer circuit #2, build
 - Beaver County – Grapevine 345kV circuit #1, build
 - Belden – Rasmussen 230kV circuit #1, build
 - Belden 230/115/13kV Transformer circuit #1, build
 - Border – Chisholm 345kV circuit #2, build
 - Border 345kV Reactive Power Support
 - Install six (6) -50Mvar Capacitor Bank(s) and +250Mvar SVC at Border
 - Carlisle 115/69/13kV Transformer circuit#1, replacement
 - Chisholm Substation Upgrade 345kV
 - Tap and terminate Woodward – Border 345kV into Chisholm Substation
 - Chisholm – Elk City 230kV circuit #1, rebuild
 - Cimarron – Minco 345kV circuit #1, replace terminal equipment

- Cleo Corner – Cleo Plant Tap 138kV circuit #1, replace terminal equipment
- Cleveland – Cleveland 138kV circuit #Z1, replace bus tie terminal equipment
- Cleveland – Silver City 138kV circuit #1, rebuild
- Daglum – Dickinson 230kV circuit #1, build
- Deaf Smith – GEN-2015-039 Tap 230kV circuit #1, replace terminal equipment
- Dickinson 230/115/13kV transformer circuit #2, build
- Dixon County – Belden 230kV circuit #1, build
- Dixon County – Twin Church 345kV circuit #1, Voltage Conversion
 - Convert Dixon Co – Twin Church 230kV to 345kV
- Emporia Energy Center – Swissvale 345kV circuit #1, replace terminal equipment
- GEN-2014-057 – Lawton Eastside 345kV circuit #1, replace terminal equipment
- GEN-2014-057 – Sunnyside 345kV circuit #1, rebuild
- GEN-2014-059 – Ogallala 230kV circuit #2, build
- GEN-2015-085 Tap – Altus Junction 138kV circuit #1, build
- GEN-2015-085 Tap – Russell 138kV circuit #1, replace terminal equipment
- GEN-2015-095 Tap – Rose Valley 138kV circuit #1, rebuild
- Gerald Gentleman Station Flowgate Stability Limit Mitigation
- Grapevine Substation Upgrade 345kV
 - Build Grapevine 345kV Substation
 - Terminate Beaver Co – Grapevine into Grapevine Substation
 - Terminate Potter Co – Grapevine into Grapevine Substation
 - Terminate Grapevine – Chisholm into Grapevine Substation
- Grapevine – Chisholm 345kV circuit #1, build
- Hanlon 69kV one (1) step of 10Mvar capacitor bank(s)
- Harbine – Beatrice 115kV circuit #1, rebuild
- Holt County – Antelope 345kV circuit #1, build
- Noel SW – Rose Valley 138kV circuit #1, rebuild
- Norge – Southwest Station 138kV circuit #1, rebuild
- Northwest 138kV circuit breaker, replace
- Ogallala – Gerald Gentleman Station 230kV circuit #1, replace terminal equipment
- Oklaunion 345kV Reactive Power Support Incremental Upgrade
 - Install four (4) -50Mvar Capacitor Bank(s) and +300Mvar SVC at Oklaunion
- Albion – Petersburg – North Petersburg 115kV circuit #1, reconductor and replace terminal equipment for at least a 193MVA rating
- Potter County – Grapevine 345kV circuit #1, build
- Shamrock 115kV Capacitor Bank, add second step of 9.6Mvars
- Sidney – GEN-2014-059 Tap 230kV circuit #2, build
- Sidney 230/115/13kV Transformer circuit #1, replacement to at least 150MVA rating
- Smokey Hills – Summit 230kV circuit #1, rebuild
- Swissvale – West Gardner 345kV circuit #1, replace terminal equipment
- Tolk 345/230/13kV Transformer circuit #2, build
- Tolk – Potter County 345kV circuit #1, build
- Tolk – TUCO 2 345kV circuit #1, build
- TUCO 2 – Border 345kV circuit #2, build
- TUCO 2 – Yoakum 345kV Retermination

- Reterminate TUCO terminal to TUCO 2 terminal by adding approximately 3 miles of 345kV (SPP-NTC-200283)
- Twin Church – Sioux City 345kV circuit #1 Voltage Conversion
 - Convert Twin Church – Sioux City 230kV circuit #1 to 345kV
- Woodward Interchange 230/115/13kV Transformer circuit #1 and #2, replacement
- (NRIS Only) Appledorn – Watertown 230kV circuit #1, replace terminal equipment
- (NRIS Only) Beulah – Stanton Tap – Garrison circuit #1, rebuild
- (NRIS Only) Blair – Granite Falls 230kV circuit #1, replace terminal equipment
- (NRIS Only) Blaisdell 230/115/13kV transformer circuit #1, replacement
- (NRIS Only) Brookings – Watertown 115kV circuit #1, rebuild
- (NRIS Only) Chappel – Colton 115kV circuit #1, achieve at least 115MVA rating
- (NRIS Only) Chisholm – Sweetwater 230kV circuit #1, rebuild
- (NRIS Only) Colton – Sidney 115kV circuit #1, achieve at least 115MVA rating
- (NRIS Only) Columbus East 230/115/13kV Transformer circuit #1, replacement
- (NRIS Only) Dawson Creek – Fallon 115kV circuit #1, replace terminal equipment
- (NRIS Only) GI-0901 Tap – Watertown 345kV circuit #2, build
- (NRIS Only) Groton – Bristol – Summit circuit #1, rebuild
- (NRIS Only) Holt County – Grand Island 345kV circuit #1, build
- (NRIS Only) Knoll – Post Rock 230kV circuit #2, build
- (NRIS Only) LP-Wadsworth 230/69/13kV Transformer circuit #1, replacement
- (NRIS Only) Milan Tap – Clearwater 138kV circuit #1, rebuild
- (NRIS Only) Mustang 230/115/13kV Transformer circuit #2, build
- (NRIS Only) Pittsburg – Seminole 345kV circuit #1, replace terminal equipment
- (NRIS Only) Sidney 345/230/13kV Transformer circuit #2, build
- (NRIS Only) Split Rock – White 345kV circuit #1, replace terminal equipment
- (NRIS Only) South Hays 230/115/13kV Transformer circuit #1, replacement
- (NRIS Only) TUCO – New Deal – Stanton 345/115kV Project
 - Build TUCO – New Deal – Stanton 115kV circuit #1
 - Build New Deal 345/115kV Transformer circuit #1
- (NRIS Only) Tupelo – Tupelo Tap 138kV circuit #2, build
- (NRIS Only) Walkemeyer 345/115/13kV Transformer circuit #2, build
- (NRIS Only) Watertown - GI-1309 Tap – Summit 115kV circuit #1, rebuild
- (NRIS Only) Watertown 345/230/13kV transformer circuit #1, replacement
- (NRIS Only) Watertown – White 345kV circuit #1, replace terminal equipment

2.2.6 Potential Upgrades Not in the Base Case

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

2.2.7 Regional Groupings

The interconnection requests listed in Appendix A are grouped together into one (1) active regional group based on geographical and electrical impacts. These groupings are shown in Appendix C.

To determine interconnection impacts, one (1) different generation dispatch scenario of the spring, summer, and winter base case models are developed to accommodate the regional groupings.

2.3 Development of Analysis Cases

2.3.1 Power Flow

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

Peaking units are not dispatched in the 2017 spring, or in the “High VER” summer and winter peaks. To study peaking units’ impacts, the 2016 winter peak and 2017 summer peak, 2020 summer and winter peaks, and 2025 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.

2.3.2 Dynamic Stability

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

2.3.3 Short Circuit

The dynamic stability models (2017 SP and 2025 SP) are used for this analysis.

3 Identification of Network Constraints (System Performance)

3.1.1 Thermal Overloads

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

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 of generator 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 support is then determined 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 considered for transmission reinforcement under NRIS.

3.1.2 Voltage

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

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

SPP Areas (69kV+):

Transmission Owner	Voltage Criteria (System Intact)	Voltage Criteria (Contingency)
AEPW	0.95 – 1.05 pu	0.92 – 1.05 pu
GRDA	0.95 – 1.05 pu	0.90 – 1.05 pu
SWPA	0.95 – 1.05 pu	0.90 – 1.05 pu
OKGE	0.95 – 1.05 pu	0.90 – 1.05 pu
OMPA	0.95 – 1.05 pu	0.90 – 1.05 pu
SWPS	0.95 – 1.05 pu	0.90 – 1.05 pu
MIDW	0.95 – 1.05 pu	0.90 – 1.05 pu
SUNC	0.95 – 1.05 pu	0.90 – 1.05 pu
KCPL	0.95 – 1.05 pu	0.90 – 1.05 pu
INDN	0.95 – 1.05 pu	0.90 – 1.05 pu
SPRM	0.95 – 1.05 pu	0.90 – 1.05 pu
NPPD	0.95 – 1.05 pu	0.90 – 1.05 pu
WAPA	0.95 – 1.05 pu	0.90 – 1.05 pu
WERE L-V	0.95 – 1.05 pu	0.93 – 1.05 pu
WERE H-V	0.95 – 1.05 pu	0.95 – 1.05 pu
EMDE L-V	0.95 – 1.05 pu	0.90 – 1.05 pu
EMDE H-V	0.95 – 1.05 pu	0.92 – 1.05 pu
LES	0.95 – 1.05 pu	0.90 – 1.05 pu
OPPD	0.95 – 1.05 pu	0.90 – 1.05 pu

SPP Buses with more stringent voltage criteria:

Bus Name/Number	Voltage Criteria (System Intact)	Voltage Criteria (Contingency)
TUCO 230kV 525830	0.925 – 1.05 pu	0.925 – 1.05 pu
Wolf Creek 230kV 532797	0.985 – 1.03 pu	0.985 – 1.03 pu
FCS 646251	1.001 – 1.047 pu	1.001 – 1.047 pu

Affected System Areas (115kV+):

Transmission Owner	Voltage Criteria (System Intact)	Voltage Criteria (Contingency)
EES-EAI	0.95 – 1.05 pu	0.90 – 1.05 pu
LAGN	0.95 – 1.05 pu	0.90 – 1.05 pu
EES	0.95 – 1.05 pu	0.90 – 1.05 pu
AMMO	0.95 – 1.05 pu	0.90 – 1.05 pu
CLEC	0.95 – 1.05 pu	0.90 – 1.05 pu
LAFA	0.95 – 1.05 pu	0.90 – 1.05 pu
LEPA	0.95 – 1.05 pu	0.90 – 1.05 pu
XEL	0.95 – 1.05 pu	0.90 – 1.05 pu
MP	0.95 – 1.05 pu	0.90 – 1.05 pu
SMMPA	0.95 – 1.05 pu	0.90 – 1.05 pu
GRE	0.95 – 1.05 pu	0.90 – 1.05 pu
OTP	0.95 – 1.05 pu	0.90 – 1.05 pu
OTP-H (115kV+)	0.97 – 1.05 pu	0.92 – 1.10 pu
ALTW	0.95 – 1.05 pu	0.90 – 1.05 pu
MEC	0.95 – 1.05 pu	0.90 – 1.05 pu
MDU	0.95 – 1.05 pu	0.90 – 1.05 pu
SPC	0.95 – 1.05 pu	0.95 – 1.05 pu
DPC	0.95 – 1.05 pu	0.90 – 1.05 pu
ALTE	0.95 – 1.05 pu	0.90 – 1.05 pu

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

3.1.3 Dynamic Stability

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

3.1.4 Upgrades Assigned

Thermal overloads that require transmission support to mitigate are discussed in Section 8 and listed in Appendix G-T. Voltage constraints that may require transmission support are discussed in Section

8 and listed in Appendix G-V. Constraints that are identified solely through the stability analysis are discussed in Section 8 and the appropriate appendix for the detailed stability study of that Interconnection Request. All of these upgrades are cost assigned in Appendix E and Appendix F.

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

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

4 Determination of Cost Allocated Network Upgrades

Cost Allocated Network Upgrades of Variable Energy Resources (VER) (solar/wind) generation interconnection requests are determined using the 2017 spring model. Cost Allocated Network Upgrades of peaking units is determined using the 2020 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 Generator 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 Generator Interconnection request 'X' for Upgrade Project 1 is found by the following set of steps and formulas:

- Determine an Impact Factor on a given project for all responsible GI requests:

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

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

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

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

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

- Repeat previous for each responsible GI request for each Project

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

4.1.1 Credits/Compensation for Amounts Advanced for Network Upgrades

Interconnection Customer shall be entitled to either credits or potentially Long Term Congestion Rights (LTCR), 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.

5 Required Interconnection Facilities

The requirement to interconnect the 200.6 MW of generation into the existing and proposed transmission systems in the affected areas of the SPP transmission footprint consist of the necessary cost allocated shared facilities listed in Appendix F by upgrade. The interconnection requirements for the cluster total an estimated \$106,722,000. This total cost estimate does not currently include possible mitigation costs for Fort Calhoun South Flowgate limitation mitigation. Interconnection Facilities specific to each generator interconnection request are listed in Appendix E. A preliminary one-line drawing for each generator interconnection request are listed in Appendix D.

Possible Costs for Fort Calhoun South Flowgate Mitigation are not included in this study analysis. If the Interconnection Request proceeds with the SPP GIP into the DISIS study, the power flow limitation constraint on the Fort Calhoun South Flowgate will be requested to be review by OPPD.

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

5.1.1 Facilities Analysis

Not applicable to the Preliminary Interconnection System Impact Study (PISIS).

5.1.2 Environmental Review

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

6 Affected Systems Coordination

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 Queue.

7 Power Flow Analysis

7.1.1 Power Flow Analysis Methodology

The ACCC function of PSS®E 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 were evaluated.

7.1.2 Power Flow Analysis

A power flow analysis is conducted for each Interconnection Customer's facility using modified versions of the 2016 winter peak (16WP) season, the 2017 spring (17G) and 2017 summer peak (17SP) seasons, the 2020 light load (20L), summer (20SP) and winter peak (20WP) seasons, and the 2025 summer peak (25SP) seasonal models. The output of the Interconnection Customer's facility is offset in each model by a reduction in output of existing online SPP generation. This method allows the request to be studied as an Energy Resource Interconnection Service request (ERIS). Certain requests that are also pursuing Network Resource Interconnection Service (NRIS) have an additional analysis conducted for displacing resources in the interconnecting Transmission Owner's balancing area.

8 Power Flow Results

8.1 Cluster Group 1 (Woodward Area)

In addition to the 5,859.9 MW of previously queued generation in the area, 0.0 MW of new interconnection service was studied. No new constraints were found in this area.

8.2 Cluster Group 2 (Hitchland Area)

In addition to the 4,216.2 MW of previously queued generation in the area, 0.0 MW of new interconnection service was studied. No new constraints were found in this area.

8.3 Cluster Group 3 (Spearville Area)

In addition to the 3,235.83 MW of previously queued generation in the area, 0.0 MW of new interconnection service was studied. No new constraints were found in this area.

8.4 Cluster Group 4 (Northwest Kansas Area)

In addition to the 2,153.3 MW of previously queued generation in the area, 0.0 MW of new interconnection service was studied.

8.5 Cluster Group 6 (South Texas Panhandle/New Mexico) Area

In addition to the 6,404.05 MW of previously queued generation in the area, 0.0 MW of new interconnection service was studied. No new constraints were found in this area.

8.6 Cluster Group 7 (Southwestern Oklahoma Area)

In addition to the 2,337.6 MW of previously queued generation in the area, 0.0 MW of new interconnection service was studied. No new constraints were found in this area.

8.7 Cluster Group 8 (North Oklahoma/South Central Kansas Area)

In addition to the 7,733.76 MW of previously queued generation in the area, 0.0 MW of new interconnection service was studied. No new constraints were found in this area.

8.8 Cluster Group 9 (Nebraska Area)

In addition to the 3,767.9 MW of previously queued generation in the area, 0.0 MW of new interconnection service was studied. No new constraints were found in this area.

8.9 Cluster Group 10 (Southeast Oklahoma/Northeast Texas Area)

In addition to the 0.0 MW of previously queued generation in the area, 0.0 MW of new interconnection service was studied. No new constraints were found in this area.

8.10 Cluster Group 12 (Northwest Arkansas Area)

In addition to the 30.0 MW of previously queued generation in the area, 0.0 MW of new interconnection service was studied. No new constraints were found in this area.

8.11 Cluster Group 13 (Northeast Kansas/Northwest Missouri Area)

In addition to the 808.7 MW of previously queued generation in the area, 0.0 MW of new interconnection service was studied. No new constraints were found in this area.

8.12 Cluster Group 14 (South Central Oklahoma Area)

In addition to the 1,195.1 MW of previously queued generation in the area, 0.0 MW of new interconnection service was studied. No new constraints were found in this area.

8.13 Cluster Group 15 (Eastern South Dakota)

In addition to approximately 1,165.7 MW of previously queued generation in the area, 0.0 MW of new interconnection service was studied. No new constraints were found in this area.

8.14 Cluster Group 16 (Western North Dakota)

In addition to approximately 3,649.01 MW of previously queued generation in the area, 0.0 MW of new interconnection service was studied. No new constraints were found in this area.

8.15 Cluster Group 17 (Western South Dakota)

In addition to approximately 490.0 MW of previously queued generation in the area, 200.6 MW of new interconnection service was studied. Due to the electrical location of GEN-2015-089’s Point of Interconnection to other geographical groups, Interconnection Requests in Nebraska that are in close proximity were dispatched at 100% nameplate. Eris analysis observed non-converged conditions for the outage of Grand Island – Holt County 345kV transmission circuit. Mitigation for the non-converged contingency requires the advancement of the “R” Plan (SPP NTC 200277). Thermal overloads were observed for GEN-2015-089 Tap – Utica Junction 230kV transmission circuit and Kelly – Meadow Grove 230kV transmission circuit. The mitigation for the GEN-2015-089 – Utica Junction 230kV overload will require the second Fort Randall – Sioux City 230kV transmission line to be tapped, looped in, and re-terminated at GEN-2015-089 230kV substation and a rebuild/reconductor of GEN-2015-089 Tap – Utica Junction 230kV transmission circuit #1. The mitigation of the Kelly – Meadow Grove 230kV overload would require the addition of a 230/115/13kV transformer at Meadow Grove and constructing a new 115kV transmission line from Meadow Grove to North Petersburg. The Meadow Grove – North Petersburg 115kV circuit #1 and Meadow 230/115/13kV transformer are currently assigned to DISIS-2015-002 Group 09 requests as NRIS upgrades. It is unknown whether the DISIS-2015-002 requests will continue with NRIS at this time and therefore these upgrades have been tentatively cost assigned to GEN-2015-089.

In addition to the Eris constraints observed, several NRIS constraints for mitigation were observed. Thermal overloads for Fort Randall – Spencer – O’Neill 115kV will require rebuild/reconductors as mitigation. Fort Calhoun South flowgate limit is violated for NRIS analysis. This flowgate limit constraint will require the T.O., OPPD, to review and provide input for possible mitigations that could be the cost responsibility of the current study Interconnection Request. If the Interconnection Request(s) proceed in the SPP GIP, this review will be conducted throughout the DISIS and Interconnection Facilities Study stages.

Cluster Eris Constraints			
MONITORED ELEMENT	Limiting Rate A/B (MVA)	TC%LOADING (% MVA)	CONTINGENCY
Non-Converged Contingency	N/A	N/A	GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z
Non-Converged Contingency	N/A	N/A	GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1
GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z	720	102.867	System Intact
GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1	720	102.1846	System Intact
	Mitigation		GGs-Thedford 345kV (R Plan) and Antelope-Holt 345kV
G15089_T 230.00 - UTICA JCT 230KV CKT 1	320	130.5847	KELLY - MEADOWGROVE4230.00 230KV CKT 1
	Mitigation		Tap and Tie in Fort Randal – Sioux City 230kV circuit #1 into GEN-2015-089 230kV and reconductor/rebuild GEN-2015-089 Tap – Utica 230kV circuit #1
KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	106.4519	System Intact

	Mitigation	Build Meadow Grove 230/115 Transformer and Meadow Grove – North Petersburg 115kV transmission circuit
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Cluster NRIS Constraints			
MONITORED ELEMENT	Limiting Rate A/B (MVA)	TC%LOADING (% MVA)	CONTINGENCY
FT RANDAL - SIOUX CITY 230KV CKT 1	320	102.416	G1524G1525 345.00 - THISTLE7 345.00 345KV CKT 1
G15089_T 230.00 - UTICA JCT 230KV CKT 1	320	105.6232	System intact
G15089_T 230.00 - UTICA JCT 230KV CKT 1	320	140.3839	KELLY - MEADOWGROVE4230.00 230KV CKT 1
GAVINS POINT - YANKON JCT 115KV CKT 1	120	117.3769	KELLY - MEADOWGROVE4230.00 230KV CKT 1
KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	116.0565	GRPRAR1-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1
NAPA JCT7 115.00 - UTICA 115KV CKT 1	120	107.9758	RASMUSN - UTICA JCT 230KV CKT 1
NAPA JCT7 115.00 - YANKON JCT 115KV CKT 1	120	107.7333	RASMUSN - UTICA JCT 230KV CKT 1
	Mitigation		ERIS upgrades
FTCAL_S	803	111.4913	System Intact
	Mitigation		If Interconnection Request proceeds to the DISIS, this would require the T.O. OPPD, to review this constraint and provide input for possible mitigation.
FT RANDAL - SPENCER 115KV CKT 1	120	131.9431	KELLY - MEADOWGROVE4230.00 230KV CKT 1
	Mitigation		ERIS upgrades & reconductor/rebuild Fort Randall – Spencer 115kV transmission circuit
G15089_T 230.00 - SIOUX CITY 230KV CKT 1	320	101.2815	G15089_T 230.00 - UTICA JCT 230KV CKT 1
	Mitigation		ERIS upgrades & upgrade terminal equipment to achieve conductor limit
ONEILL - SPENCER 115KV CKT 1	120	127.1904	KELLY - MEADOWGROVE4230.00 230KV CKT 1
	Mitigation		ERIS upgrades & reconductor/rebuild Spencer-O’Neill 115kV transmission circuit

8.16 Cluster Group 18 (Eastern North Dakota)

In addition to approximately 161.5 MW of previously queued generation in the area, 0.0 MW of new interconnection service was studied. No new constraints were found in this area.

8.17 Curtailment and System Reliability

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

9 Stability & Short Circuit Analysis

A stability and short circuit analysis was conducted for each Interconnection Customer using modified versions of the 2015 series SPP Model Development Working Group (MDWG) Models 2016 winter (16WP), 2017 summer (17SP), and 2025 summer peak (25SP) dynamic cases¹². The stability analysis was conducted with all upgrades in service that were identified in the power flow analysis unless otherwise noted in the individual group stability study. For each group, the interconnection requests were studied at 100% nameplate output while the other groups were dispatched at 20% output for non-dispatchable requests and 100% output for other requests. The output of the Interconnection Customer's facility was offset in each model by a reduction in output of existing online SPP generation. Each Interconnection Request was studied in a Stand Alone scenario in addition to the cluster scenario. The following synopsis is included for each group. The entire stability study for each group can be found in the Appendices.

Short-circuit analysis is performed but verification of over-dutied equipment is performed by the Transmission Owner within the Interconnection Facilities Study. Results of that analysis may require additional costs to replace circuit breakers and associated equipment

9.1 Cluster Group 1 (Woodward Area)

There were no customers requesting interconnection service in the Woodward area.

9.2 Cluster Group 2 (Hitchland Area)

There were no customers requesting interconnection service in the Hitchland area.

9.3 Cluster Group 3 (Spearville Area)

There were no customers requesting interconnection service in the Spearville area.

9.4 Cluster Group 4 (Northwest Kansas Area)

There were no customers requesting interconnection service in the Northwest Kansas area.

9.5 Cluster Group 6 (South Texas Panhandle/New Mexico Area)

There were no customers requesting interconnection service in the Texas Panhandle/New Mexico area.

9.6 Cluster Group 7 (Southwest Oklahoma Area)

There were no customers requesting interconnection service in the Southwest Oklahoma area.

¹² Short Circuit analysis performed only on the 2017 and 2025 Summer Peak seasonal model. Group 6 Stability Analysis also includes 2020 Summer and Winter Peak seasons.

9.7 Cluster Group 8 (North Oklahoma/South Central Kansas Area)

There were no customers requesting interconnection service in the South Central Kansas/North Oklahoma area.

9.8 Cluster Group 9 (Nebraska Area)

There were no customers requesting interconnection service in the Nebraska area.

9.9 Cluster Group 10 (Southeast Oklahoma/Northeast Texas)

There were no customers requesting interconnection service in the Southeast Oklahoma/Northeast Texas area.

9.10 Cluster Group 12 (Northwest Arkansas Area)

There were no customers requesting interconnection service in the Northwest Arkansas area.

9.11 Cluster Group 13 (Northeast Kansas/Northwest Missouri Area)

There were no customers requesting interconnection service in the Northwest Missouri area.

9.12 Cluster Group 14 (South Central Oklahoma Area)

There were no customers requesting interconnection service in the Northwest Missouri area.

9.13 Cluster Group 15 (Eastern South Dakota)

There were no customers requesting interconnection service in the Eastern South Dakota area.

9.14 Cluster Group 16 (Western North Dakota)

There were no customers requesting interconnection service in the Western North Dakota area.

9.15 Cluster Group 17 (Western South Dakota)

The Group 17 stability analysis for the Western South Dakota area was performed by POWER-tek. Stability analysis has indicated that, with proper mitigation, the study generators will remain in service and the transmission system will remain stable for the contingencies tested. Power Factor requirements are listed in the table below.

Power Factor Requirements:

Request	Size (MW)	Generator Model	Point of Interconnection	Power Factor Requirement at POI*	
				Lagging (supplying)	Leading (absorbing)
GEN 2015-089**	200.6	GE 1.7MW WTG	Fort Randall-Utica Junction 230kV	0.95	0.95

*As reactive power is required for all projects, the final requirement in the GIA will be the pro-forma 95% lagging to 95% leading at the point of interconnection.

** Requirement for reactors for low wind conditions

9.16 Cluster Group 18 (Eastern North Dakota)

There were no customers requesting interconnection service in the Eastern North Dakota area.

10 Conclusion

The minimum cost of interconnecting 200.6 MW of new interconnection requests included in this Preliminary Interconnection System Impact Study is estimated at \$106,722,000 for the Allocated Network Upgrades and Transmission Owner Interconnection Facilities are listed in Appendix E and F. This total cost estimate does not currently include possible mitigation costs for Fort Calhoun South Flowgate limitation mitigation. These costs do not include the cost of upgrades of other transmission facilities listed in Appendix H-T which are Network Constraints or when applicable the affected system network constraints listed in Appendix H-T-AS and Appendix H-V-AS.

Interconnection Requests allocated Network Upgrades and Transmission Owner Interconnection Facilities listed in Appendix E and F. For Interconnection Requests that result in an interconnection to, or modification to, 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 and Environmental Review Agreement per Section 8.6.1 of the GIP.

These interconnection costs do not include any cost of Network Upgrades determined to be required by short circuit analysis. These studies will be performed if the Interconnection Customer executes the appropriate Interconnection Facilities Study Agreement and provides the required data along with demonstration of Site Control and the appropriate deposit. At the time of the Interconnection Facilities Study, a better determination of the interconnection facilities may be available.

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

11 Appendices

11.1 A: Generator Interconnection Requests Considered for Impact Study

See next page.

A: Generation Interconnection Requests Considered for Study

Request	Amount	Service	Area	Requested Point of Interconnection	Proposed Point of Interconnection	Requested In-Service Date	In Service Date Delayed Until no earlier than*
GEN-2015-089	200.60	ER/NR	WAPA	Tap Fort Randall - Utica Junction 230kV CKT 1	Tap Fort Randall - Utica Junction 230kV CKT 1	6/30/2017	TBD
Total:	200.60						

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

11.2 B: Prior Queued Generator Interconnection Requests

See next page.

B: Prior Queued Interconnection Requests

Request	Amount	Area	Requested/Proposed Point of Interconnection	Status or In-Service Date
ASGI-2010-006	150.00	AECI	Remington 138kV	AECI queue Affected Study
ASGI-2010-010	42.20	SPS	Lovington 115kV	Lea County Affected Study
ASGI-2010-020	30.00	SPS	Tap LE-Tatum - LE-Crossroads 69kV	Lea County Affected Study
ASGI-2010-021	15.00	SPS	Tap LE-Saunders Tap - LE-Anderson 69kV	Lea County Affected Study
ASGI-2011-001	27.30	SPS	Lovington 115kV	On-Line
ASGI-2011-002	20.00	SPS	Herring 115kV	On-Line
ASGI-2011-003	10.00	SPS	Hendricks 69kV	On-Line
ASGI-2011-004	20.00	SPS	Pleasant Hill 69kV	Under Study (DISIS-2011-002)
ASGI-2012-002	18.15	SPS	FE-Clovis Interchange 115kV	Under Study (DISIS-2012-002)
ASGI-2012-006	22.50	SUNCMKEC	Tap Hugoton - Rolla 69kV	Under Study (DISIS-2012-001)
ASGI-2013-001	11.50	SPS	PanTex South 115kV	Under Study (DISIS-2013-001)
ASGI-2013-002	18.40	SPS	FE Tucumcari 115kV	Under Study (DISIS-2013-001)
ASGI-2013-003	18.40	SPS	FE Clovis 115kV	Under Study (DISIS-2013-001)
ASGI-2013-004	36.60	SUNCMKEC	Morris 115kV	Under Study (DISIS-2013-002)
ASGI-2013-005	1.65	SPS	FE Clovis 115kV	Under Study (DISIS-2013-002)
ASGI-2013-006	2.00	SPS	SP-Erskine 115kV	
ASGI-2014-001	2.50	SPS	SP-Erskine 115kV	Under Study (DISIS-2014-001)
ASGI-2014-002	49.60	SPS	Tap Tucumcari - Santa Rosa 115kV	Under Study (DISIS-2014-001)
ASGI-2014-005	10.00	SPS	Strata 69kV	Under Study (DISIS-2014-002)
ASGI-2014-008	10.00	SPS	South Loving 69kV	Under Study (DISIS-2014-002)
ASGI-2014-009	10.00	SPS	Wood Draw 115kV	Under Study (DISIS-2014-002)
ASGI-2014-010	10.00	SPS	Ochoa 115kV	Under Study (DISIS-2014-002)
ASGI-2014-012	10.00	SPS	Cooper Ranch 115kV	Under Study (DISIS-2014-002)
ASGI-2014-014	56.40	GRDA	Ferguson 69kV	Under Study (DISIS-2014-002)
ASGI-2015-001	6.13	SUNCMKEC	Ninnescah 115kV	Under Study (DISIS-2015-001)
ASGI-2015-002	2.00	SPS	SP-Yuma 69kV	Under Study (DISIS-2015-001)
ASGI-2015-004	56.36	GRDA	Coffeyville City 69kV	Under Study (DISIS-2015-001)
ASGI-2015-006	9.00	SWPA	Tupelo 138kV	Under Study (DISIS-2015-002)
G255	100.00	XEL	Yankee 115kV	MISO Queued Request
G359	150.00	MDU	MDU 230 kV system near Ellendale	MISO Queued Request
G380	150.00	OTP	Rugby 115kV	MISO Queued Request
G408	12.00	XEL	Tap McHenry - Souris 115kV	MISO Queued Request
G502	50.60	MP	Milton Young 230kV	MISO Queued Request
G645	50.00	OTP	Ladish 115kV	MISO Queued Request
G723	10.00	MDU	Haskett 115kV	MISO Queued Request
G752	150.00	MDU	Tap Bison - Hettinger 230kV	MISO Queued Request
G788	49.00	GRE	Ladish 115kV	MISO Queued Request
G830	99.00	GRE	GRE McHenry 115kV	MISO Queued Request
GEN-2001-014	96.00	WFEC	Ft Supply 138kV	On-Line
GEN-2001-026	74.30	WFEC	Washita 138kV	On-Line
GEN-2001-033	180.00	SPS	San Juan Tap 230kV	On-Line at 120MW
GEN-2001-036	80.00	SPS	Norton 115kV	On-Line
GEN-2001-037	100.00	OKGE	FPL Moreland Tap 138kV	On-Line
GEN-2001-039A	105.00	SUNCMKEC	Shooting Star Tap 115kV	On-Line
GEN-2001-039M	100.00	SUNCMKEC	Central Plains Tap 115kV	On-Line
GEN-2002-004	200.00	WERE	Latham 345kV	On-Line at 150MW

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

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GEN-2007-020IS	16.00	WAPA	Nelson 115kV	Commercial Operation
GEN-2007-021	201.00	OKGE	Tatonga 345kV	On-Line
GEN-2007-023IS	50.00	WAPA	Formit-Summit 115kV	On Suspension
GEN-2007-025	300.00	WERE	Viola 345kV	On-Line
GEN-2007-027IS	99.00	WAPA	Bismarck-Garrison 230kV #1	On Suspension
GEN-2007-040	200.00	SUNCMKEC	Buckner 345kV	On-Line at 132MW
GEN-2007-043	200.00	OKGE	Minco 345kV	On-Line
GEN-2007-044	300.00	OKGE	Tatonga 345kV	On-Line at 199MW
GEN-2007-046	200.00	SPS	Hitchland 115kV	On Schedule for 2015
GEN-2007-050	170.00	OKGE	Woodward EHV 138kV	On-Line at 150MW
GEN-2007-052	150.00	WFEC	Anadarko 138kV	On-Line
GEN-2007-062	765.00	OKGE	Woodward EHV 345kV	On Schedule for 2016 and 2017
GEN-2008-003	101.00	OKGE	Woodward EHV 138kV	On-Line
GEN-2008-008IS	5.00	WAPA	Nelson 115kV	Commercial Operation
GEN-2008-013	300.00	OKGE	Hunter 345kV	On-Line at 235MW
GEN-2008-018	250.00	SPS	Finney 345kV	On-Line
GEN-2008-021	42.00	WERE	Wolf Creek 345kV	On-Line
GEN-2008-022	300.00	SPS	Crossroads 345kV	On-Line
GEN-2008-023	150.00	AEPW	Hobart Junction 138kV	On-Line
GEN-2008-037	101.00	WFEC	Slick Hills 138kV	On-Line
GEN-2008-044	197.80	OKGE	Tatonga 345kV	On-Line
GEN-2008-047	300.00	OKGE	Beaver County 345kV	On-Line
GEN-2008-051	322.00	SPS	Potter County 345kV	On-Line at 161MW
GEN-2008-079	99.20	SUNCMKEC	Crooked Creek 115kV	On-Line
GEN-2008-086N02	201.00	NPPD	Meadow Grove 230kV	On-Line
GEN-2008-092	200.60	MIDW	Post Rock 230kV	On-Line
GEN-2008-098	100.80	WERE	Waverly 345kV	On-Line
GEN-2008-119O	60.00	OPPD	S1399 161kV	On-Line
GEN-2008-124	200.10	SUNCMKEC	Ironwood 345kV	On Schedule for 2016
GEN-2008-129	80.00	KCPL	Pleasant Hill 161kV	On-Line
GEN-2009-001IS	200.00	WAPA	Groton-Watertown 345kV	On Schedule
GEN-2009-006IS	90.00	WAPA	Mission 115kV	On Suspension
GEN-2009-007IS	100.00	WAPA	Mission 115kV	On Suspension
GEN-2009-008	199.50	MIDW	South Hays 230kV	On-Line
GEN-2009-018IS	100.00	WAPA	Groton 115kV	Commercial Operation
GEN-2009-020	48.30	MIDW	Walnut Creek 69kV	On-Line
GEN-2009-020AIS	150.00	WAPA	Tripp Junction 115kV	Commercial Operation
GEN-2009-025	59.80	OKGE	Nardins 69kV	On-Line
GEN-2009-026IS	110.00	WAPA	Dickenson-Heskett 230kV	On Schedule
GEN-2009-040	73.80	WERE	Marshall 115kV	On Schedule for 2016
GEN-2010-001	300.00	OKGE	Beaver County 345kV	On-Line
GEN-2010-001IS	99.00	WAPA	Bismarck-Glenham 230kV	On Schedule
GEN-2010-003	100.80	WERE	Waverly 345kV	On-Line
GEN-2010-003IS	34.00	WAPA	Wessington Springs 230kV	Commercial Operation
GEN-2010-005	299.20	WERE	Viola 345kV	On-Line at 170MW
GEN-2010-006	205.00	SPS	Jones 230kV	On-Line
GEN-2010-007IS	172.50	WAPA	Antelope Valley 345kV	On Suspension
GEN-2010-009	165.60	SUNCMKEC	Buckner 345kV	On-Line
GEN-2010-011	29.70	OKGE	Tatonga 345kV	On-Line

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GEN-2010-014	358.80	SPS	Hitchland 345kV	On Suspension
GEN-2010-036	4.60	WERE	6th Street 115kV	On-Line
GEN-2010-040	300.00	OKGE	Cimarron 345kV	On-Line
GEN-2010-041	10.50	OPPD	S1399 161kV	On Schedule for 2015
GEN-2010-045	197.80	SUNCMKEC	Buckner 345kV	On Schedule for 2017
GEN-2010-046	56.00	SPS	TUCO Interchange 230kV	On Schedule for 2016
GEN-2010-048	70.00	MIDW	Tap Beach Station - Redline 115kV	FACILITY STUDY STAGE
GEN-2010-051	200.00	NPPD	Tap Hoskins - Twin Church (Dixon County) 230kV	On Suspension
GEN-2010-055	4.50	AEPW	Wekiwa 138kV	On-Line
GEN-2010-057	201.00	MIDW	Rice County 230kV	On-Line
GEN-2011-008	600.00	SUNCMKEC	Clark County 345kV	On Schedule for 2016
GEN-2011-010	100.80	OKGE	Minco 345kV	On-Line
GEN-2011-011	50.00	KCPL	Iatan 345kV	On-Line
GEN-2011-014	201.00	OKGE	Tap Hitchland - Woodward Dbl Ckt (GEN-2011-014 Tap) 345kV	On Schedule for 2016
GEN-2011-016	200.10	SUNCMKEC	Ironwood 345kV	On Schedule for 2017
GEN-2011-018	73.60	NPPD	Steele City 115kV	On-Line
GEN-2011-019	299.00	OKGE	Woodward 345kV	On Suspension
GEN-2011-020	299.00	OKGE	Woodward 345kV	On Suspension
GEN-2011-022	299.00	SPS	Hitchland 345kV	On Schedule for 2016 (150MW) and 2017 (149MW)
GEN-2011-025	80.00	SPS	Tap Floyd County - Crosby County 115kV	On Schedule for 2016
GEN-2011-027	120.00	NPPD	Tap Hoskins - Twin Church (Dixon County) 230kV	On Suspension
GEN-2011-037	7.00	WFEC	Blue Canyon 5 138kV	On-Line
GEN-2011-040	111.00	OKGE	Carter County 138kV	On-Line
GEN-2011-045	205.00	SPS	Jones 230kV	On-Line
GEN-2011-046	27.00	SPS	Lopez 115kV	On-Line
GEN-2011-048	175.00	SPS	Mustang 230kV	On-Line
GEN-2011-049	250.70	OKGE	Border 345kV	On Schedule for 2016
GEN-2011-050	109.80	AEPW	Santa Fe Tap 138kV	On Schedule for 2016
GEN-2011-051	104.40	OKGE	Tap Woodward - Tatonga 345kV (GEN-2011-051 Tap)	On Schedule for 2017
GEN-2011-054	300.00	OKGE	Cimarron 345kV	On-Line
GEN-2011-056	3.60	NPPD	Jeffrey 115kV	On-Line
GEN-2011-056A	3.60	NPPD	John 1 115kV	On-Line
GEN-2011-056B	4.50	NPPD	John 2 115kV	On-Line
GEN-2011-057	150.40	WERE	Creswell 138kV	On-Line
GEN-2012-001	61.20	SPS	Cirrus Tap 230kV	On-Line
GEN-2012-004	41.40	OKGE	Carter County 138kV	On-Line
GEN-2012-006IS	125.01	WAPA	Williston-Ch. Creek 230kV	On Schedule
GEN-2012-007	120.00	SUNCMKEC	Rubart 115kV	On-Line
GEN-2012-009IS	99.00	WAPA	Tap Fort Randall - Lake Platte 230kV	On Suspension
GEN-2012-012IS	75.00	WAPA	Wolf Point-Circle 115kV	On Suspension
GEN-2012-014IS	99.50	WAPA	Groton 115kV	On Schedule
GEN-2012-020	478.00	SPS	TUCO 230kV	On Schedule for 2016
GEN-2012-021	4.80	LES	Terry Bundy Generating Station 115kV	On-Line
GEN-2012-024	180.00	SUNCMKEC	Clark County 345kV	On Schedule for 2016
GEN-2012-027	136.00	AEPW	Shidler 138kV	On Suspension
GEN-2012-028	74.80	WFEC	Gotebo 69kV	On-Line
GEN-2012-032	300.00	OKGE	Open Sky 345kV	On-Line

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GEN-2012-033	98.80	OKGE	Tap and Tie South 4th - Bunch Creek & Enid Tap - Fairmont (GEN-2012-033T) 138kV	On-Line
GEN-2012-034	7.00	SPS	Mustang 230kV	On-Line
GEN-2012-035	7.00	SPS	Mustang 230kV	On-Line
GEN-2012-036	7.00	SPS	Mustang 230kV	On-Line
GEN-2012-037	203.00	SPS	TUCO 345kV	On-Line
GEN-2012-041	121.50	OKGE	Ranch Road 345kV	On-Line
GEN-2013-001IS	90.00	WAPA	Summit-Watertown 115kV	On Suspension
GEN-2013-002	50.60	LES	Tap Sheldon - Folsom & Pleasant Hill (GEN-2013-002 Tap) 115kV CKT 2	On Schedule for 2016
GEN-2013-007	100.30	OKGE	Tap Prices Falls - Carter 138kV	On-Line
GEN-2013-008	1.20	NPPD	Steele City 115kV	On-Line
GEN-2013-009IS	19.50	WAPA	Redfield NW 115kV	Commercial Operation
GEN-2013-010	99.00	SUNCMKEC	Tap Spearville - Post Rock (North of GEN-2011-017 Tap) 345kV	IA Pending
GEN-2013-011	30.00	AEPW	Turk 138kV	On-Line
GEN-2013-012	147.00	OKGE	Redbud 345kV	On-Line
GEN-2013-014	25.50	NPPD	Tap Pauline - Hildreth (Rosemont) 115kV	On Suspension
GEN-2013-016	203.00	SPS	TUCO 345kV	On Schedule for 2017
GEN-2013-019	73.60	LES	Tap Sheldon - Folsom & Pleasant Hill (GEN-2013-002 Tap) 115kV CKT 2	On Schedule for 2016
GEN-2013-022	25.00	SPS	Norton 115kV	On Schedule for 2016
GEN-2013-027	150.00	SPS	Tap Tolk - Yoakum 230kV	IA Pending
GEN-2013-028	559.50	GRDA	Tap N Tulsa - GRDA 1 345kV	On Schedule for 2017
GEN-2013-029	300.00	OKGE	Renfrow 345kV	On Schedule for 2016 (150MW) and 2016 (150MW)
GEN-2013-030	300.00	OKGE	Beaver County 345kV	On Schedule for 2016 (200MW) and 2017 (100MW)
GEN-2013-032	204.00	NPPD	Antelope 115kV	On Schedule for 2017
GEN-2013-033	28.00	MIDW	Knoll 115kV	On Schedule for 2016
GEN-2014-001	200.60	WERE	Tap Wichita - Emporia Energy Center (GEN-2014-001 Tap) 345kV	On Suspension
GEN-2014-001IS	103.70	WAPA	Newell-Maurine 115kV	FACILITY STUDY STAGE
GEN-2014-002	10.50	OKGE	Tatonga 345kV (GEN-2007-021 POI)	On Schedule for 2015
GEN-2014-003	15.80	OKGE	Tatonga 345kV (GEN-2007-044 POI)	On Schedule for 2015
GEN-2014-003IS	91.00	WAPA	Culbertson 115kV	On Schedule
GEN-2014-004	4.00	NPPD	Steele City 115kV (GEN-2011-018 POI)	On-Line
GEN-2014-004IS	384.20	WAPA	Charlie Creek 345kV	FACILITY STUDY STAGE
GEN-2014-005	5.70	OKGE	Minco 345kV (GEN-2011-010 POI)	On-Line
GEN-2014-006IS	125.00	WAPA	Williston 115kV	On Schedule
GEN-2014-010IS	150.00	WAPA	Neset 115kV	On Schedule
GEN-2014-012	225.00	SPS	Tap Hobbs Interchange - Andrews 230kV	On Schedule for 2018
GEN-2014-013	73.50	NPPD	Meadow Grove (GEN-2008-086N2 Sub) 230kV	On-Line
GEN-2014-014IS	151.50	WAPA	Belfield-Rhame 230kV	On Schedule
GEN-2014-020	100.00	AEPW	Tuttle 138kV	On Schedule for 2017
GEN-2014-021	300.00	KCPL	Tap Nebraska City - Mullin Creek 345kV	On Schedule for 2016
GEN-2014-025	2.40	MIDW	Walnut Creek 69kV	On-Line
GEN-2014-028	35.00	EMDE	Riverton 161kV	On Schedule for 2016
GEN-2014-031	35.80	NPPD	Meadow Grove 230kV	On Schedule for 2016
GEN-2014-032	10.20	NPPD	Meadow Grove 230kV	IA Pending
GEN-2014-033	70.00	SPS	Chaves County 115kV	On Schedule for 2016
GEN-2014-034	70.00	SPS	Chaves County 115kV	On Schedule for 2016

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GEN-2014-035	30.00	SPS	Chaves County 115kV	On Schedule for 2018
GEN-2014-037	200.00	SPS	Tap Hitchland - Beaver County Dbl Ckt (Optima) 345kV	DISIS STAGE
GEN-2014-038	200.00	SPS	Tap Hitchland - Potter County 345kV	DISIS STAGE
GEN-2014-039	73.40	NPPD	Friend 115kV	On Schedule for 2017
GEN-2014-040	320.40	SPS	Castro 115kV	On Schedule for 2016
GEN-2014-041	120.80	SUNCMKEC	Arnold 115kV	On Schedule for 2017
GEN-2014-046	125.40	SPS	Chaves County 115kV	DISIS STAGE
GEN-2014-047	40.00	SPS	Crossroads 345kV	IA Pending
GEN-2014-056	250.00	OKGE	Minco 345kV	On Schedule for 2016
GEN-2014-057	250.00	AEPW	Tap Lawton - Sunnyside (Terry Road) 345kV	On Schedule for 2016
GEN-2014-064	248.40	OKGE	Otter 138kV	On Schedule for 2016
GEN-2014-074	152.00	SPS	Tap TUCO Interchange - Oklaunion (GEN-2014-074 Tap) 345kV	FACILITY STUDY STAGE
GEN-2015-001	200.00	OKGE	Ranch Road 345kV	On Schedule for 2016
GEN-2015-004	52.90	OKGE	Border 345kV	FACILITY STUDY STAGE
GEN-2015-005	200.10	KCPL	Tap Nebraska City - Sibley 345kV	FACILITY STUDY STAGE
GEN-2015-007	160.00	NPPD	Hoskins 345kV	FACILITY STUDY STAGE
GEN-2015-013	120.00	WFEC	Synder 138kV	FACILITY STUDY STAGE
GEN-2015-014	150.00	SPS	Tap Cochran - Lehman 115kV	FACILITY STUDY STAGE
GEN-2015-015	154.60	OKGE	Tap Medford Tap - Coyote 138kV	FACILITY STUDY STAGE
GEN-2015-016	200.00	KCPL	Tap Marmaton - Centerville 161kV	FACILITY STUDY STAGE
GEN-2015-018	80.00	SPS	Tap Curry County - Bailey 115kV	DISIS STAGE
GEN-2015-020	100.00	SPS	Oasis 115kV	DISIS STAGE
GEN-2015-021	20.00	SUNCMKEC	Johnson Corner 115kV	FACILITY STUDY STAGE
GEN-2015-022	112.00	SPS	Swisher 115kV	FACILITY STUDY STAGE
GEN-2015-023	300.70	NPPD	Holt County 345kV	FACILITY STUDY STAGE
GEN-2015-024	220.00	WERE	Tap Thistle - Wichita 345kV Dbl CKT	FACILITY STUDY STAGE
GEN-2015-025	220.00	WERE	Tap Thistle - Wichita 345kV Dbl CKT	FACILITY STUDY STAGE
GEN-2015-027	4.90	SUNCMKEC	Crooked Creek 115kV	FACILITY STUDY STAGE
GEN-2015-028	3.00	OKGE	Nardins 69kV	FACILITY STUDY STAGE
GEN-2015-029	161.00	OKGE	Tatonga 345kV	FACILITY STUDY STAGE
GEN-2015-030	200.10	OKGE	Sooner 345kV	IA Pending
GEN-2015-031	300.00	SPS	Tap Amarillo South - Swisher 230kV	DISIS STAGE
GEN-2015-033	152.00	SPS	Tap TUCO Interchange - Oklaunion (GEN-2014-074 Tap) 345kV	DISIS STAGE
GEN-2015-034	200.00	OKGE	Ranch Road 345kV	DISIS STAGE
GEN-2015-036	303.60	OKGE	Johnston County 345kV	DISIS STAGE
GEN-2015-038	303.60	OKGE	Cimarron 345kV	DISIS STAGE
GEN-2015-039	50.00	SPS	Tap Deaf Smith - Plant X 230kV	DISIS STAGE
GEN-2015-040	50.10	SPS	Mustang 230kV	DISIS STAGE
GEN-2015-041	5.00	SPS	TUCO Interchange 345kV	DISIS STAGE
GEN-2015-042	320.00	NPPD	Tap Hoskins - Twin Church (Dixon County) 230kV	DISIS STAGE
GEN-2015-043	20.00	WERE	Tap Thistle - Wichita 345kV Dbl CKT	DISIS STAGE
GEN-2015-044	20.00	OKGE	Minco 345kV	DISIS STAGE
GEN-2015-045	20.00	AEPW	Tap Lawton - Sunnyside (Terry Road) 345kV	DISIS STAGE
GEN-2015-046	300.00	WAPA	Tande 345kV	DISIS STAGE
GEN-2015-047	300.00	OKGE	Sooner 345kV	DISIS STAGE
GEN-2015-048	200.00	OKGE	Cleo Corner 138kV	DISIS STAGE
GEN-2015-052	300.00	WERE	Tap Open Sky - Rose Hill 345kV	DISIS STAGE
GEN-2015-053	50.00	NPPD	Antelope 115kV	DISIS STAGE

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GEN-2015-055	40.00	WFEC	Erick 138kV	DISIS STAGE
GEN-2015-056	101.20	SPS	Crossroads 345kV	DISIS STAGE
GEN-2015-057	100.00	OKGE	Minco 345kV	DISIS STAGE
GEN-2015-058	50.00	SPS	Atoka 115kV	DISIS STAGE
GEN-2015-059	6.30	OKGE	Minco 345kV	DISIS STAGE
GEN-2015-060	250.50	OKGE	Woodward EHV 138kV	DISIS STAGE
GEN-2015-061	200.00	SUNCMKEC	Tap Mingo - Setab 345kV	DISIS STAGE
GEN-2015-062	4.50	OKGE	Tap and Tie South 4th - Bunch Creek & Enid Tap - Fairmont (GEN-2012-033T) 138kV	DISIS STAGE
GEN-2015-063	300.00	OKGE	Tap Woodring - Mathewson 345kV	DISIS STAGE
GEN-2015-064	197.80	SUNCMKEC	Mingo 115kV	DISIS STAGE
GEN-2015-065	202.40	SUNCMKEC	Mingo 345kV	DISIS STAGE
GEN-2015-066	248.40	OKGE	Tap Cleveland - Sooner 345kV	DISIS STAGE
GEN-2015-067	150.00	OKGE	Sooner 138kV	DISIS STAGE
GEN-2015-068	300.00	SPS	TUCO Interchange 345kV	DISIS STAGE
GEN-2015-069	300.00	WERE	Union Ridge 230kV	DISIS STAGE
GEN-2015-071	200.00	AEPW	Chisholm 345kV	DISIS STAGE
GEN-2015-072	20.90	MIDW	South Hays 230kV	DISIS STAGE
GEN-2015-073	200.10	WERE	Emporia Energy Center 345kV	DISIS STAGE
GEN-2015-074	174.00	WERE	Tap Hoyt - Jeffrey Energy Center 345kV	DISIS STAGE
GEN-2015-075	51.48	SPS	Carlisle 69kV	DISIS STAGE
GEN-2015-076	158.40	NPPD	Belden 115kV	DISIS STAGE
GEN-2015-077	80.00	SPS	Tap Terry - Clauene 115kV	DISIS STAGE
GEN-2015-078	50.10	SPS	Mustang 115kV	DISIS STAGE
GEN-2015-079	129.20	SPS	Tap Yoakum - Hobbs Interchange 230kV	DISIS STAGE
GEN-2015-080	129.20	SPS	Tap Yoakum - Hobbs Interchange 230kV	DISIS STAGE
GEN-2015-081	180.00	OKGE	Tap Woodward - Tatonga (GEN-2011-051 Tap) 345kV	DISIS STAGE
GEN-2015-082	200.00	OKGE	Tap Hitchland - Woodward Dbl Ckt (GEN-2011-014 Tap) 345kV	DISIS STAGE
GEN-2015-083	125.00	WERE	Belle Plain 138kV	DISIS STAGE
GEN-2015-084	51.30	AEPW	Hollis 138kV	DISIS STAGE
GEN-2015-085	122.40	AEPW	Tap Lake Pauline - Russell 138kV	DISIS STAGE
GEN-2015-087	76.00	NPPD	Tap Fairbury - Hebron 115kV	DISIS STAGE
GEN-2015-088	300.00	NPPD	Tap Moore - Pauline 345kV	DISIS STAGE
GEN-2015-090	220.00	WERE	Tap Thistle - Wichita 345kV Dbl CKT	DISIS STAGE
GEN-2015-091	101.20	WAPA	Daglum 230kV	DISIS STAGE
GEN-2015-092	250.00	AEPW	Tap Lawton - Sunnyside (Terry Road) 345kV	DISIS STAGE
GEN-2015-093	250.00	OKGE	Tap Lawton East Side - Gracemont 345kV	DISIS STAGE
GEN-2015-095	172.00	WFEC	Tap Rose Valley - Mooreland 138kV	DISIS STAGE
GEN-2015-096	150.00	WAPA	Tap Belfied - Rhame 230kV	DISIS STAGE
GEN-2015-097	100.00	WAPA	Groton 115kV	DISIS STAGE
GEN-2015-098	100.00	WAPA	Mingusville 230kV	DISIS STAGE
Gray County Wind (Montezuma)	110.00	SUNCMKEC	Gray County Tap 115kV	On-Line
J003	20.00	MDU	Baker 115kV	MISO Queued Request
J249	180.00	MDU	MDU Tatanka 230kV	MISO Queued Request
J262	100.00	OTP	Jamestown 345	MISO Queued Request
J263	100.00	OTP	Jamestown 345	MISO Queued Request
J316	150.00	MDU	MDU 230 kV Tatanka-Ellendale line	MISO Queued Request
Llano Estacado (White Deer)	80.00	SPS	Llano Wind 115kV	On-Line
MPC01200	44.00	OTP	Sidney 230kV	Under OTP Study

Request	Amount	Area	Requested/Proposed Point of Interconnection	Status or In-Service Date
MPC02100	100.00	OTP	Sidney 230kV	Under OTP Study
NPPD Distributed (Broken Bow)	8.30	NPPD	Broken Bow 115kV	On-Line
NPPD Distributed (Buffalo County Solar)	10.00	NPPD	Kearney Northeast	On-Line
NPPD Distributed (Burt County Wind)	12.00	NPPD	Tekamah & Oakland 115kV	On-Line
NPPD Distributed (Burwell)	3.00	NPPD	Ord 115kV	On-Line
NPPD Distributed (Columbus Hydro)	45.00	NPPD	Columbus 115kV	On-Line
NPPD Distributed (North Platte - Lexington)	54.00	NPPD	Multiple: Jeffrey 115kV, John_1 115kV, John_2 115kV	On-Line
NPPD Distributed (Ord)	11.90	NPPD	Ord 115kV	On-Line
NPPD Distributed (Stuart)	2.10	NPPD	Ainsworth 115kV	On-Line
SPS Distributed (Dumas 19th St)	20.00	SPS	Dumas 19th Street 115kV	On-Line
SPS Distributed (Etter)	20.00	SPS	Etter 115kV	On-Line
SPS Distributed (Hopi)	10.00	SPS	Hopi 115kV	On-Line
SPS Distributed (Jal)	10.00	SPS	S Jal 115kV	On-Line
SPS Distributed (Lea Road)	10.00	SPS	Lea Road 115kV	On-Line
SPS Distributed (Monument)	10.00	SPS	Monument 115kV	On-Line
SPS Distributed (Moore E)	25.00	SPS	Moore East 115kV	On-Line
SPS Distributed (Ocotillo)	10.00	SPS	S_Jal 115kV	On-Line
SPS Distributed (Sherman)	20.00	SPS	Sherman 115kV	On-Line
SPS Distributed (Spearman)	10.00	SPS	Spearman 69kV	On-Line
SPS Distributed (TC-Texas County)	20.00	SPS	Texas County 115kV	On-Line
SPS Distributed (Yuma)	2.57	SPS	SP-Yuma 69kV	On-Line
Total:	43,208.6			

11.3 C: Study Groupings

See next page

C. Study Groups

GROUP 1: WOODWARD AREA			
Request	Capacity	Area	Proposed Point of Interconnection
GEN-2001-014	96.00	WFEC	Ft Supply 138kV
GEN-2001-037	100.00	OKGE	FPL Moreland Tap 138kV
GEN-2005-008	120.00	OKGE	Woodward 138kV
GEN-2006-024S	19.80	WFEC	Buffalo Bear Tap 69kV
GEN-2006-046	131.00	OKGE	Dewey 138kV
GEN-2007-021	201.00	OKGE	Tatonga 345kV
GEN-2007-043	200.00	OKGE	Minco 345kV
GEN-2007-044	300.00	OKGE	Tatonga 345kV
GEN-2007-050	170.00	OKGE	Woodward EHV 138kV
GEN-2007-062	765.00	OKGE	Woodward EHV 345kV
GEN-2008-003	101.00	OKGE	Woodward EHV 138kV
GEN-2008-044	197.80	OKGE	Tatonga 345kV
GEN-2010-011	29.70	OKGE	Tatonga 345kV
GEN-2010-040	300.00	OKGE	Cimarron 345kV
GEN-2011-010	100.80	OKGE	Minco 345kV
GEN-2011-019	299.00	OKGE	Woodward 345kV
GEN-2011-020	299.00	OKGE	Woodward 345kV
GEN-2011-051	104.40	OKGE	Tap Woodward - Tatonga 345kV (GEN-2011-051 Tap)
GEN-2011-054	300.00	OKGE	Cimarron 345kV
GEN-2014-002	10.50	OKGE	Tatonga 345kV (GEN-2007-021 POI)
GEN-2014-003	15.80	OKGE	Tatonga 345kV (GEN-2007-044 POI)
GEN-2014-005	5.70	OKGE	Minco 345kV (GEN-2011-010 POI)
GEN-2014-020	100.00	AEPW	Tuttle 138kV
GEN-2014-056	250.00	OKGE	Minco 345kV
GEN-2015-029	161.00	OKGE	Tatonga 345kV
GEN-2015-038	303.60	OKGE	Cimarron 345kV
GEN-2015-044	20.00	OKGE	Minco 345kV
GEN-2015-048	200.00	OKGE	Cleo Corner 138kV
GEN-2015-057	100.00	OKGE	Minco 345kV
GEN-2015-059	6.30	OKGE	Minco 345kV
GEN-2015-060	250.50	OKGE	Woodward EHV 138kV
GEN-2015-081	180.00	OKGE	Tap Woodward - Tatonga (GEN-2011-051 Tap) 345kV
GEN-2015-093	250.00	OKGE	Tap Lawton East Side - Gracemont 345kV
GEN-2015-095	172.00	WFEC	Tap Rose Valley - Mooreland 138kV
PRIOR QUEUED SUBTOTAL	5,859.90		
AREA TOTAL	5,859.90		

GROUP 2: HITCHLAND AREA			
Request	Capacity	Area	Proposed Point of Interconnection
ASGI-2011-002	20.00	SPS	Herring 115kV
ASGI-2013-001	11.50	SPS	PanTex South 115kV
GEN-2002-008	240.00	SPS	Hitchland 345kV
GEN-2002-009	80.00	SPS	Hansford 115kV
GEN-2002-022	240.00	SPS	Bushland 230kV
GEN-2003-020	160.00	SPS	Martin 115kV
GEN-2006-020S	18.90	SPS	DWS Frisco 115kV
GEN-2006-044	370.00	SPS	Hitchland 345kV
GEN-2007-046	200.00	SPS	Hitchland 115kV
GEN-2008-047	300.00	OKGE	Beaver County 345kV
GEN-2008-051	322.00	SPS	Potter County 345kV
GEN-2010-001	300.00	OKGE	Beaver County 345kV
GEN-2010-014	358.80	SPS	Hitchland 345kV
GEN-2011-014	201.00	OKGE	Tap Hitchland - Woodward Dbl Ckt (GEN-2011-014 Tap) 345kV
GEN-2011-022	299.00	SPS	Hitchland 345kV
GEN-2013-030	300.00	OKGE	Beaver County 345kV
GEN-2014-037	200.00	SPS	Tap Hitchland - Beaver County Dbl Ckt (Optima) 345kV
GEN-2014-038	200.00	SPS	Tap Hitchland - Potter County 345kV
GEN-2015-082	200.00	OKGE	Tap Hitchland - Woodward Dbl Ckt (GEN-2011-014 Tap) 345kV
Llano Estacado (White Deer)	80.00	SPS	Llano Wind 115kV
SPS Distributed (Dumas 19th St)	20.00	SPS	Dumas 19th Street 115kV
SPS Distributed (Etter)	20.00	SPS	Etter 115kV
SPS Distributed (Moore E)	25.00	SPS	Moore East 115kV
SPS Distributed (Sherman)	20.00	SPS	Sherman 115kV
SPS Distributed (Spearman)	10.00	SPS	Spearman 69kV
SPS Distributed (TC-Texas County)	20.00	SPS	Texas County 115kV
PRIOR QUEUED SUBTOTAL	4,216.20		
AREA TOTAL	4,216.20		

GROUP 3: SPEARVILLE AREA			
Request	Capacity	Area	Proposed Point of Interconnection
ASGI-2012-006	22.50	SUNCMKEC	Tap Hugoton - Rolla 69kV
ASGI-2015-001	6.13	SUNCMKEC	Ninnescah 115kV
GEN-2001-039A	105.00	SUNCMKEC	Shooting Star Tap 115kV
GEN-2002-025A	150.00	SUNCMKEC	Spearville 230kV
GEN-2004-014	154.50	SUNCMKEC	Spearville 230kV
GEN-2005-012	250.00	SUNCMKEC	Ironwood 345kV
GEN-2006-021	101.00	SUNCMKEC	Flat Ridge Tap 138kV
GEN-2007-040	200.00	SUNCMKEC	Buckner 345kV
GEN-2008-018	250.00	SPS	Finney 345kV
GEN-2008-079	99.20	SUNCMKEC	Crooked Creek 115kV
GEN-2008-124	200.10	SUNCMKEC	Ironwood 345kV
GEN-2010-009	165.60	SUNCMKEC	Buckner 345kV
GEN-2010-045	197.80	SUNCMKEC	Buckner 345kV
GEN-2011-008	600.00	SUNCMKEC	Clark County 345kV
GEN-2011-016	200.10	SUNCMKEC	Ironwood 345kV
GEN-2012-007	120.00	SUNCMKEC	Rubart 115kV
GEN-2012-024	180.00	SUNCMKEC	Clark County 345kV
GEN-2013-010	99.00	SUNCMKEC	Tap Spearville - Post Rock (North of GEN-2011-017 Tap) 345kV
GEN-2015-021	20.00	SUNCMKEC	Johnson Corner 115kV
GEN-2015-027	4.90	SUNCMKEC	Crooked Creek 115kV
Gray County Wind (Montezuma)	110.00	SUNCMKEC	Gray County Tap 115kV
PRIOR QUEUED SUBTOTAL	3,235.83		
AREA TOTAL	3,235.83		

GROUP 4: NORTHWEST KANSAS AREA			
Request	Capacity	Area	Proposed Point of Interconnection
ASGI-2013-004	36.60	SUNCMKEC	Morris 115kV
GEN-2001-039M	100.00	SUNCMKEC	Central Plains Tap 115kV
GEN-2003-006A	200.00	SUNCMKEC	Elm Creek 230kV
GEN-2003-019	250.00	MIDW	Smoky Hills Tap 230kV
GEN-2006-031	75.00	MIDW	Knoll 115kV
GEN-2008-092	200.60	MIDW	Post Rock 230kV
GEN-2009-008	199.50	MIDW	South Hays 230kV
GEN-2009-020	48.30	MIDW	Walnut Creek 69kV
GEN-2010-048	70.00	MIDW	Tap Beach Station - Redline 115kV
GEN-2010-057	201.00	MIDW	Rice County 230kV
GEN-2013-033	28.00	MIDW	Knoll 115kV
GEN-2014-025	2.40	MIDW	Walnut Creek 69kV
GEN-2014-041	120.80	SUNCMKEC	Arnold 115kV
GEN-2015-061	200.00	SUNCMKEC	Tap Mingo - Setab 345kV
GEN-2015-064	197.80	SUNCMKEC	Mingo 115kV
GEN-2015-065	202.40	SUNCMKEC	Mingo 345kV
GEN-2015-072	20.90	MIDW	South Hays 230kV
PRIOR QUEUED SUBTOTAL	2,153.30		
AREA TOTAL	2,153.30		

GROUP 6: SOUTH TEXAS PANHANDLE/NEW MEXICO AREA

Request	Capacity	Area	Proposed Point of Interconnection
ASGI-2010-010	42.20	SPS	Lovington 115kV
ASGI-2010-020	30.00	SPS	Tap LE-Tatum - LE-Crossroads 69kV
ASGI-2010-021	15.00	SPS	Tap LE-Saunders Tap - LE-Anderson 69kV
ASGI-2011-001	27.30	SPS	Lovington 115kV
ASGI-2011-003	10.00	SPS	Hendricks 69kV
ASGI-2011-004	20.00	SPS	Pleasant Hill 69kV
ASGI-2012-002	18.15	SPS	FE-Clovis Interchange 115kV
ASGI-2013-002	18.40	SPS	FE Tucumcari 115kV
ASGI-2013-003	18.40	SPS	FE Clovis 115kV
ASGI-2013-005	1.65	SPS	FE Clovis 115kV
ASGI-2013-006	2.00	SPS	SP-Erskine 115kV
ASGI-2014-001	2.50	SPS	SP-Erskine 115kV
ASGI-2014-002	49.60	SPS	Tap Tucumcari - Santa Rosa 115kV
ASGI-2014-005	10.00	SPS	Strata 69kV
ASGI-2014-008	10.00	SPS	South Loving 69kV
ASGI-2014-009	10.00	SPS	Wood Draw 115kV
ASGI-2014-010	10.00	SPS	Ochoa 115kV
ASGI-2014-012	10.00	SPS	Cooper Ranch 115kV
ASGI-2015-002	2.00	SPS	SP-Yuma 69kV
GEN-2001-033	180.00	SPS	San Juan Tap 230kV
GEN-2001-036	80.00	SPS	Norton 115kV
GEN-2006-018	170.00	SPS	TUCO Interchange 230kV
GEN-2006-026	502.00	SPS	Hobbs 230kV & Hobbs 115kV
GEN-2008-022	300.00	SPS	Crossroads 345kV
GEN-2010-006	205.00	SPS	Jones 230kV
GEN-2010-046	56.00	SPS	TUCO Interchange 230kV
GEN-2011-025	80.00	SPS	Tap Floyd County - Crosby County 115kV
GEN-2011-045	205.00	SPS	Jones 230kV
GEN-2011-046	27.00	SPS	Lopez 115kV
GEN-2011-048	175.00	SPS	Mustang 230kV
GEN-2012-001	61.20	SPS	Cirrus Tap 230kV
GEN-2012-020	478.00	SPS	TUCO 230kV
GEN-2012-034	7.00	SPS	Mustang 230kV
GEN-2012-035	7.00	SPS	Mustang 230kV
GEN-2012-036	7.00	SPS	Mustang 230kV
GEN-2012-037	203.00	SPS	TUCO 345kV
GEN-2013-016	203.00	SPS	TUCO 345kV
GEN-2013-022	25.00	SPS	Norton 115kV
GEN-2013-027	150.00	SPS	Tap Tolk - Yoakum 230kV
GEN-2014-012	225.00	SPS	Tap Hobbs Interchange - Andrews 230kV
GEN-2014-033	70.00	SPS	Chaves County 115kV
GEN-2014-034	70.00	SPS	Chaves County 115kV
GEN-2014-035	30.00	SPS	Chaves County 115kV
GEN-2014-040	320.40	SPS	Castro 115kV
GEN-2014-046	125.40	SPS	Chaves County 115kV
GEN-2014-047	40.00	SPS	Crossroads 345kV
GEN-2014-074	152.00	SPS	Tap TUCO Interchange - Oklaunion (GEN-2014-074 Tap) 345kV
GEN-2015-014	150.00	SPS	Tap Cochran - Lehman 115kV
GEN-2015-018	80.00	SPS	Tap Curry County - Bailey 115kV

GEN-2015-020	100.00	SPS	Oasis 115kV
GEN-2015-022	112.00	SPS	Swisher 115kV
GEN-2015-031	300.00	SPS	Tap Amarillo South - Swisher 230kV
GEN-2015-033	152.00	SPS	Tap TUCO Interchange - Oklaunion (GEN-2014-074 Tap) 345kV
GEN-2015-039	50.00	SPS	Tap Deaf Smith - Plant X 230kV
GEN-2015-040	50.10	SPS	Mustang 230kV
GEN-2015-041	5.00	SPS	TUCO Interchange 345kV
GEN-2015-056	101.20	SPS	Crossroads 345kV
GEN-2015-058	50.00	SPS	Atoka 115kV
GEN-2015-068	300.00	SPS	TUCO Interchange 345kV
GEN-2015-075	51.48	SPS	Carlisle 69kV
GEN-2015-077	80.00	SPS	Tap Terry - Clauene 115kV
GEN-2015-078	50.10	SPS	Mustang 115kV
GEN-2015-079	129.20	SPS	Tap Yoakum - Hobbs Interchange 230kV
GEN-2015-080	129.20	SPS	Tap Yoakum - Hobbs Interchange 230kV
SPS Distributed (Hopi)	10.00	SPS	Hopi 115kV
SPS Distributed (Jal)	10.00	SPS	S Jal 115kV
SPS Distributed (Lea Road)	10.00	SPS	Lea Road 115kV
SPS Distributed (Monument)	10.00	SPS	Monument 115kV
SPS Distributed (Ocotillo)	10.00	SPS	S_Jal 115kV
SPS Distributed (Yuma)	2.57	SPS	SP-Yuma 69kV
PRIOR QUEUED SUBTOTAL	6,404.05		
AREA TOTAL	6,404.05		

GROUP 7: SOUTHWEST OKLAHOMA AREA			
Request	Capacity	Area	Proposed Point of Interconnection
GEN-2001-026	74.30	WFEC	Washita 138kV
GEN-2002-005	120.00	WFEC	Red Hills Tap 138kV
GEN-2003-004	100.00	WFEC	Washita 138kV
GEN-2003-005	100.00	WFEC	Anadarko - Paradise (Blue Canyon) 138kV
GEN-2003-022	120.00	AEPW	Weatherford 138kV
GEN-2004-020	27.00	AEPW	Weatherford 138kV
GEN-2004-023	20.60	WFEC	Washita 138kV
GEN-2005-003	30.60	WFEC	Washita 138kV
GEN-2006-002	101.00	AEPW	Sweetwater 230kV
GEN-2006-035	225.00	AEPW	Sweetwater 230kV
GEN-2006-043	99.00	AEPW	Sweetwater 230kV
GEN-2007-052	150.00	WFEC	Anadarko 138kV
GEN-2008-023	150.00	AEPW	Hobart Junction 138kV
GEN-2008-037	101.00	WFEC	Slick Hills 138kV
GEN-2011-037	7.00	WFEC	Blue Canyon 5 138kV
GEN-2011-049	250.70	OKGE	Border 345kV
GEN-2012-028	74.80	WFEC	Gotebo 69kV
GEN-2015-004	52.90	OKGE	Border 345kV
GEN-2015-013	120.00	WFEC	Synder 138kV
GEN-2015-055	40.00	WFEC	Erick 138kV
GEN-2015-071	200.00	AEPW	Chisholm 345kV
GEN-2015-084	51.30	AEPW	Hollis 138kV
GEN-2015-085	122.40	AEPW	Tap Lake Pauline - Russell 138kV
PRIOR QUEUED SUBTOTAL	2,337.60		
AREA TOTAL	2,337.60		

GROUP 8: NORTH OKLAHOMA/SOUTH CENTRAL KANSAS AREA			
Request	Capacity	Area	Proposed Point of Interconnection
ASGI-2010-006	150.00	AECI	Remington 138kV
ASGI-2014-014	56.40	GRDA	Ferguson 69kV
ASGI-2015-004	56.36	GRDA	Coffeyville City 69kV
GEN-2002-004	200.00	WERE	Latham 345kV
GEN-2005-013	201.00	WERE	Caney River 345kV
GEN-2007-025	300.00	WERE	Viola 345kV
GEN-2008-013	300.00	OKGE	Hunter 345kV
GEN-2008-021	42.00	WERE	Wolf Creek 345kV
GEN-2008-098	100.80	WERE	Waverly 345kV
GEN-2009-025	59.80	OKGE	Nardins 69kV
GEN-2010-003	100.80	WERE	Waverly 345kV
GEN-2010-005	299.20	WERE	Viola 345kV
GEN-2010-055	4.50	AEPW	Wekiwa 138kV
GEN-2011-057	150.40	WERE	Creswell 138kV
GEN-2012-027	136.00	AEPW	Shidler 138kV
GEN-2012-032	300.00	OKGE	Open Sky 345kV
GEN-2012-033	98.80	OKGE	Tap and Tie South 4th - Bunch Creek & Enid Tap - Fairmont (GEN-2012-033T) 138kV
GEN-2012-041	121.50	OKGE	Ranch Road 345kV
GEN-2013-012	147.00	OKGE	Redbud 345kV
GEN-2013-028	559.50	GRDA	Tap N Tulsa - GRDA 1 345kV
GEN-2013-029	300.00	OKGE	Renfrow 345kV
GEN-2014-001	200.60	WERE	Tap Wichita - Emporia Energy Center (GEN-2014-001 Tap) 345kV

GEN-2014-028	35.00	EMDE	Riverton 161kV
GEN-2014-064	248.40	OKGE	Otter 138kV
GEN-2015-001	200.00	OKGE	Ranch Road 345kV
GEN-2015-015	154.60	OKGE	Tap Medford Tap - Coyote 138kV
GEN-2015-016	200.00	KCPL	Tap Marmaton - Centerville 161kV
GEN-2015-024	220.00	WERE	Tap Thistle - Wichita 345kV Dbl CKT
GEN-2015-025	220.00	WERE	Tap Thistle - Wichita 345kV Dbl CKT
GEN-2015-028	3.00	OKGE	Nardins 69kV
GEN-2015-030	200.10	OKGE	Sooner 345kV
GEN-2015-034	200.00	OKGE	Ranch Road 345kV
GEN-2015-043	20.00	WERE	Tap Thistle - Wichita 345kV Dbl CKT
GEN-2015-047	300.00	OKGE	Sooner 345kV
GEN-2015-052	300.00	WERE	Tap Open Sky - Rose Hill 345kV
GEN-2015-062	4.50	OKGE	Tap and Tie South 4th - Bunch Creek & Enid Tap - Fairmont (GEN-2012-033T) 138kV
GEN-2015-063	300.00	OKGE	Tap Woodring - Mathewson 345kV
GEN-2015-066	248.40	OKGE	Tap Cleveland - Sooner 345kV
GEN-2015-067	150.00	OKGE	Sooner 138kV
GEN-2015-069	300.00	WERE	Union Ridge 230kV
GEN-2015-073	200.10	WERE	Emporia Energy Center 345kV
GEN-2015-083	125.00	WERE	Belle Plain 138kV
GEN-2015-090	220.00	WERE	Tap Thistle - Wichita 345kV Dbl CKT
PRIOR QUEUED SUBTOTAL	7,733.76		
AREA TOTAL	7,733.76		

GROUP 9: NEBRASKA AREA

Request	Capacity	Area	Proposed Point of Interconnection
GEN-2002-023N	0.80	NPPD	Harmony 115kV
GEN-2003-021N	75.00	NPPD	Ainsworth Wind Tap 115kV
GEN-2004-023N	75.00	NPPD	Columbus Co 115kV
GEN-2006-020N	42.00	NPPD	Bloomfield 115kV
GEN-2006-037N1	75.00	NPPD	Broken Bow 115kV
GEN-2006-038N005	80.00	NPPD	Broken Bow 115kV
GEN-2006-038N019	80.00	NPPD	Petersburg North 115kV
GEN-2006-044N	40.50	NPPD	North Petersburg 115kV
GEN-2007-011N08	81.00	NPPD	Bloomfield 115kV
GEN-2007-017IS	166.00	WAPA	Ft Thompson-Grand Island 345kV
GEN-2007-018IS	234.00	WAPA	Ft Thompson-Grand Island 345kV
GEN-2008-086N02	201.00	NPPD	Meadow Grove 230kV
GEN-2008-119O	60.00	OPPD	S1399 161kV
GEN-2009-040	73.80	WERE	Marshall 115kV
GEN-2010-041	10.50	OPPD	S1399 161kV
GEN-2010-051	200.00	NPPD	Tap Hoskins - Twin Church (Dixon County) 230kV
GEN-2011-018	73.60	NPPD	Steele City 115kV
GEN-2011-027	120.00	NPPD	Tap Hoskins - Twin Church (Dixon County) 230kV
GEN-2011-056	3.60	NPPD	Jeffrey 115kV
GEN-2011-056A	3.60	NPPD	John 1 115kV
GEN-2011-056B	4.50	NPPD	John 2 115kV
GEN-2012-021	4.80	LES	Terry Bundy Generating Station 115kV
GEN-2013-002	50.60	LES	Tap Sheldon - Folsom & Pleasant Hill (GEN-2013-002 Tap) 115kV CKT 2
GEN-2013-008	1.20	NPPD	Steele City 115kV
GEN-2013-014	25.50	NPPD	Tap Pauline - Hildreth (Rosemont) 115kV
GEN-2013-019	73.60	LES	Tap Sheldon - Folsom & Pleasant Hill (GEN-2013-002 Tap) 115kV CKT 2
GEN-2013-032	204.00	NPPD	Antelope 115kV

GEN-2014-004	4.00	NPPD	Steele City 115kV (GEN-2011-018 POI)
GEN-2014-013	73.50	NPPD	Meadow Grove (GEN-2008-086N2 Sub) 230kV
GEN-2014-031	35.80	NPPD	Meadow Grove 230kV
GEN-2014-032	10.20	NPPD	Meadow Grove 230kV
GEN-2014-039	73.40	NPPD	Friend 115kV
GEN-2015-007	160.00	NPPD	Hoskins 345kV
GEN-2015-023	300.70	NPPD	Holt County 345kV
GEN-2015-042	320.00	NPPD	Tap Hoskins - Twin Church (Dixon County) 230kV
GEN-2015-053	50.00	NPPD	Antelope 115kV
GEN-2015-076	158.40	NPPD	Belden 115kV
GEN-2015-087	76.00	NPPD	Tap Fairbury - Hebron 115kV
GEN-2015-088	300.00	NPPD	Tap Moore - Pauline 345kV
NPPD Distributed (Broken Bow)	8.30	NPPD	Broken Bow 115kV
NPPD Distributed (Buffalo County Solar)	10.00	NPPD	Kearney Northeast
NPPD Distributed (Burt County Wind)	12.00	NPPD	Tekamah & Oakland 115kV
NPPD Distributed (Burwell)	3.00	NPPD	Ord 115kV
NPPD Distributed (Columbus Hydro)	45.00	NPPD	Columbus 115kV
NPPD Distributed (North Platte - Lexington)	54.00	NPPD	Multiple: Jeffrey 115kV, John_1 115kV, John_2 115kV
NPPD Distributed (Ord)	11.90	NPPD	Ord 115kV
NPPD Distributed (Stuart)	2.10	NPPD	Ainsworth 115kV
PRIOR QUEUED SUBTOTAL	3,767.90		
AREA TOTAL	3,767.90		

GROUP 10: SOUTHEAST OKLAHOMA/NORTHEAST TEXAS AREA

Request	Capacity	Area	Proposed Point of Interconnection
AREA TOTAL	0.00		

GROUP 12: NORTHWEST ARKANSAS AREA

Request	Capacity	Area	Proposed Point of Interconnection
GEN-2013-011	30.00	AEPW	Turk 138kV
PRIOR QUEUED SUBTOTAL	30.00		
AREA TOTAL	30.00		

GROUP 13: NORTHWEST MISSOURI AREA

Request	Capacity	Area	Proposed Point of Interconnection
GEN-2008-129	80.00	KCPL	Pleasant Hill 161kV
GEN-2010-036	4.60	WERE	6th Street 115kV
GEN-2011-011	50.00	KCPL	Iatan 345kV
GEN-2014-021	300.00	KCPL	Tap Nebraska City - Mullin Creek 345kV
GEN-2015-005	200.10	KCPL	Tap Nebraska City - Sibley 345kV
GEN-2015-074	174.00	WERE	Tap Hoyt - Jeffrey Energy Center 345kV
PRIOR QUEUED SUBTOTAL	808.70		
AREA TOTAL	808.70		

GROUP 14: SOUTH CENTRAL OKLAHOMA AREA

Request	Capacity	Area	Proposed Point of Interconnection
ASGI-2015-006	9.00	SWPA	Tupelo 138kV
GEN-2011-040	111.00	OKGE	Carter County 138kV
GEN-2011-050	109.80	AEPW	Santa Fe Tap 138kV
GEN-2012-004	41.40	OKGE	Carter County 138kV
GEN-2013-007	100.30	OKGE	Tap Prices Falls - Carter 138kV
GEN-2014-057	250.00	AEPW	Tap Lawton - Sunnyside (Terry Road) 345kV
GEN-2015-036	303.60	OKGE	Johnston County 345kV
GEN-2015-045	20.00	AEPW	Tap Lawton - Sunnyside (Terry Road) 345kV
GEN-2015-092	250.00	AEPW	Tap Lawton - Sunnyside (Terry Road) 345kV
PRIOR QUEUED SUBTOTAL	1,195.10		
AREA TOTAL	1,195.10		

GROUP 15: E-SOUTH DAKOTA AREA

Request	Capacity	Area	Proposed Point of Interconnection
G255	100.00	XEL	Yankee 115kV
GEN-2006-001IS	10.00	XEL	Marshall 115kV
GEN-2006-006IS	10.00	XEL	Marshall 115kV
GEN-2007-013IS	50.00	WAPA	Wessington Springs 230kV
GEN-2007-014IS	100.00	WAPA	Wessington Springs 230kV
GEN-2007-023IS	50.00	WAPA	Formit-Summit 115kV
GEN-2009-001IS	200.00	WAPA	Groton-Watertown 345kV
GEN-2009-018IS	100.00	WAPA	Groton 115kV
GEN-2010-001IS	99.00	WAPA	Bismarck-Glenham 230kV
GEN-2010-003IS	34.00	WAPA	Wessington Springs 230kV
GEN-2012-014IS	99.50	WAPA	Groton 115kV
GEN-2013-001IS	90.00	WAPA	Summit-Watertown 115kV
GEN-2013-009IS	19.50	WAPA	Redfield NW 115kV
GEN-2014-001IS	103.70	WAPA	Newell-Maurine 115kV
GEN-2015-097	100.00	WAPA	Groton 115kV
PRIOR QUEUED SUBTOTAL	1,165.70		
AREA TOTAL	1,165.70		

GROUP 16: W-NORTH DAKOTA AREA			
Request	Capacity	Area	Proposed Point of Interconnection
G359	150.00	MDU	MDU 230 kV system near Ellendale
G380	150.00	OTP	Rugby 115kV
G408	12.00	XEL	Tap McHenry - Souris 115kV
G502	50.60	MP	Milton Young 230kV
G645	50.00	OTP	Ladish 115kV
G723	10.00	MDU	Haskett 115kV
G752	150.00	MDU	Tap Bison - Hettinger 230kV
G788	49.00	GRE	Ladish 115kV
G830	99.00	GRE	GRE McHenry 115kV
GEN-2005-008IS	50.00	WAPA	Hilken 230kV [Ecklund 230kV]
GEN-2006-015IS	50.00	WAPA	Hilken 230kV [Ecklund 230kV]
GEN-2007-027IS	99.00	WAPA	Bismarck-Garrison 230kV #1
GEN-2009-026IS	110.00	WAPA	Dickenson-Heskett 230kV
GEN-2010-007IS	172.50	WAPA	Antelope Valley 345kV
GEN-2012-006IS	125.01	WAPA	Williston-Ch. Creek 230kV
GEN-2012-012IS	75.00	WAPA	Wolf Point-Circle 115kV
GEN-2014-003IS	91.00	WAPA	Culbertson 115kV
GEN-2014-004IS	384.20	WAPA	Charlie Creek 345kV
GEN-2014-006IS	125.00	WAPA	Williston 115kV
GEN-2014-010IS	150.00	WAPA	Neset 115kV
GEN-2014-014IS	151.50	WAPA	Belfield-Rhame 230kV
GEN-2015-046	300.00	WAPA	Tande 345kV
GEN-2015-091	101.20	WAPA	Daglum 230kV
GEN-2015-096	150.00	WAPA	Tap Belfied - Rhame 230kV
GEN-2015-098	100.00	WAPA	Mingusville 230kV
J003	20.00	MDU	Baker 115kV
J249	180.00	MDU	MDU Tatanka 230kV
J262	100.00	OTP	Jamestown 345
J263	100.00	OTP	Jamestown 345
J316	150.00	MDU	MDU 230 kV Tatanka-Ellendale line
MPC01200	44.00	OTP	Sidney 230kV
MPC02100	100.00	OTP	Sidney 230kV
PRIOR QUEUED SUBTOTAL	3,649.01		
AREA TOTAL	0.00		

GROUP 17: W-SOUTH DAKOTA AREA			
Request	Capacity	Area	Proposed Point of Interconnection
GEN-2006-002IS	51.00	WAPA	Wessington Springs 230kV
GEN-2009-006IS	90.00	WAPA	Mission 115kV
GEN-2009-007IS	100.00	WAPA	Mission 115kV
GEN-2009-020AIS	150.00	WAPA	Tripp Junction 115kV
GEN-2012-009IS	99.00	WAPA	Tap Fort Randall - Lake Platte 230kV
PRIOR QUEUED SUBTOTAL	490.00		
GEN-2015-089	200.60	WAPA	Tap Fort Randall - Utica Junction 230kV CKT 1
CURRENT CLUSTER SUBTOTAL	200.60		
AREA TOTAL	0.00		

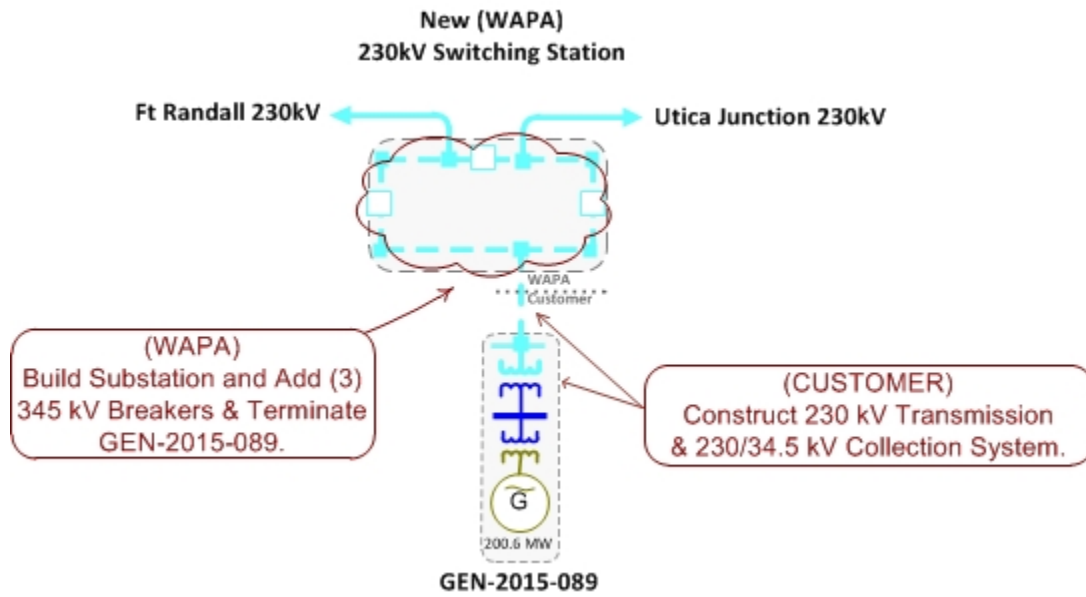
GROUP 18: E-NORTH DAKOTA AREA			
Request	Capacity	Area	Proposed Point of Interconnection
GEN-2002-008IS	40.50	WAPA	Edgeley 115kV [Pomona 115kV]
GEN-2005-003IS	100.00	WAPA	Nelson 115kV
GEN-2007-020IS	16.00	WAPA	Nelson 115kV
GEN-2008-008IS	5.00	WAPA	Nelson 115kV
PRIOR QUEUED SUBTOTAL	161.50		
AREA TOTAL	0.00		

CLUSTER TOTAL (CURRENT STUDY)	200.6	MW
PQ TOTAL (PRIOR QUEUED)	43,208.6	MW
CLUSTER TOTAL (INCLUDING PRIOR QUEUED)	43,409.2	MW

11.4 D: Proposed Point of Interconnection One Line Diagrams

See next page

GEN-2015-089
Estimated Interconnection Cost: \$ 6,000,000



11.5 E: Cost Allocation per Interconnection Request (Including Prior Queued Upgrades)

Important Note:

****WITHDRAWAL OF HIGHER QUEUED PROJECTS WILL CAUSE A RESTUDY
AND MAY RESULT IN HIGHER INTERCONNECTION COSTS****

This section shows each Generator Interconnection Request Customer, their current study impacted Network Upgrades, and the previously allocated upgrades upon which they rely to accommodate their interconnection to the transmission system.

The costs associated with the current study Network Upgrades are allocated to the Customers shown in this report.

In addition should a higher queued request, defined as one this study includes as a prior queued request, withdraw, the Network Upgrades assigned to the withdrawn request may be reallocated to the remaining requests that have an impact on the Network Upgrade under a restudy. Also, should a Interconnection Request choose to go into service prior to the operation date of any necessary Network Upgrades, the costs associated with those upgrades may be reallocated to the impacted Interconnection Request. The actual costs allocated to each Generator Interconnection Request Customer will be determined at the time of a restudy.

The required interconnection costs listed 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 through SPP's Open Access Same Time Information System (OASIS) as required by Attachment Z1 of the SPP OATT. In addition, costs associated with a short circuit analysis will be allocated should the Interconnection Request Customer choose to execute a Facility Study Agreement.

There may be additional costs allocated to each Customer. See Appendix F for more details.

Appendix E. Cost Allocation Per Request

(Including Previously Allocated Network Upgrades*)

Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
GEN-2015-089			
Fort Calhoun South Flowgate Power Flow Limit Mitigation NRIS only required upgrade: Mitigation for Fort Calhoun South Flowgate Power Flow Limit. Mitigation TBD in the DISIS & Facilities Study per OPPD review.	Current Study	\$TBD	\$TBD
Fort Randall - Spencer 115kV CKT 1 NRIS only required upgrade: Rebuild approximately 20 miles of 115kV from Fort Randall - Spencer.	Current Study	\$16,000,000	\$16,000,000
GEN-2015-089 Interconnection Costs See One-Line Diagram.	Current Study	\$6,000,000	\$6,000,000
GEN-2015-089 Tap - Sioux City 230kV CKT 1 NRIS only required upgrade: Replace terminal equipment.	Current Study	\$500,000	\$500,000
GEN-2015-089 Tap - Utica Junction 230kV CKT 1 Rebuild approximately 29 miles of 230kV from GEN-2015-089 Tap - Utica Junction.	Current Study	\$28,722,000	\$28,722,000
GEN-2015-089 Tap 230kV Substation Expansion Tap and Tie the Ft Randall - Sioux City 230kV into the Ft Randall - Utica Junction 230kV at the GEN 2015-089 Tap.	Current Study	\$8,000,000	\$8,000,000
Meadow Grove - North Petersburg 115kV CKT 1 Build approx. 25 miles of new 115kV circuit from Meadow Grove - N. Petersburg, expand N. Petersburg 115kV Sub and replace equip. at Neligh 115kV Sub.	Current Study	\$16,200,000	\$16,200,000
Meadow Grove 230/115/13.8kV Transformer CKT 1 Build Meadow Grove 230/115/13.8kV Transformer and Substation Expansion.	Current Study	\$11,300,000	\$11,300,000
O'Neill - Spencer 115kV CKT 1 NRIS only required upgrade: Rebuild approximately 25 miles of 115kV from Spencer - O'Neill.	Current Study	\$20,000,000	\$20,000,000
Gentleman - Thedford 345kV CKT 1 Build approximately 76 Miles of 345kV from Gentleman to Thedford per SPP-NTC-200220 (Total Project E&C Cost Shown).	Previously Allocated		\$311,717,040
Holt County - Antelope 345kV CKT 1 Build approximately 30 miles of new 345kV	Previously Allocated		\$36,000,000
Thedford - Holt County 345kV CKT 1 Build approximately 146 Miles of 345kV from Thedford to Holt County per SPP-NTC-200220 (Total Project E&C Cost Shown).	Previously Allocated		\$311,717,040
Thedford 345/115kV Transformer CKT 1 Install Thedford 345/115kV transformer per SPP-NTC-200277 (Total Project E&C Cost Shown).	Previously Allocated		\$311,717,040
	Current Study Total	\$106,722,000	
	TOTAL CURRENT STUDY COSTS:	\$106,722,000*	

*Does not currently include the possible costs for mitigation of the Fort Calhoun South Flowgate constraint.

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

11.6 F: Cost Allocation per Proposed Study Network Upgrade

Important Note:

****WITHDRAWAL OF HIGHER QUEUED PROJECTS WILL CAUSE A RESTUDY
AND MAY RESULT IN HIGHER INTERCONNECTION COSTS****

This section shows each Direct Assigned Facility and Network Upgrade and the Generator Interconnection Request Customer(s) which have an impact in this study assuming all higher queued projects remain in the queue and achieve commercial operation.

The required interconnection costs listed 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 through SPP's Open Access Same Time Information System (OASIS) as required by Attachment Z1 of the SPP OATT. In addition, costs associated with a short circuit analysis will be allocated should the Interconnection Request Customer choose to execute a Facility Study Agreement.

There may be additional costs allocated to each Customer. See Appendix E for more details.

Appendix F. Cost Allocation by Upgrade

Fort Randall - Spencer 115kV CKT 1 \$16,000,000

NRIS only required upgrade: Rebuild approximately 20 miles of 115kV from Fort Randall - Spencer.

GEN-2015-089 \$16,000,000

Total Allocated Costs **\$16,000,000**

Fort Calhoun South Flowgate Power Flow Limit Mitigation \$TBD

NRIS only required upgrade: Mitigation for Fort Calhoun South Flowgate Power Flow Limit. Mitigation TBD in the DISIS & Facilities Study per OPPD review

GEN-2015-089 \$TBD

Total Allocated Costs **\$TBD**

GEN-2015-089 Tap 230kV Substation Expansion \$8,000,000

Tap and Tie the Ft Randall - Sioux City 230kV into the Ft Randall - Utica Junction 230kV at the GEN 2015-089 Tap.

GEN-2015-089 \$8,000,000

Total Allocated Costs **\$8,000,000**

GEN-2015-089 Tap - Sioux City 230kV CKT 1 \$500,000

NRIS only required upgrade: Replace terminal equipment.

GEN-2015-089 \$500,000

Total Allocated Costs **\$500,000**

GEN-2015-089 Tap - Utica Junction 230kV CKT 1 \$28,722,000

Rebuild approximately 29 miles of 230kV from GEN-2015-089 Tap - Utica Junction.

GEN-2015-089 \$28,722,000

Total Allocated Costs **\$28,722,000**

GEN-2015-089 Interconnection Costs \$6,000,000

See One-Line Diagram.

GEN-2015-089 \$6,000,000

Total Allocated Costs **\$6,000,000**

Meadow Grove - North Petersburg 115kV CKT 1 \$16,200,000

Build approx. 25 miles of new 115kV circuit from Meadow Grove - N. Petersburg, expand N. Petersburg 115kV Sub and replace equip. at Neligh 115kV Sub.

GEN-2015-089 \$16,200,000

Total Allocated Costs **\$16,200,000**

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

Meadow Grove 230/115/13.8kV Transformer CKT 1 **\$11,300,000**

Build Meadow Grove 230/115/13.8kV Transformer and Substation Expansion.

GEN-2015-089 \$11,300,000

Total Allocated Costs **\$11,300,000**

Oneill - Spencer 115kV CKT 1 **\$20,000,000**

NRIS only required upgrade: Rebuild approximately 25 miles of 115kV from Spencer - Oneill.

GEN-2015-089 \$20,000,000

Total Allocated Costs **\$20,000,000**

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

11.7 G-T: Thermal Power Flow Analysis (Constraints Requiring Transmission Reinforcement)

See next page.

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNSLock-Blown up	17ALL		0 17SP	G15_089		Non-Converged Contingency	720	720	0.08616	102.867	GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z
FDNSLock-Blown up	17ALL		0 17SP	G15_089		Non-Converged Contingency	720	720	0.08616	102.1846	GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1
FDNSLock-Blown up	17ALL		0 17G	G15_089		Non-Converged Contingency	720	720	0.08518	83.04443	GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z
FDNSLock-Blown up	17ALL		0 17G	G15_089		Non-Converged Contingency	720	720	0.08518	82.58952	GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1
FDNSLock-Blown up	17ALL		0 16WP	G15_089		Non-Converged Contingency	720	720	0.0816	82.12033	GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z
FDNSLock-Blown up	17ALL		0 16WP	G15_089		Non-Converged Contingency	720	720	0.0816	81.75541	GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	FT RANDAL - SIOUX CITY 230KV CKT 1	320	320	0.16006	102.416	G15089 T 230.00 - UTICA JCT 230KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	FT RANDAL - SIOUX CITY 230KV CKT 1	320	320	0.08833	100.2901	KELLY - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.03067	131.9431	KELLY - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR		0 25SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.03219	130.9796	KELLY - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR		0 20SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.03221	129.3768	KELLY - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.04615	124.7941	G15089 T 230.00 - UTICA JCT 230KV CKT 1
FDNS	00NR		0 25SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.04821	123.3124	G15089 T 230.00 - UTICA JCT 230KV CKT 1
FDNS	00NR		0 20SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.04823	121.4159	G15089 T 230.00 - UTICA JCT 230KV CKT 1
FDNS	00NR		0 25SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.03219	120.3033	FT RANDAL - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.03067	120.2143	FT RANDAL - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.02925	119.8485	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	00NR		0 25SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.03078	119.4481	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	00NR		0 20SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.03221	118.6057	FT RANDAL - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR		0 20SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.0308	117.8137	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	00NR		0 25SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.03056	113.7211	RASMUSN - UTICA JCT 230KV CKT 1
FDNS	00NR		0 25SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.03056	113.2263	RASMUSN - SIOUX CITY 230KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.02908	113.1693	RASMUSN - UTICA JCT 230KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.02908	112.611	RASMUSN - SIOUX CITY 230KV CKT 1
FDNS	00NR		0 20SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.03058	112.0491	RASMUSN - UTICA JCT 230KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.02974	111.6331	GAVINS POINT - YANKON JCT 115KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.02974	111.6331	GAVINS POINT - YANKON JCT 115KV CKT 1
FDNS	00NR		0 20SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.03058	111.5754	RASMUSN - SIOUX CITY 230KV CKT 1
FDNS	00NR		0 25SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.02945	103.604	MT VERN - STORLA 115KV CKT 1
FDNS	00NR		0 25SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.02945	103.3193	GREGORY - WINNER 115KV CKT 1
FDNS	00NR		0 25SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.02945	103.1759	P12:115:UMZW# 172 #: WI IN SD.
FDNS	00NR		0 25SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.02945	102.2269	WINNER - WITTEN 115KV CKT 1
FDNS	00NR		0 25SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.03273	102.0997	FT RANDAL - LAKE PLATT 230KV CKT 1
FDNS	00NR		0 20SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.02948	101.6932	MT VERN - STORLA 115KV CKT 1
FDNS	00NR		0 25SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.03289	101.6428	FT RANDAL - FT THOMPSON 230KV CKT 1
FDNS	00NR		0 25SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.03289	101.6428	FT RANDAL - FT THOMPSON 230KV CKT 1
FDNS	00NR		0 25SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.03273	101.4991	FT THOMPSON - LAKE PLATT 230KV CKT 1
FDNS	00NR		0 25SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.03273	101.4991	FT THOMPSON - LAKE PLATT 230KV CKT 1
FDNS	00NR		0 20SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.02948	101.2082	GREGORY - WINNER 115KV CKT 1
FDNS	00NR		0 20SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.02948	101.0821	P12:115:UMZW# 172 #: WI IN SD.
FDNS	00NR		0 17SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.03108	100.3741	FT RANDAL - LAKE PLATT 230KV CKT 1
FDNS	00NR		0 20SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.02948	100.1474	WINNER - WITTEN 115KV CKT 1
FDNS	00NR		0 25SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.02972	100.0523	P12:115:UMZW# 173 #: WI-WE-MS IN SD. WITTEN IS A TAP
FDNS	00NR		0 17SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.03123	99.9	FT RANDAL - FT THOMPSON 230KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.03123	99.9	FT RANDAL - FT THOMPSON 230KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.03108	99.9	FT THOMPSON - LAKE PLATT 230KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.03108	99.9	FT THOMPSON - LAKE PLATT 230KV CKT 1
FDNS	00NR		0 20SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.03275	99.9	FT RANDAL - LAKE PLATT 230KV CKT 1
FDNS	00NR		0 20SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.03291	99.5	FT RANDAL - FT THOMPSON 230KV CKT 1
FDNS	00NR		0 20SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.03291	99.5	FT RANDAL - FT THOMPSON 230KV CKT 1
FDNS	00NR		0 20SP	G15_089	FROM->TO	FTCAL S	803	803	0.035	104.0565	BASE CASE
FDNS	00NR		0 25SP	G15_089	FROM->TO	FTCAL S	803	803	0.03485	102.9253	BASE CASE
FDNS	00NR		0 20WP	G15_089	FROM->TO	FTCAL S	803	803	0.03533	100.9677	BASE CASE
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.41314	140.3839	KELLY - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.41643	132.5801	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	17ALL		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.45251	130.5847	KELLY - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR		0 20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.4155	128.9576	KELLY - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR		0 25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.41555	128.1945	KELLY - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.41314	124.3227	FT RANDAL - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.38842	122.9961	HANLON - STORLA 230KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.38867	122.7562	P12:230:UMZB# 116 #: ST IN SD. WSG-ST-VH
FDNS	17ALL		0 16WP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.4504	122.7362	KELLY - MEADOWGROVE4230.00 230KV CKT 1
FDNS	17ALL		0 25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.4518	122.6072	KELLY - MEADOWGROVE4230.00 230KV CKT 1
FDNS	17ALL		0 20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.45143	122.1981	KELLY - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR		0 20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.4189	121.5805	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	00NR		0 25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.41896	120.6162	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	17ALL		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.45463	119.7904	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.38843	119.0415	FT THOMPSON - LETCHER 230KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.38843	119.0415	FT THOMPSON - LETCHER 230KV CKT 1
FDNS	17ALL		0 20WP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.4489	118.9469	KELLY - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR		0 16WP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.41708	118.6385	KELLY - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.38979	117.131	STORLA - WESSINGTON 230KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39006	116.7749	P12:345:UMZW# 1747 #: WT2 IN SD. WT2-WHT LINE FAULT
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39006	116.7292	WATERTRN-LNX3345.00 - WATERTOWN 345KV CKT Z
FDNS	17ALL		0 17G	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.45136	116.5	KELLY - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR		0 20WP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.41694	115.5381	KELLY - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.38747	114.5702	SPLIT ROCK - WHITE 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATE (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.38747	114.5702	SPLIT ROCK - WHITE 345KV CKT 1
FDNS	17ALL		0 16WP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.45262	114.497	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39723	114.3488	FT RANDAL - SPENCER 115KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39723	114.3429	P12:115:NPPD:WAPAG:FRANDL7:ONEILL 7:BTB
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39723	114.3429	P12:115:UMZB:# 115 #: SE IN NE. FR-SE-ON
FDNS	00NR		0 20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.4155	114.3363	FT RANDAL - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39646	114.1603	FT RANDAL - WHITE SWAN 115KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39723	113.9389	ONEILL - SPENCER 115KV CKT 1
FDNS	00NR		0 20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39431	113.9049	GRPRAR1-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1
FDNS	00NR		0 20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39431	113.8536	GRPRAR1-LNX3345.00 - YANKTON 345KV CKT Z
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39646	113.7764	TYNDALL - WHITE SWAN 115KV CKT 1
FDNS	00NR		0 25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.41555	113.6866	FT RANDAL - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR		0 25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39436	113.4307	GRPRAR1-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1
FDNS	00NR		0 25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39436	113.3424	GRPRAR1-LNX3345.00 - YANKTON 345KV CKT Z
FDNS	00NR		0 16WP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.4205	113.2744	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	17NR		0 17G	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.4168	113.2469	KELLY - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39049	113.0906	LETCHER - SIOUX FALLS 230KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.38621	112.3901	MENNO JCT - TRIPP JCT 115KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.4239	112.0744	P13:230:UMZW:# 253 #: FR IN SD. LOSS OF TRANSFORMER (E
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39646	112.0223	P12:115:UMZW:# 1901 #: TY IN SD. TY-WSEG LINE FAULT
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39646	112.0223	P12:115:UMZW:# 537 #: TY IN SD. TY-Y LINE FAULT
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39646	112.0223	P13:115:UMZW:# 1902 #: TY IN SD. LOSS OF TRANSFORMER (KY1A).
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39093	111.9799	G09_001ST 345.00 - GROTON 345KV CKT 1
FDNS	00NR		0 20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39145	111.9378	HANLON - STORLA 230KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.38621	111.8451	MENNO JCT - UTICA 115KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.38621	111.7471	P12:115:UMZZ:# 237 #: MEN IN SD. MENNO JUNCTION IS A TAP (UJ-MEN-TP).
FDNS	00NR		0 20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39165	111.4249	P12:230:UMZB:# 116 #: ST IN SD. WSG-ST-VH
FDNS	00NR		0 25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39152	111.4118	HANLON - STORLA 230KV CKT 1
FDNS	17ALL		0 20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.45377	111.2322	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	17ALL		0 25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.45414	111.1899	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39206	111.061	HANLON - SIOUX FALLS 230KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39141	110.9764	FTTHOM2-LNX3345.00 - GRPRAR2-LNX3345.00 345KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39646	110.9541	TYNDALL - YANKON JCT 115KV CKT 1
FDNS	00NR		0 25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39172	110.9332	P12:230:UMZB:# 116 #: ST IN SD. WSG-ST-VH
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39224	110.9144	CHISAGO COUNTY - CHISAGO COUNTY 500KV CKT 1
FDNS	17ALL		0 20WP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.45129	110.7668	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39141	110.6824	FT THOMPSON - FTTHOM2-LNX3345.00 345KV CKT Z
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39141	110.6161	GRPRAR2-LNX3345.00 - YANKTON 345KV CKT Z
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39202	110.5867	CENTER - JAMESTOWN 345KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39224	110.3272	CHISAGO COUNTY - FORBES 500KV CKT 1
FDNSLock	00NR		0 20WP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42042	110.3152	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39221	110.2989	BISON 3 345.00 - BUFFALO 345KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39217	110.1611	GRAND ISLAND - MCCOOL 345KV CKT 1
FDNS	17ALL		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42106	110.046	HANLON - STORLA 230KV CKT 1
FDNS	17ALL		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42123	109.4018	P12:230:UMZB:# 116 #: ST IN SD. WSG-ST-VH
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39103	109.2733	GROTON-LNX3 345.00 - LELAND1-LNX3345.00 345KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39222	109.1821	MCCOOL - MOORE 345KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.3952	109.1613	CLEARWATER - ONEILL 115KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.3952	109.0904	P12:115:NPPD:1164:ONEILL 7:JEFFREY9:BTB
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39103	109.0378	P12:345:UMZB:# 109 #: LOS GRT IN ND. LOS GRT
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39103	109.0353	GROTON - GROTON-LNX3 345.00 345KV CKT Z
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39103	109.0155	LELAND OLDS - LELAND1-LNX3345.00 345KV CKT Z
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	108.9278	GEN635214 4-NEAL UNIT 4
FDNS	00NR		0 25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39448	108.8017	GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	108.7859	GEN660016 1-B. H WIND 0.7000
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39244	108.7585	ELLENDALE - OAKES 230KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39244	108.7585	ELLENDALE - OAKES 230KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.38979	108.7191	FT THOMPSON - WESSINGTON 230KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.38979	108.7191	FT THOMPSON - WESSINGTON 230KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39244	108.6953	FORMAN - OAKES 230KV CKT 1
FDNS	00NR		0 20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39442	108.6871	GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39212	108.5999	ALEXMRES3 345.00 - BISON 3 345.00 345KV CKT 1
FDNS	00NR		0 20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39442	108.5311	GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39266	108.5294	CARPENTER - HURON 230KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.3926	108.4637	MISSION - ST FRANCIS 115KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39266	108.4374	HURON - WATERTOWN 230KV CKT 2
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39266	108.4374	HURON - WATERTOWN 230KV CKT 2
FDNS	00NR		0 25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39448	108.4323	GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.3952	108.3744	CLEARWATER - NELIGH 115KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39266	108.3576	CARPENTER - WATERTOWN 230KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	108.3373	NUNDRWD - WAYSIDE 230KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.3926	108.3031	HARMONY - ST FRANCIS 115KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39183	108.2785	KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39183	108.24	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	108.1472	GEN635213 3-NEAL UNIT 3
FDNSLock	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.3926	108.0958	HARMONY - VALENTINE 115KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATE (MVA)	RATE (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39147	108.0908	FT THOMPSON - LETCHER 230KV CKT 1
FDNS	00NR	0	20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39147	108.0908	FT THOMPSON - LETCHER 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39351	108.0618	KELLY - SHELL CREEK 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39351	108.047	SHELL CREEK (SHELLCREEK1) 345/230/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39351	108.047	SHELL CREEK (SHELLCREEK1) 345/230/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39247	107.9272	FORMAN - HANKINSON 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39243	107.9081	G15088 T 345.00 - MOORE 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39073	107.8764	HURON WEST PARK - MITCHELL NW 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39073	107.8764	HURON WEST PARK - MITCHELL NW 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39245	107.7906	AXTELL - SWEETWATER 345KV CKT 1
FDNSLock	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.3926	107.7798	AINSWORTH - VALENTINE 115KV CKT 1
FDNS	00NR	0	25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39154	107.7474	FT THOMPSON - LETCHER 230KV CKT 1
FDNS	00NR	0	25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39154	107.7474	FT THOMPSON - LETCHER 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.3925	107.7353	CNTSHNT3 345.00 - PRAIRIE3 345.00 345KV CKT 1
FDNS	17ALL	0	17G	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.45357	107.6786	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	107.6642	ANSON - SPLIT ROCK 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	107.6638	ANSON (ANS 1) 115/13.8/13.8KV TRANSFORMER CKT 2
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	107.5386	GEN562832 1-G15042 3 0.6900
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39236	107.4809	DIXONCO 230.00 - TRIN CHURCH 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39237	107.37	MINGO - RED WILLOW 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39237	107.37	MINGO - RED WILLOW 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39229	107.3267	GLENBORO SOUTH - J290 SUB 230.00 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	107.2697	GEN645001 1-FORT CALHOUN 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39218	107.2579	ALEXMRES3 345.00 - WAITE PARK 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	107.2511	GEN600045 4-ANSON
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	107.2495	ANSON - SPLIT ROCK 115KV CKT 2
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	107.2485	ANSON 115/17.5KV TRANSFORMER CKT 4
FDNS	00NR	0	20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.38974	107.2343	SPLIT ROCK - WHITE 345KV CKT 1
FDNS	00NR	0	20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.38974	107.2343	SPLIT ROCK - WHITE 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	107.2151	P12:115:UMZW# 162 #: NEL IN ND. FAULT ON ML-NEL-MX-GA 115 KV
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39207	107.2098	GERALD GENTLEMAN STATION - KEYSTONE 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.3925	107.2062	G15061 T 345.00 - SETAB 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39252	107.137	CENTER - COYOTE 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39073	107.0947	MITCHELL - MITCHELL NW 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39073	107.0947	MITCHELL - MITCHELL NW 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39259	107.065	BLAIR - GRANITE FALLS 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39259	107.065	BLAIR - GRANITE FALLS 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39252	106.9929	GERALD GENTLEMAN STATION - RED WILLOW 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39412	106.9151	FT THOMPSON - HURON 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39412	106.9151	FT THOMPSON - HURON 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39412	106.9151	FT THOMPSON - HURON 230KV CKT 2
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39412	106.9151	FT THOMPSON - HURON 230KV CKT 2
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39314	106.8964	COLUMEAST - NW68TH & HOLDREGE 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39314	106.8964	COLUMEAST - NW68TH & HOLDREGE 345KV CKT 1
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42043	106.7924	FT THOMPSON - LETCHER 230KV CKT 1
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42043	106.7924	FT THOMPSON - LETCHER 230KV CKT 1
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42572	106.7862	GRPRAR1-LNX3345.00 - YANKTON 345KV CKT 2
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42572	106.7307	GRPRAR1-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.3922	106.6833	LETCHER (LET KV3A) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	0	20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39261	106.6297	STORLA - WESSINGTON 230KV CKT 1
FDNS	00NR	0	25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.38982	106.4418	SPLIT ROCK - WHITE 345KV CKT 1
FDNS	00NR	0	25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.38982	106.4418	SPLIT ROCK - WHITE 345KV CKT 1
FDNS	00NR	0	25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	106.2383	STORLA - WESSINGTON 230KV CKT 1
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.41998	105.7224	STORLA - WESSINGTON 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	105.6232	BASE CASE
FDNS	17NR	0	17G	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42013	105.5672	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	00NR	0	20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.40006	105.3486	P12:115:NPPD-WAPAG:FTRANDL7:ONEILL 7:BTB
FDNS	00NR	0	20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.40006	105.3486	P12:115:UMZB# 115 #: SE IN NE. FR-SE-ON
FDNS	00NR	0	20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.40006	105.3414	FT RANDAL - SPENCER 115KV CKT 1
FDNS	00NR	0	25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.40011	105.188	FT RANDAL - SPENCER 115KV CKT 1
FDNS	00NR	0	25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.40011	105.1812	P12:115:NPPD-WAPAG:FTRANDL7:ONEILL 7:BTB
FDNS	00NR	0	25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.40011	105.1812	P12:115:UMZB# 115 #: SE IN NE. FR-SE-ON
FDNS	17ALL	0	16WP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.41936	105.166	HANLON - STORLA 230KV CKT 1
FDNS	00NR	0	20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.40006	105.0045	ONEILL - SPENCER 115KV CKT 1
FDNS	00NR	0	25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.40011	104.8086	ONEILL - SPENCER 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39219	104.6583	NOBLES - SPLIT ROCK 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39208	104.6129	PLYMOUTH - SIOUX CITY 161KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39208	104.6129	PLYMOUTH - SIOUX CITY 161KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	104.6097	P13:230-345:NPPD:NUCOR-1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39255	104.5723	GRIMES - LEHIGH 345KV CKT 1
FDNS	17ALL	0	16WP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.41953	104.5429	P12:230:UMZB# 116 #: ST IN SD. WSG-ST-VH
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	104.5255	GEN952511 1-G12_00915_2 0.6900
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39353	104.4886	P12:345:UMZB# 102 #: AVS BD IN ND. AVS BRD LR
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39353	104.4784	BRDLAND-LNX3345.00 - HURON 345KV CKT 2
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39353	104.4768	BROADLAND - HURON 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39353	104.4767	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39353	104.4767	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATE (MVA)	RATE (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.38621	104.4585	MITCHELL - TRIPP JCT 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.38621	104.4585	MITCHELL - TRIPP JCT 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	104.4225	GEN562528 1-G14_031_2 0.6900
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39353	104.3799	P12:345:UMZB# 103 #: BD IN SD. LOSS OF LINE
FDNSLock	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39353	104.3096	BISON - MAURINE 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39492	104.2589	BONESTEEL - FT RANDAL 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.3984	104.2558	ARMOUR - MT VERN 115KV CKT 1
FDNSLock	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39353	104.2359	BISON - HETINGER 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39492	104.2305	P12:115:UMZW# 150 #: GY-BO-FR IN SD. GY-BO-FR BONESTEEL HAS FAULT INTERRUPTING DEVICES (NOT BREAKER)
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	104.1948	BISONMP4 230.00 - SQUARE BUTTE 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	104.1779	GEN652542 1-BIG BEND
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	104.1505	GEN659296 2-SDPRAIRWIND1W0.6900
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39492	104.147	BONESTEEL - GREGORY 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39353	104.1102	ANTELOP-LNX3345.00 - ANTELOPE VALLEY 345KV CKT Z
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	104.1076	GEN659453 1-G1141AGEN W0.6900
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	104.1023	GEN563302 1-G15096_3 0.6900
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.3923	104.086	DENISON - SIOUX CITY 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	104.0813	GEN659411 1-CAMPBLCNTY W0.6900
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42618	104.0812	FT RANDAL - WHITE SWAN 115KV CKT 1
FDNS	00NR	0	16WP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39276	104.0617	HANLON - STORLA 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.3919	104.0593	HOSKINS - SHELL CREEK 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	104.0567	GEN652559 1-OAHE
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39418	104.0134	OAHE - SULLY BUTTE 230KV CKT 1
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.45251	104.0035	FT RANDAL - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39244	103.9892	LAKEFIELD 3 - NOBLES 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.35984	103.9733	UTICA JCT (UJ KV3A) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42767	103.9706	P12:115:NPPD-WAPAG:FRANDL7:ONEILL 7:BTB
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42767	103.9706	P12:115:UMZB# 115 #: SE IN NE. FR-SE-ON
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42767	103.9622	FT RANDAL - SPENCER 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39195	103.96	BELDEN - HOSKINS 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39104	103.9387	GAVINS POINT - HARTINGTON 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39109	103.9127	RAUN - SIOUX CITY 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39109	103.9127	RAUN - SIOUX CITY 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	103.8696	GEN562714 1-G15_023_4 0.6900
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	103.8696	GEN562715 1-G15_023_5 0.6900
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	103.8379	GEN659407 1-ANTELOPHILLSW0.6900
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39418	103.8363	SULLY BUTTE - SULLYBT-LNX3230.00 230KV CKT Z
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39418	103.825	SULLYBT-LNX3230.00 - WHITLOK 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39418	103.7771	P12:230:UMZB# 114 #: SB IN SD. SB-WK-GH
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39418	103.7771	P12:230:UMZB# 117 #: WK IN SD. SB-WK-GH
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	103.7767	SQUARE BUTTE - YNG2 4 230.00 230KV CKT 1
FDNS	00NR	0	20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39953	103.7284	FT RANDAL - WHITE SWAN 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	103.7185	GEN640011 2-GERALD GENTLEMAN STATION UNIT 2
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42618	103.71	TYNDALL - WHITE SWAN 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	103.703	GEN615010 1-STANTON4
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39418	103.7016	GLENHAM - WHITLOK 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39236	103.6803	DIXONCO 230.00 - HOSKINS 230KV CKT 1
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42767	103.6271	ONEILL - SPENCER 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39492	103.5105	GREGORY - WINNER 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	103.5008	GEN657749 1-YOUNG 1 GENERATOR
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39492	103.4588	P12:115:UMZW# 172 #: WI IN SD.
FDNS	00NR	0	16WP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39297	103.4435	P12:230:UMZB# 116 #: ST IN SD. WSG-ST-VH
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	103.424	GEN652556 2-OAHE
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	103.424	GEN652557 4-OAHE
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	103.424	GEN652558 6-OAHE
FDNS	00NR	0	25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39959	103.3552	FT RANDAL - WHITE SWAN 115KV CKT 1
FDNS	00NR	0	20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39953	103.355	TYNDALL - WHITE SWAN 115KV CKT 1
FDNS	00NR	0	20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39329	103.3505	LETCHER - SIOUX FALLS 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	103.3458	STANTON 230/18.0KV TRANSFORMER CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	103.2682	GEN562500 1-G14_013_3 0.6900
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	103.241	GEN640010 1-GERALD GENTLEMAN STATION UNIT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39279	103.2025	EAGLE 4 230.00 - PAHOJA 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	103.1708	GEN652546 1-FT RANDAL
FDNS	00NR	0	20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.38902	103.0754	MENNO JCT - TRIPP JCT 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39129	103.0296	BLOOMFIELD - GAVINS POINT 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.3941	102.9972	GLENHAM - L3 HAWDON 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39492	102.9925	WINNER - WITTEN 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39492	102.971	P12:115:UMZW# 173 #: WI-WE-MS IN SD. WITTEN IS A TAP
FDNS	00NR	0	25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39959	102.9504	TYNDALL - WHITE SWAN 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39492	102.9401	MISSION - WITTEN 115KV CKT 1
FDNS	00NR	0	25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39336	102.9255	LETCHER - SIOUX FALLS 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	102.9065	GEN652906 1-G09_00615_3 0.6900
FDNS	00NR	0	20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39384	102.9048	G09_0011ST 345.00 - WATERTOWN 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39129	102.9021	BLOOMFIELD - CREIGHTON 115KV CKT 1
FDNS	00NR	0	25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42758	102.8649	P13:230:UMZW# 253 #: FR IN SD. LOSS OF TRANSFORMER (E
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39279	102.8422	PAHOJA - SIOUX FALLS 230KV CKT 1
FDNS	00NR	0	20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39431	102.7727	FTTHOM2-LNX3345.00 - GRPRAR2-LNX3345.00 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATE (MVA)	RATE (MVA)	TDF	TC%LOADING		CONTINGENCY
										(MVA)	(% MVA)	
FDNS	00NR		0 20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42754	102.7687	P13:230:UMZW:# 253 #: FR IN SD. LOSS OF TRANSFORMER (E	
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	102.7595	RCDC EAST 4230.00 - RED CEDAR DC 230KV CKT 1	
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	102.7552	P12:230:UMZB:# 112 #: NU IN SD. NU-RCDC & DRY CREEK XFMR	
FDNS	00NR		0 16WP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.41708	102.7525	FT RANDAL - MEADOWGROVE4230.00 230KV CKT 1	
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	102.745	GEN659111 2-LELAND OLDS UNIT2	
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	102.7283	GEN562872 1-G15046 3 0.6900	
FDNS	00NR		0 25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.38908	102.6655	MENNO JCT - TRIPP JCT 115KV CKT 1	
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.392	102.6637	RAUN - SUB 3451 FT CAL 345KV CKT 1	
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.392	102.6637	RAUN - SUB 3451 FT CAL 345KV CKT 1	
FDNS	00NR		0 20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39431	102.6348	FT THOMPSON - FTTHOM2-LNX3345.00 345KV CKT Z	
FDNS	00NR		0 20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39431	102.6117	GRPRAR2-LNX3345.00 - YANKTON 345KV CKT Z	
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	102.5947	GEN659118 1-LARAMIE RIVER UNIT1	
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	102.5777	GEN652907 1-G09_007IS 3 0.6900	
FDNS	17ALL		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42105	102.5647	LETCHER - SIOUX FALLS 230KV CKT 1	
FDNS	00NR		0 20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.38902	102.5348	MENNO JCT - UTICA 115KV CKT 1	
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	102.499	GEN659103 1-ANTELOPE VALLEY UNIT1	
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	102.499	GEN659107 2-ANTELOPE VALLEY UNIT2	
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.3984	102.4835	MN VERT - STORLA 115KV CKT 1	
FDNS	00NR		0 25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39391	102.4594	G09_001IST 345.00 - WATERTOWN 345KV CKT 1	
FDNS	00NR		0 20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.38902	102.4272	P12:115:UMZZ:# 237 #: MEN IN SD. MENNO JUNCTION IS A TAP (UJ-MEN-TP).	
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	102.4189	GEN652548 5-FT RANDAL	
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	102.4189	GEN652549 7-FT RANDAL	
FDNS	00NR		0 25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39436	102.3892	FTTHOM2-LNX3345.00 - GRPRAR2-LNX3345.00 345KV CKT 1	
FDNS	00NR		0 20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39459	102.3543	BUFFALO - JAMESTOWN 345KV CKT 1	
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	102.2955	GEN652547 3-FT RANDAL	
FDNS	17ALL		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42618	102.2925	P12:115:UMZW:# 1901 #: TY IN SD. TY-WSW LINE FAULT	
FDNS	17ALL		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42618	102.2925	P12:115:UMZW:# 537 #: TY IN SD. TY-YJ LINE FAULT	
FDNS	17ALL		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42618	102.2925	P13:115:UMZW:# 1902 #: TY IN SD. LOSS OF TRANSFORMER (KY1A).	
FDNS	17ALL		0 25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42101	102.2816	HANLON - STORLA 230KV CKT 1	
FDNS	00NR		0 25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39436	102.2461	FT THOMPSON - FTTHOM2-LNX3345.00 345KV CKT Z	
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.38273	102.2138	GAVINS POINT - YANKON JCT 115KV CKT 1	
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.38273	102.2138	GAVINS POINT - YANKON JCT 115KV CKT 1	
FDNS	00NR		0 25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39436	102.2041	GRPRAR2-LNX3345.00 - YANKTON 345KV CKT Z	
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	102.1943	GEN661015 1-COYOTE	
FDNS	00NR		0 25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39466	102.1822	BUFFALO - JAMESTOWN 345KV CKT 1	
FDNS	17ALL		0 20WP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.41857	102.1372	HANLON - STORLA 230KV CKT 1	
FDNS	00NR		0 25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.38908	102.1048	MENNO JCT - UTICA 115KV CKT 1	
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	102.0938	GEN659125 1-COVEY	
FDNS	17ALL		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.41548	102.0584	MENNO JCT - TRIPP JCT 115KV CKT 1	
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	102.0431	GEN657748 1-YOUNG 2 GENERATOR	
FDNS	00NR		0 25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.38908	101.9833	P12:115:UMZZ:# 237 #: MEN IN SD. MENNO JUNCTION IS A TAP (UJ-MEN-TP).	
FDNS	00NR		0 20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39368	101.9758	WATERTN-LNX3345.00 - WATERTOWN 345KV CKT Z	
FDNS	00NR		0 20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39368	101.9714	WATERTN-LNX3345.00 - WHITE 345KV CKT 1	
FDNS	00NR		0 20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39368	101.9563	P12:345:UMZW:# 1747 #: WT2 IN SD. WT2-WHT LINE FAULT	
FDNS	00NR		0 20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39953	101.9264	P12:115:UMZW:# 1901 #: TY IN SD. TY-WSW LINE FAULT	
FDNS	00NR		0 20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39953	101.9264	P12:115:UMZW:# 537 #: TY IN SD. TY-YJ LINE FAULT	
FDNS	00NR		0 20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39953	101.9264	P13:115:UMZW:# 1902 #: TY IN SD. LOSS OF TRANSFORMER (KY1A).	
FDNS	17ALL		0 16WP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.41875	101.9217	FT THOMPSON - LETCHER 230KV CKT 1	
FDNS	17ALL		0 16WP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.41875	101.9217	FT THOMPSON - LETCHER 230KV CKT 1	
FDNS	17ALL		0 20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.4207	101.8878	HANLON - STORLA 230KV CKT 1	
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	101.8573	GEN652353 2-GR PRAIRIEG 0.6900	
FDNS	17ALL		0 25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42116	101.7081	P12:230:UMZB:# 116 #: ST IN SD. WSG-ST-VH	
FDNS	17ALL		0 16WP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.41836	101.6855	STORLA - WESSINGTON 230KV CKT 1	
FDNS	17ALL		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.41548	101.597	MENNO JCT - UTICA 115KV CKT 1	
FDNS	00NR		0 25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39959	101.5596	P12:115:UMZW:# 1901 #: TY IN SD. TY-WSW LINE FAULT	
FDNS	00NR		0 25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39959	101.5596	P12:115:UMZW:# 537 #: TY IN SD. TY-YJ LINE FAULT	
FDNS	00NR		0 25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39959	101.5596	P13:115:UMZW:# 1902 #: TY IN SD. LOSS OF TRANSFORMER (KY1A).	
FDNS	17ALL		0 20WP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.41872	101.542	P12:230:UMZB:# 116 #: ST IN SD. WSG-ST-VH	
FDNS	17ALL		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.41548	101.5076	P12:115:UMZZ:# 237 #: MEN IN SD. MENNO JUNCTION IS A TAP (UJ-MEN-TP).	
FDNS	00NR		0 25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39375	101.4393	WATERTN-LNX3345.00 - WHITE 345KV CKT 1	
FDNS	00NR		0 20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39477	101.3473	HANLON - SIOUX FALLS 230KV CKT 1	
FDNS	17ALL		0 20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42085	101.2924	P12:230:UMZB:# 116 #: ST IN SD. WSG-ST-VH	
FDNS	00NR		0 25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39375	101.2839	WATERTN-LNX3345.00 - WATERTOWN 345KV CKT Z	
FDNS	00NR		0 20WP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39298	101.2754	HANLON - STORLA 230KV CKT 1	
FDNS	00NR		0 25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39375	101.2647	P12:345:UMZW:# 1747 #: WT2 IN SD. WT2-WHT LINE FAULT	
FDNS	17ALL		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42172	101.1741	HANLON - SIOUX FALLS 230KV CKT 1	
FDNS	17ALL		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42618	101.0033	TYNDALL - YANKON JCT 115KV CKT 1	
FDNS	17ALL		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42064	100.9994	GEN660016 1-B_H_WIND 0.7000	
FDNS	17ALL		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42105	100.9065	WATERTN-LNX3345.00 - WHITE 345KV CKT 1	
FDNS	00NR		0 25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39483	100.8922	HANLON - SIOUX FALLS 230KV CKT 1	
FDNS	00NR		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39709	100.8502	FTTHOM1-LNX3345.00 - LELAND-LNX3345.00 345KV CKT 1	
FDNS	17ALL		0 17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT						

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATE (MVA)	RATE (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	20WP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39316	100.71	P12:230:UMZB:# 116 #: ST IN SD. WSG-ST-VH
FDNS	00NR	0	25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39959	100.5402	TYNDALL - YANKON JCT 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39709	100.5044	FT THOMPSON - FTTHOM1-LNX3345.00 345KV CKT Z
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39709	100.5012	P12:345:UMZB:# 108 #: LOS FT IN ND. LOS FT
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42064	100.4919	GEN635214 4-NEAL UNIT 4
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	100.486	GEN615001 1-COAL CREEK
FDNS	00NR	0	20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39384	100.427	G09_001IST 345.00 - GROTON 345KV CKT 1
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42117	100.4227	GRAND ISLAND - MCCOOL 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39267	100.4161	GEN615002 2-COAL CREEK
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.41899	100.4022	SPLIT ROCK - WHITE 345KV CKT 1
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.41899	100.4022	SPLIT ROCK - WHITE 345KV CKT 1
FDNS	00NR	0	20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39465	100.3701	BROOKING COUNTY - BSSOUTH3 345.00 345KV CKT 1
FDNS	00NR	0	20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39457	100.358	CENTER - JAMESTOWN 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39709	100.3236	LELAND OLDS - LELAND2-LNX3345.00 345KV CKT Z
FDNS	00NR	0	20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39477	100.3003	BISON 3 345.00 - BUFFALO 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.35168	100.2605	SIoux FALLS - VFODNES 230KV CKT 1
FDNS	00NR	0	25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39482	100.2592	GRAND ISLAND - MCCOOL 345KV CKT 1
FDNS	00NR	0	20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39521	100.2497	GEN660016 1-B H WIND 0.7000
FDNS	00NR	0	16WP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39281	100.2288	FT THOMPSON - LETCHER 230KV CKT 1
FDNS	00NR	0	16WP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39281	100.2288	FT THOMPSON - LETCHER 230KV CKT 1
FDNS	17ALL	0	25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42598	100.181	GRPRAR1-LNX3345.00 - YANKTON 345KV CKT Z
FDNS	00NR	0	25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39464	100.1074	CENTER - JAMESTOWN 345KV CKT 1
FDNS	00NR	0	20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39483	100.1069	CHISAGO COUNTY - FORBES 500KV CKT 1
FDNS	17ALL	0	25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42598	100.1019	GRPRAR1-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1
FDNS	17ALL	0	16WP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.4239	100.0697	GRPRAR1-LNX3345.00 - YANKTON 345KV CKT Z
FDNS	00NR	0	20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39521	100.0684	GEN635214 4-NEAL UNIT 4
FDNS	00NR	0	25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39484	100.0638	BISON 3 345.00 - BUFFALO 345KV CKT 1
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42062	100.0616	G09_001IST 345.00 - WATERTOWN 345KV CKT 1
FDNS	17ALL	0	16WP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.4239	100	GRPRAR1-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1
FDNS	00NR	0	20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39728	100	CLEARWATER - ONEILL 115KV CKT 1
FDNS	00NR	0	25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.3949	100	CHISAGO COUNTY - FORBES 500KV CKT 1
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42188	99.9	FT THOMPSON - HURON 230KV CKT 1
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42188	99.9	FT THOMPSON - HURON 230KV CKT 1
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42188	99.9	FT THOMPSON - HURON 230KV CKT 2
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42188	99.9	FT THOMPSON - HURON 230KV CKT 2
FDNS	00NR	0	20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39728	99.9	P12:115:NPPD:1164:ONEILL 7:JEFFREY9:BTB
FDNS	00NR	0	25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39527	99.9	GEN660016 1-B H WIND 0.7000
FDNS	00NR	0	25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39472	99.9	BROOKING COUNTY - BSSOUTH3 345.00 345KV CKT 1
FDNS	00NR	0	25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39391	99.9	G09_001IST 345.00 - GROTON 345KV CKT 1
FDNSLock	00NR	0	20WP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.41694	99.9	FT RANDAL - MEADOWGROVE4230.00 230KV CKT 1
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42074	99.8	BUFFALO - JAMESTOWN 345KV CKT 1
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.38936	99.8	UTICA JCT (UJ KV3A) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	17ALL	0	16WP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42451	99.7	FT RANDAL - WHITE SWAN 115KV CKT 1
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42074	99.7	CENTER - JAMESTOWN 345KV CKT 1
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42071	99.7	CHISAGO COUNTY - FORBES 500KV CKT 1
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42064	99.7	GEN635213 3-NEAL UNIT 3
FDNS	00NR	0	20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.3948	99.7	MCCOOL - MOORE 345KV CKT 1
FDNS	00NR	0	25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39527	99.7	GEN635214 4-NEAL UNIT 4
FDNS	00NR	0	25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39498	99.7	MINGO - RED WILLOW 345KV CKT 1
FDNS	00NR	0	25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39498	99.7	MINGO - RED WILLOW 345KV CKT 1
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42146	99.6	CARPENTER - HURON 230KV CKT 1
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42062	99.6	G09_001IST 345.00 - GROTON 345KV CKT 1
FDNS	00NR	0	16WP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39389	99.5	STORLA - WESSINGTON 230KV CKT 1
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42203	99.5	KELLY - SHELL CREEK 230KV CKT 1
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42203	99.5	SHELL CREEK (SHELLCREEK1) 345/230/13.8KV TRANSFORMER CKT 1
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42203	99.5	SHELL CREEK (SHELLCREEK1) 345/230/13.8KV TRANSFORMER CKT 1
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42146	99.5	CARPENTER - WATERTOWN 230KV CKT 1
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42146	99.5	CARPENTER - WATERTOWN 230KV CKT 1
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42146	99.5	HURON - WATERTOWN 230KV CKT 2
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42146	99.5	HURON - WATERTOWN 230KV CKT 2
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42111	99.5	MCCOOL - MOORE 345KV CKT 1
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42064	99.5	ANSON - SPLIT ROCK 115KV CKT 1
FDNS	17ALL	0	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.42064	99.5	ANSON (ANS 1) 115/13.8/13.8KV TRANSFORMER CKT 2
FDNS	00NR	0	17SP	G15_089	TO->FROM	GAVINS POINT - YANKON JCT 115KV CKT 1	120	120	0.07162	117.3769	KELLY - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	GAVINS POINT - YANKON JCT 115KV CKT 1	120	120	0.08468	111.3262	RASMUSN - UTICA JCT 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	GAVINS POINT - YANKON JCT 115KV CKT 1	120	120	0.08468	109.0559	RASMUSN - SIOUX CITY 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	GAVINS POINT - YANKON JCT 115KV CKT 1	120	120	0.07162	101.5382	FT RANDAL - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	GAVINS POINT - YANKON JCT 115KV CKT 1	120	120	0.06966	101.2679	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	GAVINS POINT - YANKON JCT 115KV CKT 1	120	120	0.0682	100	FT RANDAL - SPENCER 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	GAVINS POINT - YANKON JCT 115KV CKT 1	120	120	0.0682	99.8	P12:115:NPPD:WAPAG:FTRANDLT:ONEILL 7:BTB
FDNS	00NR	0	17SP	G15_089	TO->FROM	GAVINS POINT - YANKON JCT 115KV CKT 1	120	120	0.0682	99.8	P12:115:UMZB:# 115 #: SE IN NE. FR-SE-ON
FDNS	17ALL	0	17SP	G15_089	FROM->TO	GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z	720	720	0.08616	102.867	BASE CASE
FDNS	17ALL	0	17SP	G15_089	TO->FROM	GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1	720	720	0.08616	102.1846	BASE CASE
FDNS	00NR	0	20SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07466	116.0565	GRPRAR1-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1
FDNS	00NR	0	20SP								

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATE (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	25SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.0746	114.9707	GRPRAR1-LNX3345.00 - YANKTON 345KV CKT Z
FDNS	00NR	0	20SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07474	111.6328	GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1
FDNS	00NR	0	20SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07474	111.5042	GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.08869	111.4051	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	00NR	0	25SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.0747	111.0177	GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1
FDNS	00NR	0	20SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.13955	111.0027	G15089_T 230.00 - UTICA JCT 230KV CKT 1
FDNS	00NR	0	25SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.0747	110.6507	GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z
FDNS	00NR	0	25SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.13952	109.9739	G15089_T 230.00 - UTICA JCT 230KV CKT 1
FDNS	00NR	0	20SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.08847	107.7427	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	17ALL	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.11911	106.4519	BASE CASE
FDNS	00NR	0	25SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.08844	106.448	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07406	105.6479	FTTHOM2-LNX3345.00 - GRPRAR2-LNX3345.00 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07406	105.5801	FT THOMPSON - FTTHOM2-LNX3345.00 345KV CKT Z
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07406	105.5757	GRPRAR2-LNX3345.00 - YANKTON 345KV CKT Z
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07837	105.1311	HOSKINS - SHELL CREEK 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.08022	105.0021	P12:115:NPPD-WAPA6:FTRANDL7:ONEILL 7:BTB
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.08022	105.0021	P12:115:UMZB# 115 #: SE IN NE. FR-SE-ON
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.08022	105.0019	FT RANDAL - SPENCER 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.08787	104.9391	RASMUSN - UTICA JCT 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.08022	104.712	ONEILL - SPENCER 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.08787	104.4708	RASMUSN - SIOUX CITY 230KV CKT 1
FDNS	17ALL	0	25SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.11764	104.4058	BASE CASE
FDNS	17ALL	0	20SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.11724	104.2599	BASE CASE
FDNS	00NR	0	20SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07466	103.8805	GRPRAR2-LNX3345.00 - YANKTON 345KV CKT Z
FDNS	00NR	0	20SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07466	103.8558	FTTHOM2-LNX3345.00 - GRPRAR2-LNX3345.00 345KV CKT 1
FDNS	00NR	0	20SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07466	103.8415	FT THOMPSON - FTTHOM2-LNX3345.00 345KV CKT Z
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07727	103.5323	RAUN - SUB 3451 FT CAL 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07727	103.5323	RAUN - SUB 3451 FT CAL 345KV CKT 1
FDNS	17NR	0	17G	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.14141	103.5299	G15089_T 230.00 - UTICA JCT 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07551	103.4072	P12:345:UMZW# 1747 #: WT2 IN SD. WT2-WHT LINE FAULT
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07551	103.3858	WATERTN-LNX3345.00 - WATERTOWN 345KV CKT Z
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07698	103.0432	DIXONCO 230.00 - HOSKINS 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07565	102.9429	HANLON - STORLA 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.0765	102.7926	GEN635024 4-WALTER SCOTT UNIT 4
FDNS	00NR	0	25SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.0746	102.7172	GRPRAR2-LNX3345.00 - YANKTON 345KV CKT Z
FDNS	00NR	0	25SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.0746	102.7123	FTTHOM2-LNX3345.00 - GRPRAR2-LNX3345.00 345KV CKT 1
FDNS	00NR	0	25SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.0746	102.6989	FT THOMPSON - FTTHOM2-LNX3345.00 345KV CKT Z
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07589	102.5825	P12:230:UMZB# 116 #: ST IN SD. WSG-ST-VH
FDNS	00NR	0	20SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07781	102.5167	HOSKINS - SHELL CREEK 345KV CKT 1
FDNS	00NR	0	20SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.08026	102.3218	P12:115:NPPD-WAPA6:FTRANDL7:ONEILL 7:BTB
FDNS	00NR	0	20SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.08026	102.3218	P12:115:UMZB# 115 #: SE IN NE. FR-SE-ON
FDNS	00NR	0	20SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.08026	102.3019	FT RANDAL - SPENCER 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.0765	102.2454	GEN635023 3-WALTER SCOTT UNIT 3
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07648	102.1682	NUNDRWD - WAYSIDE 230KV CKT 1
FDNS	00NR	0	20SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.08751	102.1322	RASMUSN - UTICA JCT 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07848	102.1171	RAUN - SIOUX CITY 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07848	102.1171	RAUN - SIOUX CITY 345KV CKT 1
FDNS	00NR	0	20SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.08026	102.0705	ONEILL - SPENCER 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.0762	101.9578	CHISAGO COUNTY - CHISAGO COUNTY 500KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.0765	101.9459	GEN336821 1-GRAND GULF UNIT
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07508	101.868	KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07576	101.8476	FT THOMPSON - LETCHER 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07576	101.8476	FT THOMPSON - LETCHER 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07508	101.8351	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.0765	101.7983	GEN344225 1-1CAL G1 25.00
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.09189	101.7901	P13:230:UMZW# 253 #: FR IN SD. LOSS OF TRANSFORMER (E
FDNS	00NR	0	20SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.08751	101.7246	RASMUSN - SIOUX CITY 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07609	101.7161	CENTER - JAMESTOWN 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.0762	101.5994	BISON 3 345.00 - BUFFALO 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.0762	101.5822	CHISAGO COUNTY - FORBES 500KV CKT 1
FDNS	00NR	0	25SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07776	101.5763	HOSKINS - SHELL CREEK 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.08274	101.5209	GAVINS POINT - YANKON JCT 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.08274	101.5209	GAVINS POINT - YANKON JCT 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.0765	101.4877	GEN337911 1-ARKANSAS NUCLEAR ONE UNIT #2
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.0762	101.4639	HAZLETON - MITCHLCO3 345.00 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07853	101.4376	CLEARWATER - ONEILL 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.0765	101.4318	GEN336153 1-WATERFORD UNIT#3
FDNS	00NR	0	25SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.08022	101.4283	P12:115:NPPD-WAPA6:FTRANDL7:ONEILL 7:BTB
FDNS	00NR	0	25SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.08022	101.4283	P12:115:UMZB# 115 #: SE IN NE. FR-SE-ON
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07535	101.4239	SIOUXCY-LNX3345.00 - SPLIT ROCK 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07535	101.4239	SIOUXCY-LNX3345.00 - SPLIT ROCK 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07853	101.4211	P12:115:NPPD:1164:ONEILL 7:JEFFREY9:BTB
FDNS	00NR	0	25SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.08022	101.417	FT RANDAL - SPENCER 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07757	101.359	FT RANDAL - WHITE SWAN 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07633	101.3411	ARROWHEAD - ARROWHEAD 230 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07535	101.335	P12:345:UMZW# 907 #: SC2-SR IN IA. SC2-SR 345 KV LINE
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07535	101.2962	SIOUX CITY - SIOUXCY-LNX3345.00 345KV CKT Z

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07757	101.27	TYNDALL - WHITE SWAN 115KV CKT 1
FDNS	17NR	0	17G	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07623	101.2566	GRPRAR1-LNX3345.00 - YANKTON 345KV CKT 2
FDNS	17NR	0	17G	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07623	101.2384	GRPRAR1-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07642	101.1954	PAHOJA - SIOUX FALLS 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07641	101.1868	MISSION - ST FRANCIS 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.0765	101.164	GEN335831 1-RIVERBEND UNIT#1
FDNS	00NR	0	25SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.08022	101.1612	ONEILL - SPENCER 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07672	101.1595	LAKEFIELD 3 - NOBLES 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.0765	101.1347	GEN337910 1-ARKANSAS NUCLEAR ONE UNIT #1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07626	101.0902	HANLON - SIOUX FALLS 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07757	101.0885	P12:115:UMZW:# 1901 #: TY IN SD. TY-WSW LINE FAULT
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07757	101.0885	P12:115:UMZW:# 537 #: TY IN SD. TY-YJ LINE FAULT
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07757	101.0885	P13:115:UMZW:# 1902 #: TY IN SD. LOSS OF TRANSFORMER (KY1A).
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07641	101.0782	HARMONY - ST FRANCIS 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07598	101.0722	LETCHER - SIOUX FALLS 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07638	101.0572	AS KING - EAU CLAIRE 345KV CKT 1
FDNSLock	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07641	100.9956	HARMONY - VALENTINE 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07637	100.9624	ARPIN B4 345.00 - EAU CLAIRE 345KV CKT 1
FDNS	00NR	0	25SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.08747	100.8941	RASMUSN - UTICA JCT 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.0765	100.845	GEN337653 1-WHITE BLUFF UNIT #2
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07853	100.8374	CLEARWATER - NELIGH 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.0765	100.836	GEN337652 1-WHITE BLUFF UNIT #1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.0762	100.8352	ADAMS - MITCHLCO3 345.00 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07642	100.8182	EAGLE 4 230.00 - PAHOJA 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07552	100.8122	GERALD GENTLEMAN STATION - KEYSTONE 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07689	100.8107	PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.0765	100.8045	GEN338146 1-INDEPENDENCE UNIT #2
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.0765	100.8033	GEN338143 1-INDEPENDENCE UNIT #1
FDNSLock	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07641	100.7722	AINSWORTH - VALENTINE 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07664	100.7558	GRIMES - LEHIGH 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07689	100.7363	P12:115:NPPD:11688:ALBION 7:PETERSBRG.N7:BTB
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07738	100.736	BLOOMFIELD - CREIGHTON 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.0765	100.7298	GEN501801 1-DOLET HILLS UNIT1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07651	100.7151	BROOKING COUNTY - LYON COUNTY 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.0863	100.7142	UTICA JCT - VFODNES 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07738	100.7135	BLOOMFIELD - GAVINS POINT 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07689	100.7057	ALBION - PETERSBURG 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07198	100.6754	COLUMWEST - GRAND ISLAND 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07576	100.6395	SIDNEY - STEGALL 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07624	100.6109	ADAMS - PLEASANT VALLEY 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07716	100.5956	BELDEN - HOSKINS 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07757	100.5491	TYNDALL - YANKON JCT 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07686	100.5199	DENISON - SIOUX CITY 230KV CKT 1
FDNS	00NR	0	20SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07701	100.4905	RAUN - SUB 3451 FT CAL 345KV CKT 1
FDNS	00NR	0	20SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07701	100.4905	RAUN - SUB 3451 FT CAL 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.0765	100.48	GEN336252 1-NINEMILE POINT UNIT#5
FDNS	00NR	0	25SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.08747	100.4694	RASMUSN - SIOUX CITY 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.0789	100.4358	P12:115:UMZW:# 1910 #: YJ IN SD. YJ-UJ LINE FAULT
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.0789	100.4351	NAPA JCT7 115.00 - UTICA 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.0789	100.4351	NAPA JCT7 115.00 - UTICA 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.0765	100.4325	GEN563222 1-G15088 3 0.6900
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.0789	100.431	NAPA JCT7 115.00 - YANKON JCT 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.0789	100.431	NAPA JCT7 115.00 - YANKON JCT 115KV CKT 1
FDNS	00NR	0	20SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07679	100.4121	DIXONCO 230.00 - HOSKINS 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.0765	100.3905	GEN336831 1-BAXTER WILSON SES
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.0765	100.3754	GEN336251 1-NINEMILE POINT UNIT#4
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07689	100.3548	NELIGH - PETERSBRG.N7115.00 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07769	100.3272	GAVINS POINT - HARTINGTON 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07716	100.2936	PLYMOUTH - SIOUX CITY 161KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07716	100.2936	PLYMOUTH - SIOUX CITY 161KV CKT 1
FDNS	00NR	0	20SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07631	100.2683	GEN635024 4-WALTER SCOTT UNIT 4
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.0765	100.1903	P13:230-345:NPPD:NUCOR-1
FDNS	17NR	0	17G	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.09	100.1815	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	00NR	0	16WP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07553	100.1104	GRPRAR1-LNX3345.00 - YANKTON 345KV CKT 2
FDNS	00NR	0	16WP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07553	100.1059	GRPRAR1-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1
FDNS	00NR	0	20SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07819	99.9	RAUN - SIOUX CITY 345KV CKT 1
FDNS	00NR	0	20SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07819	99.9	RAUN - SIOUX CITY 345KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.0765	99.8	GEN640010 1-GERALD GENTLEMAN STATION UNIT 1
FDNS	00NR	0	20SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07631	99.8	GEN635023 3-WALTER SCOTT UNIT 3
FDNS	00NR	0	20SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.0765	99.7	LAKEFIELD 3 - NOBLES 345KV CKT 1
FDNS	00NR	0	16WP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.14119	99.5	G15089_T 230.00 - UTICA JCT 230KV CKT 1
FDNS	00NR	0	20SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07631	99.5	GEN336821 1-GRAND GULF UNIT
FDNS	00NR	0	20SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07557	99.5	HANLON - STORLA 230KV CKT 1
FDNS	00NR	0	25SP	G15_089	TO->FROM	KELLY - MEADOWGROVE4230.00 230KV CKT 1	368	368	0.07675	99.5	DIXONCO 230.00 - HOSKINS 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	NAPA JCT7 115.00 - UTICA 115KV CKT 1	120				

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATE (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	17SP	G15_089	TO->FROM	NAPA JCT7 115.00 - UTICA 115KV CKT 1	120	120	0.07874	105.482	RASMUSN - SIOUX CITY 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	NAPA JCT7 115.00 - YANKON JCT 115KV CKT 1	120	120	0.07874	107.7333	RASMUSN - UTICA JCT 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	NAPA JCT7 115.00 - YANKON JCT 115KV CKT 1	120	120	0.06245	107.413	FT RANDAL - WHITE SWAN 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	NAPA JCT7 115.00 - YANKON JCT 115KV CKT 1	120	120	0.06245	105.8649	TYNDALL - WHITE SWAN 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	FROM->TO	NAPA JCT7 115.00 - YANKON JCT 115KV CKT 1	120	120	0.07874	105.2384	RASMUSN - SIOUX CITY 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	120	0.03067	127.1904	KELLY - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR	0	25SP	G15_089	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	120	0.03219	126.3925	KELLY - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR	0	20SP	G15_089	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	120	0.03221	124.9098	KELLY - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	120	0.04615	120.0881	G15089 T 230.00 - UTICA JCT 230KV CKT 1
FDNS	00NR	0	25SP	G15_089	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	120	0.04821	118.7599	G15089 T 230.00 - UTICA JCT 230KV CKT 1
FDNS	00NR	0	20SP	G15_089	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	120	0.04823	116.9849	G15089 T 230.00 - UTICA JCT 230KV CKT 1
FDNS	00NR	0	25SP	G15_089	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	120	0.03219	115.7754	FT RANDAL - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	120	0.03067	115.5625	FT RANDAL - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	120	0.02925	115.198	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	00NR	0	25SP	G15_089	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	120	0.03078	114.9244	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	00NR	0	20SP	G15_089	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	120	0.03221	114.1978	FT RANDAL - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR	0	20SP	G15_089	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	120	0.0308	113.4115	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	00NR	0	25SP	G15_089	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	120	0.03056	109.2116	RASMUSN - UTICA JCT 230KV CKT 1
FDNS	00NR	0	25SP	G15_089	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	120	0.03056	108.7202	RASMUSN - SIOUX CITY 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	120	0.02908	108.5389	RASMUSN - UTICA JCT 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	120	0.02908	107.9868	RASMUSN - SIOUX CITY 230KV CKT 1
FDNS	00NR	0	20SP	G15_089	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	120	0.03058	107.6608	RASMUSN - UTICA JCT 230KV CKT 1
FDNS	00NR	0	20SP	G15_089	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	120	0.03058	107.1903	RASMUSN - SIOUX CITY 230KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	120	0.02974	107	GAVINS POINT - YANKON JCT 115KV CKT 1
FDNS	00NR	0	17SP	G15_089	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	120	0.02974	107	GAVINS POINT - YANKON JCT 115KV CKT 1
FDNS	00NR	2	25SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.03539	107.155	FT RANDAL - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR	2	20SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.03542	105.2134	FT RANDAL - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR	2	25SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.04072	102.3083	G15089 T 230.00 - UTICA JCT 230KV CKT 1
FDNS	00NR	2	25SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.03464	100.4818	G15089 T 230.00 - SIOUX CITY 230KV CKT 1
FDNS	00NR	2	20SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.04074	100.1321	G15089 T 230.00 - UTICA JCT 230KV CKT 1
FDNS	00NR	2	20WP	G15_089	FROM->TO	FTCAL_S	803	803	0.02946	107.6118	BASE CASE
FDNS	00NR	2	17SP	G15_089	FROM->TO	G15089 T 230.00 - SIOUX CITY 230KV CKT 1	320	320	0.23729	101.2815	G15089 T 230.00 - UTICA JCT 230KV CKT 1
FDNS	00NR	2	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.35397	124.5222	G15089 T 230.00 - SIOUX CITY 230KV CKT 1
FDNS	17ALL	2	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39377	116.214	G15089 T 230.00 - SIOUX CITY 230KV CKT 1
FDNS	00NR	2	20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.35693	114.9354	G15089 T 230.00 - SIOUX CITY 230KV CKT 1
FDNS	00NR	2	25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.35699	114.0004	G15089 T 230.00 - SIOUX CITY 230KV CKT 1
FDNS	17ALL	2	16WP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.3916	112.7354	G15089 T 230.00 - SIOUX CITY 230KV CKT 1
FDNS	00NR	2	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.3094	110.0843	FT RANDAL - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR	2	16WP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.35822	109.6044	G15089 T 230.00 - SIOUX CITY 230KV CKT 1
FDNS	17ALL	2	20WP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39129	108.6277	G15089 T 230.00 - SIOUX CITY 230KV CKT 1
FDNS	17ALL	2	25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39435	107.2899	G15089 T 230.00 - SIOUX CITY 230KV CKT 1
FDNS	17ALL	2	20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39397	107.216	G15089 T 230.00 - SIOUX CITY 230KV CKT 1
FDNS	00NR	2	20WP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.35853	106.4191	G15089 T 230.00 - SIOUX CITY 230KV CKT 1
FDNS	00NR	2	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.28176	106.172	HANLON - STORLA 230KV CKT 1
FDNS	00NR	2	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.29673	106.1609	KELLY - MEADOWGROVE4230.00 230KV CKT 1
FDNS	17ALL	2	17G	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.39257	106.111	G15089 T 230.00 - SIOUX CITY 230KV CKT 1
FDNS	00NR	2	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.28203	105.5551	P12:230-UMZB# 116 #: ST IN SD. WSG-ST-VH
FDNS	17NR	2	17G	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.35771	103.5368	G15089 T 230.00 - SIOUX CITY 230KV CKT 1
FDNS	17ALL	2	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.32898	103.3004	KELLY - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR	2	25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.2861	102.9695	GRPRAR1-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1
FDNS	00NR	2	25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.2861	102.8943	GRPRAR1-LNX3345.00 - YANKTON 345KV CKT Z
FDNS	00NR	2	20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.28605	102.6864	GRPRAR1-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1
FDNS	00NR	2	20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.28605	102.6683	GRPRAR1-LNX3345.00 - YANKTON 345KV CKT Z
FDNS	00NR	2	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.28168	101.8704	FT THOMPSON - LETCHER 230KV CKT 1
FDNS	00NR	2	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.28168	101.8704	FT THOMPSON - LETCHER 230KV CKT 1
FDNS	00NR	2	20SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.3125	101.2912	FT RANDAL - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR	2	25SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.31256	101.1191	FT RANDAL - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR	2	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.28271	101.0479	FTTHOM2-LNX3345.00 - GRPRAR-LNX3345.00 345KV CKT 1
FDNS	17ALL	2	16WP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.32712	100.9165	KELLY - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR	2	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.28271	100.81	FT THOMPSON - FTTHOM2-LNX3345.00 345KV CKT Z
FDNS	00NR	2	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.28271	100.7583	GRPRAR2-LNX3345.00 - YANKTON 345KV CKT Z
FDNS	00NR	2	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.28255	100.1819	STORLA - WESSINGTON 230KV CKT 1
FDNS	00NR	2	17SP	G15_089	FROM->TO	G15089 T 230.00 - UTICA JCT 230KV CKT 1	320	320	0.2826	99.5	WATERTN-LNX3345.00 - WHITE 345KV CKT 1
FDNS	00NR	2	25SP	G15_089	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	120	0.03539	102.7095	FT RANDAL - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR	2	20SP	G15_089	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	120	0.03542	100.889	FT RANDAL - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR	3	25SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.03517	106.9431	FT RANDAL - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR	3	20SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.0352	105.0074	FT RANDAL - MEADOWGROVE4230.00 230KV CKT 1
FDNS	00NR	3	25SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.04072	102.3081	G15089 T 230.00 - UTICA JCT 230KV CKT 1
FDNS	00NR	3	25SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.03438	100.2591	G15089 T 230.00 - SIOUX CITY 230KV CKT 1
FDNS	00NR	3	20SP	G15_089	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	120	0.04074	100.1318	G15089 T 230.00 - UTICA JCT 230KV CKT 1
FDNS	00NR	3	20SP	G15_089	FROM->TO	FTCAL_S	803	803	0.02911	111.4716	BASE CASE
FDNS	00NR	3	20WP	G15_089	FROM->TO	FTCAL_S	803	803	0.0296	107.6477	BASE CASE
FDNS	00NR	3	17SP	G15_089	FROM->TO	FTCAL_S	803	803	0.02903	103.1388	BASE CASE
FDNS	00NR	3	17SP	G15_089	FROM->TO	G15089 T 230.00 - SIOUX CITY 230KV CKT 1	320	320	0.23729	101.281	G15089 T 230.00 - UTICA JCT 230KV CKT 1
FDNS	00NR	3	25SP	G15_089	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	120			

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	4	20WP	G15_089	FROM->TO	FTCAL_S	803	803	0.02959	107.6532	BASE CASE
FDNS	00NR	4	17SP	G15_089	FROM->TO	FTCAL_S	803	803	0.02902	103.147	BASE CASE

11.8G-V: Voltage Power Flow Analysis (Constraints Requiring Transmission Reinforcement)

Available upon request. Contact SPP Generation Interconnection Studies for details.

11.9 H-T: Thermal Power Flow Analysis (Other Constraints Not Requiring Transmission Reinforcement)

See next page.

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	17ALL	0	17G	G15_089	'FROM->TO'	'BELDEN - HOSKINS 115KV CKT 1'	115	115	0.02979	112.4761	'BELDEN - TWIN CHURCH 115KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	'FROM->TO'	'BELDEN - HOSKINS 115KV CKT 1'	115	115	0.02959	112.0661	'BELDEN - TWIN CHURCH 115KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'FROM->TO'	'BELDEN - HOSKINS 115KV CKT 1'	115	115	0.02975	109.5641	'BELDEN - TWIN CHURCH 115KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'BELDEN - HOSKINS 115KV CKT 1'	115	115	0.02964	106.5705	'BELDEN - TWIN CHURCH 115KV CKT 1'
FDNS	17ALL	0	20WP	G15_089	'FROM->TO'	'BELDEN - HOSKINS 115KV CKT 1'	115	115	0.02912	106.202	'BELDEN - TWIN CHURCH 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'BELDEN - HOSKINS 115KV CKT 1'	115	115	0.03033	101.2827	'BELDEN - TWIN CHURCH 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'COLUMEAST (COL.EAST T3) 230/115/13.8KV TRANSFORMER CKT 1'	187	187	0.04681	97.4	'COLUMEAST - SHELL CREEK 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'COLUMEAST (COL.EAST T3) 230/115/13.8KV TRANSFORMER CKT 1'	187	187	0.04681	97.3	'COLUMEAST - SHELL CREEK 345KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	'FROM->TO'	'COLUMEAST (COL.EAST T3) 230/115/13.8KV TRANSFORMER CKT 1'	187	187	0.04546	97	'COLUMEAST - SHELL CREEK 345KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	'FROM->TO'	'COLUMEAST (COL.EAST T3) 230/115/13.8KV TRANSFORMER CKT 1'	187	187	0.04546	97	'COLUMEAST - SHELL CREEK 345KV CKT 1'
FDNS	17ALL	0	17G	G15_089	'FROM->TO'	'COLUMEAST (COL.EAST T3) 230/115/13.8KV TRANSFORMER CKT 1'	187	187	0.04651	96.5	'COLUMEAST - SHELL CREEK 345KV CKT 1'
FDNS	17ALL	0	17G	G15_089	'FROM->TO'	'COLUMEAST (COL.EAST T3) 230/115/13.8KV TRANSFORMER CKT 1'	187	187	0.04651	95.8	'COLUMEAST - SHELL CREEK 345KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.04873	113.3428	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.04047	110.7424	'MISSION - ST FRANCIS 115KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.04858	109.7881	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.04739	109.2091	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.04047	109.1398	'HARMONY - ST FRANCIS 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.04047	107.4507	'P12:115:NPPD:1091:VALENTN7:MISSION7:8TB'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.04047	106.9049	'HARMONY - VALENTINE 115KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.04384	105.767	'GRPRARI-LNX3345.00 - YANKTON 345KV CKT 2'
FDNS	17ALL	0	25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.04384	105.7223	'GRPRARI-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.04132	105.694	'MISSION - ST FRANCIS 115KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.04132	104.4857	'HARMONY - ST FRANCIS 115KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.06307	103.4643	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.04132	103.252	'P12:115:NPPD:1091:VALENTN7:MISSION7:8TB'
FDNS	17ALL	0	25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.04132	102.8626	'HARMONY - VALENTINE 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.04047	101.7975	'AINSWORTH - VALENTINE 115KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.04118	101.5017	'MISSION - ST FRANCIS 115KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.04369	101.449	'GRPRARI-LNX3345.00 - YANKTON 345KV CKT 2'
FDNS	17ALL	0	20SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.04369	101.4177	'GRPRARI-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.03279	101.1573	'AINSWORTH - BASSETT 7115.00 115KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.04118	100.4127	'HARMONY - ST FRANCIS 115KV CKT 1'
FDNSLock	0	0	17SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.03417	100.2117	'MAXWELL - STAPLETON 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.06127	100	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.06294	99.9	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'
FDNS	0	0	25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.03455	99.8	'AINSWORTH - AINSWORTH 115KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.03279	99.8	'BASSETT 7115.00 - STUART 115KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.04604	99.6	'FT RANDAL - SIOUX CITY 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.03275	99.4	'FT THOMPSON - LAKE PLATT 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.03275	99.4	'FT THOMPSON - LAKE PLATT 230KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.04118	99.3	'P12:115:NPPD:1091:VALENTN7:MISSION7:8TB'
FDNS	17ALL	0	20SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.03266	99	'AINSWORTH - BASSETT 7115.00 115KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.04132	99	'AINSWORTH - VALENTINE 115KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.04118	98.9	'HARMONY - VALENTINE 115KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.04	98.6	'GEN562438 1-G13-032 0.6900'
FDNS	17ALL	0	25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.03456	98.3	'AINSWORTH - AINSWORTH 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.04162	98.1	'GRPRARI-LNX3345.00 - YANKTON 345KV CKT 2'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.04162	98	'GRPRARI-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.02977	97.7	'P12:115:UMZW:# 173 #: WI-WE-MS IN SD. WITTEN IS A TAP'
FDNS	17ALL	0	25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.03279	97.7	'ATKINSON - STUART 115KV CKT 1'
FDNS	0	0	25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.03276	97.7	'AINSWORTH - BASSETT 7115.00 115KV CKT 1'
FDNS	0	0	17SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.04043	97.5	'MISSION - ST FRANCIS 115KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.03266	97.4	'BASSETT 7115.00 - STUART 115KV CKT 1'
FDNS	0	0	20SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.03445	96.8	'AINSWORTH - AINSWORTH 115KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.0422	96.7	'BLOOMFIELD - CREIGHTON 115KV CKT 1'
FDNS	0	0	25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.03455	96.6	'CALAMUS - THEDFORD 115KV CKT 1'
FDNS	0	0	20SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.03264	96.5	'AINSWORTH - BASSETT 7115.00 115KV CKT 1'
FDNS	0	0	25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.03455	96.5	'AINSWORTH - CALAMUS 115KV CKT 1'
FDNS	0	0	25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.03455	96.5	'P12:115:NPPD:1090:AINSWND7:THEDFRD7:8TB'
FDNS	17ALL	0	20SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.0459	96.3	'FT RANDAL - SIOUX CITY 230KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.03841	96.3	'THEDFRD3 345.00 (THEDFORDT2) 345/115/13.8KV TRANSFORMER CKT 1'
FDNS	0	0	25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.03276	96.2	'BASSETT 7115.00 - STUART 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.04465	95.9	'FT RANDAL - SIOUX CITY 230KV CKT 1'
FDNS	0	0	17SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.04043	95.8	'HARMONY - ST FRANCIS 115KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.03266	95.4	'ATKINSON - STUART 115KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.04118	95.3	'AINSWORTH - VALENTINE 115KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.03988	95	'GEN562438 1-G13-032 0.6900'
FDNS	00NR	0	17SP	G15_089	'FROM->TO'	'FTCAL 5'	803	803	0.03641	95.8	'BASE CASE'
FDNS	00NR	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39265	107.6874	'DBL-G1524-WI'
FDNS	00NR	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39265	107.1012	'DBL-THIS-G15'
FDNS	00NR	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39264	106.7821	'DBL-CLRK-THI'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42542	99.4	'ARMOUR - FT RANDAL 115KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39521	99.4	'GEN635213 3-NEAL UNIT 3'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39372	99.4	'GROTON-LNX3 345.00 - LELAND1-LNX3345.00 345KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39261	99.4	'FT THOMPSON - WESSINGTON 230KV CKT 1'

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39261	99.4	FT THOMPSON - WESSINGTON 230KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39734	99.4	CLEARWATER - ONEILL 115KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42451	99.3	TYNDALL - WHITE SWAN 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41998	99.3	FT THOMPSON - WESSINGTON 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41998	99.3	FT THOMPSON - WESSINGTON 230KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42566	99.3	GRPRARI-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42566	99.3	GRPRARI-LNX3345.00 - YANKTON 345KV CKT 2'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39728	99.3	CLEARWATER - NELIGH 115KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39372	99.3	GROTON - GROTON-LNX3 345.00 345KV CKT 2'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39372	99.3	LELAND OLDS - LELAND1-LNX3345.00 345KV CKT 2'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39372	99.3	P12:345:UMZB:# 109 #: LOS GRT IN ND. LOS GRT'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39734	99.3	P12:115:NPPD:1164:ONEILL 7:JEFFREY9:BTB'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.38777	99.2	UTICA JCT (UJ KV3A) 230/115/13.2KV TRANSFORMER CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42064	99.2	GEN600045 4-ANSON'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42064	99.2	GEN640418 1-ELKHORN RIDGE WIND'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39499	99.2	G15088 T 345.00 - MOORE 345KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39487	99.2	MCCOOL - MOORE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42542	99.1	P12:115:UMZB:# 128 #: AR IN SD. MV-AR-FR 115'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42184	99.1	MINGO - RED WILLOW 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42184	99.1	MINGO - RED WILLOW 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42086	99.1	P12:115:NPPD:1091:VALENTN7:MISSION7:BTB'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39518	99.1	DBL-G1524-WI'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39499	99.1	AXTELL - SWEETWATER 345KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39474	99.1	ALEXMRES3 345.00 - BISON 3 345.00 345KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.4204	99.1	FT THOMPSON - LETCHER 230KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.4204	99.1	FT THOMPSON - LETCHER 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42149	99	OAHE - SULLY BUTTE 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42097	99	AXTELL - SWEETWATER 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42071	99	BISON 3 345.00 - BUFFALO 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42064	99	ANSON - SPLIT ROCK 115KV CKT 2'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42064	99	ANSON 115/17.5KV TRANSFORMER CKT 4'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42064	99	GEN645001 1-FORT CALHOUN 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42052	99	GROTON - GROTON-LNX3 345.00 345KV CKT 2'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42052	99	GROTON-LNX3 345.00 - LELAND1-LNX3345.00 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42052	99	LELAND OLDS - LELAND1-LNX3345.00 345KV CKT 2'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42052	99	P12:345:UMZB:# 109 #: LOS GRT IN ND. LOS GRT'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39608	99	KELLY - SHELL CREEK 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39608	99	SHELL CREEK (SHELLCREEKT1) 345/230/13.8KV TRANSFORMER CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39608	99	SHELL CREEK (SHELLCREEKT1) 345/230/13.8KV TRANSFORMER CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39525	99	CARPENTER - HURON 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39338	99	HURON WEST PARK - MITCHELL NW 115KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39338	99	HURON WEST PARK - MITCHELL NW 115KV CKT 1'
FDNS	17ALL	0	20WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41798	99	FT THOMPSON - LETCHER 230KV CKT 1'
FDNS	17ALL	0	20WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41798	99	FT THOMPSON - LETCHER 230KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39527	99	GEN635213 3-NEAL UNIT 3'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39512	99	G15061 T 345.00 - SETAB 345KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39506	99	AXTELL - SWEETWATER 345KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39379	99	GROTON-LNX3 345.00 - LELAND1-LNX3345.00 345KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39267	99	FT THOMPSON - WESSINGTON 230KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39267	99	FT THOMPSON - WESSINGTON 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.4253	98.9	CLEARWATER - ONEILL 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.4253	98.9	P12:115:NPPD:1164:ONEILL 7:JEFFREY9:BTB'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42149	98.9	SULLY BUTTE - SULLYBT-LNX3230.00 230KV CKT 2'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39525	98.9	HURON - WATERTOWN 230KV CKT 2'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39525	98.9	HURON - WATERTOWN 230KV CKT 2'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39521	98.9	GEN562832 1-G15042 3 0.6900'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42149	98.8	P12:230:UMZB:# 114 #: SB IN SD. SB-WK-GH'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42149	98.8	P12:230:UMZB:# 117 #: WK IN SD. SB-WK-GH'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42149	98.8	SULLYBT-LNX3230.00 - WHITLOK 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42086	98.8	HARMONY - ST FRANCIS 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42086	98.8	MISSION - ST FRANCIS 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42083	98.8	KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42083	98.8	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT 2'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42064	98.8	GEN300003 1-THOMAS HILL UNIT 3'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39525	98.8	CARPENTER - WATERTOWN 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39525	98.8	CARPENTER - WATERTOWN 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39504	98.8	CNTHNT3 345.00 - PRAIRIE3 345.00 345KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.3949	98.8	DIXONCO 230.00 - TWIN CHURCH 230KV CKT 1'
FDNS	17ALL	0	20WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41759	98.8	STORLA - WESSINGTON 230KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39512	98.8	GERALD GENTLEMAN STATION - RED WILLOW 345KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39379	98.8	GROTON - GROTON-LNX3 345.00 345KV CKT 2'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39379	98.8	LELAND OLDS - LELAND1-LNX3345.00 345KV CKT 2'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39379	98.8	P12:345:UMZB:# 109 #: LOS GRT IN ND. LOS GRT'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42149	98.7	GLENHAM - WHITLOK 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42113	98.7	GERALD GENTLEMAN STATION - RED WILLOW 345KV CKT 1'

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42086	98.7	'HARMONY - VALENTINE 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42064	98.7	'P13:230:UMZW:# 2218 #: FP IN MT. LOSS OF TRANSFORMER (AT2)'
FDNS	17ALL	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.4201	98.7	'FT THOMPSON - LETCHER 230KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.4201	98.7	'FT THOMPSON - LETCHER 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39521	98.7	'GEN645001 1-FORT CALHOUN 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39492	98.7	'MINGO - RED WILLOW 345KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39492	98.7	'MINGO - RED WILLOW 345KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39531	98.7	'CARPENTER - HURON 230KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39481	98.7	'ALEXMR3 345.00 - BISON 3 345.00 345KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39344	98.7	'HURON WEST PARK - MITCHELL NW 115KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39344	98.7	'HURON WEST PARK - MITCHELL NW 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42086	98.6	'AINSWORTH - VALENTINE 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42064	98.6	'GEN563113 1-G15076 4 0.6500'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42064	98.6	'GEN563114 1-G15076 5 0.6500'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42064	98.6	'GEN600020 2-ANGUS ANSON1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42064	98.6	'GEN600021 3-ANGUS ANSON2'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41976	98.6	'HURON WEST PARK - MITCHELL NW 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41976	98.6	'HURON WEST PARK - MITCHELL NW 115KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39521	98.6	'ANSON - SPLIT ROCK 115KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39521	98.6	'ANSON (ANS 1) 115/13.8/13.8KV TRANSFORMER CKT 2'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39521	98.6	'GEN600045 4-ANSON'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.3952	98.6	'P12:115:UMZW:# 162 #: NEL IN ND. FAULT ON ML-NEL-MX-GA 115 KV'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39454	98.6	'KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39454	98.6	'SIDNEY - SIDNEY1-LNX3345.00 345KV CKT 2'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39734	98.6	'CLEARWATER - NELIGH 115KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39531	98.6	'CARPENTER - WATERTOWN 230KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39531	98.6	'CARPENTER - WATERTOWN 230KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39531	98.6	'HURON - WATERTOWN 230KV CKT 2'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39531	98.6	'HURON - WATERTOWN 230KV CKT 2'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39527	98.6	'GEN562832 1-G15042_3 0.6900'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41941	98.5	'LETCHER - SIOUX FALLS 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39521	98.5	'ANSON - SPLIT ROCK 115KV CKT 2'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39521	98.5	'ANSON 115/17.5KV TRANSFORMER CKT 4'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39518	98.5	'DBL-THIS-G15'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39506	98.5	'GERALD GENTLEMAN STATION - RED WILLOW 345KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41991	98.5	'STORLA - WESSINGTON 230KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39614	98.5	'KELLY - SHELL CREEK 230KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39614	98.5	'SHELL CREEK (SHELLCREEKT1) 345/230/13.8KV TRANSFORMER CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39614	98.5	'SHELL CREEK (SHELLCREEKT1) 345/230/13.8KV TRANSFORMER CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39505	98.5	'G15088_T 345.00 - MOORE 345KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39497	98.5	'DIXONCO 230.00 - TWIN CHURCH 230KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39461	98.5	'KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39519	98.4	'NUNDRWD - WAYSIDE 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39512	98.4	'P12:115:NPPD:1091-VALENTN7-MISSION7-BTB'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39505	98.4	'G15061 T 345.00 - SETAB 345KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39527	98.4	'GEN645001 1-FORT CALHOUN 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39511	98.4	'CNTSHT3 345.00 - PRAIRIE3 345.00 345KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39461	98.4	'SIDNEY - SIDNEY1-LNX3345.00 345KV CKT 2'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.3953	98.3	'HOLT.CO3 345.00 - THEDFRD3 345.00 345KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39518	98.3	'DBL-CLRK-THI'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39485	98.3	'GLENBORO SOUTH - J290 SUB 230.00 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39338	98.3	'MITCHELL - MITCHELL NW 115KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39338	98.3	'MITCHELL - MITCHELL NW 115KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42241	98.3	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39527	98.3	'GEN600045 4-ANSON'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39527	98.3	'P12:115:UMZW:# 162 #: NEL IN ND. FAULT ON ML-NEL-MX-GA 115 KV'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39521	98.2	'GEN300003 1-THOMAS HILL UNIT 3'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39521	98.2	'GEN659116 1-SPIRIT MOUND UNIT1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39521	98.2	'PROSE CAP7 115.00 - PROSE WIND7 115.00 115KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39521	98.2	'PROSE CAP7 115.00 - SPLIT ROCK 115KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39482	98.2	'BSSOUTH3 345.00 - ELLENDLMVP3 345.00 345KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39482	98.2	'BSSOUTH3 345.00 - ELLENDLMVP3 345.00 345KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42241	98.2	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT 2'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39527	98.2	'ANSON - SPLIT ROCK 115KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39527	98.2	'ANSON - SPLIT ROCK 115KV CKT 2'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39527	98.2	'ANSON (ANS 1) 115/13.8/13.8KV TRANSFORMER CKT 2'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39527	98.2	'ANSON 115/17.5KV TRANSFORMER CKT 4'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39519	98.2	'P12:115:NPPD:1091-VALENTN7-MISSION7-BTB'
FDNS	17ALL	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41963	98.1	'STORLA - WESSINGTON 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39482	98.1	'ELLENDLMVP3 345.00 (1) 345/230/34.5KV TRANSFORMER CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39491	98.1	'GLENBORO SOUTH - J290 SUB 230.00 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39521	98	'GEN563113 1-G15076 4 0.6500'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39521	98	'GEN563114 1-G15076 5 0.6500'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39521	98	'GEN659117 2-SPIRIT MOUND UNIT2'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39341	98	'HANLON (VH XXXX) 230/115/13.8KV TRANSFORMER CKT 1'

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39537	98	HOLT.CO3 345.00 - THEDFRD3 345.00 345KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39527	98	PROSE CAP7 115.00 - PROSE WIND7 115.00 115KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39527	98	PROSE CAP7 115.00 - SPLIT ROCK 115KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39526	98	NUNDRWD - WAYSIDE 230KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39524	98	DBL-CLRK-THI'
FDNS	17ALL	0	17G	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42029	97.9	HANLON - STORLA 230KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42211	97.9	GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'
FDNS	00NR	0	20WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39573	97.9	GRPRARI-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'
FDNS	00NR	0	20WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39573	97.9	GRPRARI-LNX3345.00 - YANKTON 345KV CKT 2'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39527	97.9	GEN300003 1-THOMAS HILL UNIT 3'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39527	97.9	GEN659116 1-SPIRIT MOUND UNIT1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39517	97.9	HOLCOMB - SETAB 345KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39517	97.9	HOLCOMB - SETAB 345KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39344	97.9	MITCHELL - MITCHELL NW 115KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39344	97.9	MITCHELL - MITCHELL NW 115KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42211	97.8	GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT 2'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39511	97.8	CENTER - COYOTE 345KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39347	97.8	HANLON (VH XXXX) 230/115/13.8KV TRANSFORMER CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39347	97.8	J2PRMGR8 - VFODNES 115KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42451	97.7	P12:115:UMZW:# 1901 #: TY IN SD. TY-WSW LINE FAULT'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42451	97.7	P12:115:UMZW:# 537 #: TY IN SD. TY-YJ LINE FAULT'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42451	97.7	P13:115:UMZW:# 1902 #: TY IN SD. LOSS OF TRANSFORMER (KY1A).'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39527	97.7	GEN563113 1-G15076_4_0.6500'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39527	97.7	GEN563114 1-G15076_5_0.6500'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39527	97.7	GEN659117 2-SPIRIT MOUND UNIT2'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39526	97.7	AXTELL - POST ROCK 345KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.4139	97.6	MENNO JCT - TRIPP JCT 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42064	97.6	BASE CASE'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41908	97.5	GEN60016 1-B_H WIND 0.7000'
FDNS	17ALL	0	20WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42006	97.5	GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42782	97.5	FT RANDAL - SPENCER 115KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42782	97.5	P12:115:NPPD:WAPAG:FTRANDL7:ONEILL 7:BTB'
FDNS	17ALL	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42782	97.5	P12:115:UMZB:# 115 #: SE IN NE. FR-SE-ON'
FDNSLock	00NR	0	20WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39303	97.5	FT THOMPSON - LETCHER 230KV CKT 1'
FDNS	17ALL	0	17G	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42045	97.4	P12:230:UMZB:# 116 #: ST IN SD. WSG-ST-VH'
FDNS	17ALL	0	20WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42006	97.4	GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT 2'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42011	97.2	HANLON - SIOUX FALLS 230KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.4139	97.2	MENNO JCT - UTICA 115KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42385	97.1	ARMOUR - FT RANDAL 115KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.4196	97.1	GRAND ISLAND - MCCOOL 345KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41922	97.1	ROSEAU - ROSEAUM 2 500.00 500KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.4139	97.1	P12:115:UMZ:# 237 #: MEN IN SD. MENNO JUNCTION IS A TAP (UJ-MEN-TP).'
FDNS	17ALL	0	20WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42341	97.1	GRPRARI-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'
FDNS	17ALL	0	20WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42341	97.1	GRPRARI-LNX3345.00 - YANKTON 345KV CKT 2'
FDNS	00NR	0	20WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39077	97.1	SPLIT ROCK - WHITE 345KV CKT 1'
FDNS	00NR	0	20WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39077	97.1	SPLIT ROCK - WHITE 345KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42782	97.1	ONEILL - SPENCER 115KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.4504	97	FT RANDAL - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42598	97	FT RANDAL - SPENCER 115KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42598	97	P12:115:NPPD:WAPAG:FTRANDL7:ONEILL 7:BTB'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42598	97	P12:115:UMZB:# 115 #: SE IN NE. FR-SE-ON'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41922	97	FORBES - ROSEAU 500KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41922	97	ROSEAU - ROSEAUM 2 500.00 500KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41908	97	GEN635214 4-NEAL UNIT 4'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39521	97	BASE CASE'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42385	96.9	P12:115:UMZW:# 128 #: AR IN SD. MV-AR-FR 115'
FDNS	00NR	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39122	96.9	SPLIT ROCK - WHITE 345KV CKT 1'
FDNS	00NR	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39122	96.9	SPLIT ROCK - WHITE 345KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42753	96.9	FT RANDAL - SPENCER 115KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42753	96.9	P12:115:NPPD:WAPAG:FTRANDL7:ONEILL 7:BTB'
FDNS	17ALL	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42753	96.9	P12:115:UMZB:# 115 #: SE IN NE. FR-SE-ON'
FDNSLock	00NR	0	20WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39403	96.9	STORLA - WESSINGTON 230KV CKT 1'
FDNS	00NR	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.40101	96.8	FT RANDAL - WHITE SWAN 115KV CKT 1'
FDNS	00NR	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39391	96.8	WATERTN-LNX3345.00 - WHITE 345KV CKT 1'
FDNS	00NR	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.37356	96.8	NAPA JCT7 115.00 - UTICA 115KV CKT 1'
FDNS	00NR	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.37356	96.8	NAPA JCT7 115.00 - UTICA 115KV CKT 1'
FDNS	00NR	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.37356	96.8	NAPA JCT7 115.00 - YANKON JCT 115KV CKT 1'
FDNS	00NR	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.37356	96.8	NAPA JCT7 115.00 - YANKON JCT 115KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42033	96.7	FT THOMPSON - HURON 230KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42033	96.7	FT THOMPSON - HURON 230KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42033	96.7	FT THOMPSON - HURON 230KV CKT 2'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42033	96.7	FT THOMPSON - HURON 230KV CKT 2'
FDNS	00NR	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39391	96.7	P12:345:UMZW:# 1747 #: WT2 IN SD. WT2-WHT LINE FAULT'
FDNS	00NR	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39391	9	

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	17ALL	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.4518	96.7	'FT RANDAL - MEADOWGROVE4230.00 230KV CRT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.39527	96.7	'BASE CASE'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.42598	96.6	'ONEILL - SPENCER 115KV CRT 1'
FDNS	00NR	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.39454	96.6	'LETCHER - SIOUX FALLS 230KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.4517	96.6	'P13:230:UMZW:# 253 #: FR IN SD. LOSS OF TRANSFORMER (E'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.42144	96.6	'STORLA (KV1A) 230/115/13.2KV TRANSFORMER CRT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.42064	96.6	'GEN562528 1-G14_031_2_0.6900'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.42064	96.6	'GEN659110 1-LELAND OLDS UNIT1'
FDNS	00NR	0	20WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.39566	96.6	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.41955	96.5	'MCCOOL - MOORE 345KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.42064	96.5	'GEN652559 1-OAHE'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.41977	96.5	'DENISON - SIOUX CITY 230KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.41943	96.5	'LAXEFIELD 3 - NOBLE 345KV CRT 1'
FDNS	17ALL	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.42753	96.5	'ONEILL - SPENCER 115KV CRT 1'
FDNS	00NR	0	20WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.39566	96.5	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CRT 2'
FDNS	00NR	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.40101	96.4	'TYNDALL - WHITE SWAN 115KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.42542	96.4	'MT VERN - STORLA 115KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.42064	96.4	'GEN562714 1-G15_023_4_0.6900'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.42064	96.4	'GEN562715 1-G15_023_5_0.6900'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.42064	96.4	'GEN615010 1-STANTON4'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.42064	96.4	'STANTON 230/18.0KV TRANSFORMER CRT 1'
FDNS	17ALL	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.45143	96.4	'FT RANDAL - MEADOWGROVE4230.00 230KV CRT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.42451	96.3	'TYNDALL - YANKON JCT 115KV CRT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.41635	96.3	'BLOOMFIELD - GAVINS POINT 115KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.42285	96.3	'GREGORY - WINNER 115KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.42064	96.3	'GEN652556 2-OAHE'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.42064	96.3	'GEN652557 4-OAHE'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.42064	96.3	'GEN652558 6-OAHE'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.42064	96.3	'GEN657749 1-YOUNG 1 GENERATOR'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.41778	96.3	'HOSKINS - SHELL CREEK 345KV CRT 1'
FDNS	17ALL	0	20WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.38706	96.3	'UTICA JCT (UJ KV3A) 230/115/13.2KV TRANSFORMER CRT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.41916	96.2	'BUFFALO - JAMESTOWN 345KV CRT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.41908	96.2	'GEN635213 3-NEAL UNIT 3'
FDNS	00NR	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.39021	96.2	'MENNON JCT - TRIPP JCT 115KV CRT 1'
FDNS	17ALL	0	17G	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.38843	96.2	'UTICA JCT (UJ KV3A) 230/115/13.2KV TRANSFORMER CRT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.42285	96.2	'P12:115:UMZW:# 172 #: WI IN SD.'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.42064	96.2	'SQUARE BUTTE - YNG2 4 230.00 230KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.41916	96.2	'BELDEN - HOSKINS 115KV CRT 1'
FDNS	17ALL	0	20WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.42348	96.2	'FT RANDAL - WHITE SWAN 115KV CRT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.41988	96.1	'CARPENTER - HURON 230KV CRT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.39393	96.1	'BELDEN - HARTINGTON 115KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.41949	96	'EAGLE 4 230.00 - PAHOJA 230KV CRT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.42385	95.9	'ARMOUR - MT VERN 115KV CRT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.42046	95.9	'KELLY - SHELL CREEK 230KV CRT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.42046	95.9	'SHELL CREEK (SHELLCREEKT1) 345/230/13.8KV TRANSFORMER CRT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.42046	95.9	'SHELL CREEK (SHELLCREEKT1) 345/230/13.8KV TRANSFORMER CRT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.41988	95.9	'HURON - WATERTOWN 230KV CRT 2'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.41988	95.9	'HURON - WATERTOWN 230KV CRT 2'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.41938	95.9	'WATERTN-LNX3345.00 - WHITE 345KV CRT 1'
FDNS	00NR	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.39577	95.9	'FORBES - ROSEAU 500KV CRT 1'
FDNS	00NR	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.39577	95.9	'RIEL - ROSEAU 500KV CRT 1'
FDNS	00NR	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.39577	95.9	'ROSEAU - ROSEAU 2 500.00 500KV CRT 1'
FDNS	00NR	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.39577	95.9	'ROSEAU - ROSEAU 2 500.00 500KV CRT 1'
FDNS	00NR	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.39465	95.9	'G09_001ST 345.00 - WATERTOWN 345KV CRT 1'
FDNS	00NR	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.36173	95.9	'UTICA JCT (UJ KV3A) 230/115/13.2KV TRANSFORMER CRT 1'
FDNS	17NR	0	17G	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.39263	95.9	'HANLON - STORLA 230KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.41738	95.9	'GAVINS POINT - HARTINGTON 115KV CRT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.39616	95.9	'BRDLAND-LNX3345.00 - HURON 345KV CRT 2'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.39616	95.9	'BROADLAND - HURON 230KV CRT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.39616	95.9	'HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CRT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.39616	95.9	'HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CRT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.39616	95.9	'P12:345:UMZB:# 102 #: AVS BD IN ND. AVS BRD LR'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.39616	95.9	'P12:345:UMZB:# 103 #: BD IN SD. LOSS OF LINE'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.39605	95.9	'BISON - MAURINE 230KV CRT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.39565	95.9	'MISSION - WITTEN 115KV CRT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.39521	95.9	'GEN562528 1-G14_031_2_0.6900'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.39521	95.9	'GEN952511 1-G12_009IS_2_0.6900'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.39521	95.9	'P13:230:345-NPPD-NUCOR-1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.39514	95.9	'GRIMES - LEHIGH 345KV CRT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.39462	95.9	'PLYMOUTH - SIOUX CITY 161KV CRT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.39462	95.9	'PLYMOUTH - SIOUX CITY 161KV CRT 1'
FDNS	17ALL	0	20WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.42348	95.9	'TYNDALL - WHITE SWAN 115KV CRT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.41995	95.8	'OAHE - SULLY BUTTE 230KV CRT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.41988	95.8	'CARPENTER - WATERTOWN 230KV CRT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CRT 1'	320	320	0.41988	95.8	'CARPENTER - WATERTOWN 230KV CRT 1'

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41938	95.8	'P12:345:UMZW:# 1747 #: WT2 IN SD. WT2-WHT LINE FAULT'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41938	95.8	'WATERTN-LNX3345.00 - WATERTOWN 345KV CKT Z'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41915	95.8	'CENTER - JAMESTOWN 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41779	95.8	'RAUN - SUB 3451 FT CAL 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41779	95.8	'RAUN - SUB 3451 FT CAL 345KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.40054	95.8	'ARMOUR - MT VERN 115KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39672	95.8	'OAHÉ - SULLY BUTTE 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39616	95.8	'ANTELOP-LNX3345.00 - ANTELOPE VALLEY 345KV CKT Z'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39521	95.8	'GEN659296 2-SDPRAIRWIND1W0.6900'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39521	95.8	'GEN659411 1-CAMPBLNCY W0.6900'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39411	95.8	'ANTELOPE 7115.00 - CREIGHTON 115KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42366	95.7	'CLEARWATER - ONEILL 115KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42366	95.7	'P12:115:NPPD:1164:ONEILL 7:JEFFREY9:BTB'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41995	95.7	'SULLY BUTTE - SULLYBT-LNX3230.00 230KV CKT Z'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41995	95.7	'SULLYBT-LNX3230.00 - WHITLOK 230KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41908	95.7	'GEN640418 1-ELKHORN RIDGE WIND'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.40768	95.7	'GAVINS POINT - YANKON JCT 115KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.40768	95.7	'GAVINS POINT - YANKON JCT 115KV CKT 1'
FDNS	00NR	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39021	95.7	'MENNO JCT - UTICA 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42064	95.7	'GEN640010 1-GERALD GENTLEMAN STATION UNIT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42064	95.7	'GEN640011 2-GERALD GENTLEMAN STATION UNIT 2'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42064	95.7	'P12:230:UMZB:# 112 #: NU IN SD. NU-RDC & DRY CREEK XFMR'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42064	95.7	'RDCD EAST 4230.00 - RED CEDAR DC 230KV CKT 1'
FDNS	17NR	0	20L	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41655	95.7	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39605	95.7	'BISON - HETINGER 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39521	95.7	'GEN562714 1-G15_023_4_0.6900'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39521	95.7	'GEN562715 1-G15_023_5_0.6900'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39521	95.7	'GEN652542 1-BIG BEND'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39477	95.7	'NOBLES - SPLIT ROCK 345KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42589	95.7	'FT RANDAL - WHITE SWAN 115KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39484	95.7	'NOBLES - SPLIT ROCK 345KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39417	95.7	'ANTELOPE 7115.00 - CREIGHTON 115KV CKT 1'
FDNSLock	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42285	95.7	'MISSION - WITTEN 115KV CKT 1'
FDNSLock	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42285	95.7	'WINNER - WITTEN 115KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42366	95.6	'CLEARWATER - NELIGH 115KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41995	95.6	'GLENHAM - WHITLOK 230KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41995	95.6	'P12:230:UMZB:# 114 #: SB IN SD. SB-WK-GH'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41995	95.6	'P12:230:UMZB:# 117 #: WK IN SD. SB-WK-GH'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41732	95.6	'SPLIT ROCK - WHITE 345KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41732	95.6	'SPLIT ROCK - WHITE 345KV CKT 1'
FDNS	00NR	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39021	95.6	'P12:115:UMZZ:# 237 #: MEN IN SD. MENNO JUNCTION IS A TAP (UJ-MEN-TP).'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41949	95.6	'PAHOJA - SIOUX FALLS 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39672	95.6	'P12:230:UMZB:# 114 #: SB IN SD. SB-WK-GH'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39672	95.6	'P12:230:UMZB:# 117 #: WK IN SD. SB-WK-GH'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39672	95.6	'SULLY BUTTE - SULLYBT-LNX3230.00 230KV CKT Z'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39672	95.6	'SULLYBT-LNX3230.00 - WHITLOK 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39521	95.6	'CENTER 230/22.0KV TRANSFORMER CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39521	95.6	'GEN615010 1-STANTON4'
FDNS	17ALL	0	20WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41864	95.6	'LETCHER - SIOUX FALLS 230KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39677	95.6	'OAHÉ - SULLY BUTTE 230KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39613	95.6	'BISON - MAURINE 230KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39527	95.6	'GEN952511 1-G12_00915_2_0.6900'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39527	95.6	'P13:230-345:NPPD:NUCOR-1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39521	95.6	'GRIMES - LEHIGH 345KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39468	95.6	'PLYMOUTH - SIOUX CITY 161KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39468	95.6	'PLYMOUTH - SIOUX CITY 161KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42024	95.5	'MINGO - RED WILLOW 345KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42024	95.5	'MINGO - RED WILLOW 345KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41993	95.5	'BISMARCK - L3 HAWDON 230KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41908	95.5	'GEN645001 1-FORT CALHOUN 1'
FDNS	00NR	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.40099	95.5	'FT RANDAL - SPENCER 115KV CKT 1'
FDNS	00NR	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.40099	95.5	'P12:115:NPPD:WAPAG:FRANDL7:ONEILL 7:BTB'
FDNS	00NR	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.40099	95.5	'P12:115:UMZB:# 115 #: SE IN NE. FR-SE-ON'
FDNS	00NR	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39572	95.5	'BUFFALO - JAMESTOWN 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42064	95.5	'GEN659111 2-LELAND OLDS UNIT2'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42064	95.5	'GEN661015 1-COYOTE'
FDNS	00NR	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.3268	95.5	'UTICA JCT - VFODNES 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39672	95.5	'GLENHAM - WHITLOK 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39485	95.5	'DENISON - SIOUX CITY 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.38399	95.5	'GAVINS POINT - YANKON JCT 115KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.38399	95.5	'GAVINS POINT - YANKON JCT 115KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.40061	95.5	'ARMOUR - MT VERN 115KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39622	95.5	'BRDLAND-LNX3345.00 - HURON 345KV CKT Z'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39622	95.5	'BROADLAND - HURON 23

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39622	95.5	HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39622	95.5	P12:345:UMZB:# 102 #: AVS BD IN ND. AVS BRD LR'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39622	95.5	P12:345:UMZB:# 103 #: BD IN SD. LOSS OF LINE'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39527	95.5	GEN562528 1-G14_031_2_0.6900'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41933	95.4	HOSKINS - RAUN 345KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41933	95.4	HOSKINS - RAUN 345KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41914	95.4	BISON 3 345.00 - BUFFALO 345KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41908	95.4	P13:230:UMZW:# 2218 #: FP IN MT. LOSS OF TRANSFORMER (AT2)'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.419	95.4	G09_001IST 345.00 - WATERTOWN 345KV CKT 1'
FDNS	17NR	0	17G	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39284	95.4	P12:230:UMZB:# 116 #: ST IN SD. WSG-ST-VH'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42064	95.4	GEN562500 1-G14_013_3_0.6900'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42064	95.4	GEN652906 1-G09_006I5_3_0.6900'
FDNS	17ALL	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42561	95.4	FT RANDAL - WHITE SWAN 115KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39521	95.4	GEN652559 1-OAHE'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.38902	95.4	MITCHELL - TRIPP JCT 115KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.38902	95.4	MITCHELL - TRIPP JCT 115KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42589	95.4	TYNDALL - WHITE SWAN 115KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39677	95.4	SULLY BUTTE - SULLYBT-LNX3230.00 230KV CKT 2'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39677	95.4	SULLYBT-LNX3230.00 - WHITLOK 230KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39622	95.4	ANTELOP-LNX3345.00 - ANTELOPE VALLEY 345KV CKT 2'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39527	95.4	GEN652542 1-BIG BEND'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39527	95.4	GEN659296 2-SDPRAIRWIND1W0.6900'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39527	95.4	GEN659411 1-CAMPBLCNTY W0.6900'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.38406	95.4	GAVINS POINT - YANKON JCT 115KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.38406	95.4	GAVINS POINT - YANKON JCT 115KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41941	95.3	AXTELL - SWEETWATER 345KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41891	95.3	GROTON - GROTON-LNX3 345.00 345KV CKT 2'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41891	95.3	GROTON-LNX3 345.00 - LELAND1-LNX3345.00 345KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41891	95.3	LELAND OLDS - LELAND1-LNX3345.00 345KV CKT 2'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41891	95.3	P12:345:UMZB:# 109 #: LOS GRT IN ND. LOS GRT'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41836	95.3	FT THOMPSON - WESSINGTON 230KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41836	95.3	FT THOMPSON - WESSINGTON 230KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39933	95.3	NAPA JCT7 115.00 - UTICA 115KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39933	95.3	NAPA JCT7 115.00 - UTICA 115KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39933	95.3	NAPA JCT7 115.00 - YANKON JCT 115KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39933	95.3	NAPA JCT7 115.00 - YANKON JCT 115KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39933	95.3	P12:115:UMZW:# 1910 #: YJ IN SD. YJ-UJ LINE FAULT'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42064	95.3	GEN652353 2-GR PRAIRIEG 0.6900'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39521	95.3	STANTON 230/18.0KV TRANSFORMER CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39677	95.3	P12:230:UMZB:# 114 #: SB IN SD. SB-WK-GH'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39677	95.3	P12:230:UMZB:# 117 #: WK IN SD. SB-WK-GH'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39613	95.3	BISON - HETINGER 230KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39527	95.3	GEN562714 1-G15_023_4_0.6900'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39527	95.3	GEN562715 1-G15_023_5_0.6900'
FDNSLock	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41922	95.3	BISON - MAURINE 230KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42013	95.2	MARTIN - VETAL TAP 115KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42013	95.2	MISSION - VETAL TAP 115KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42013	95.2	P12:115:UMZW:# 159 #: MS-VE-MR IN SD. VETAL TAP IS A TAP WITH NON-FAULT INTERRUPTERS'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41923	95.2	KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41923	95.2	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT 2'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41908	95.2	CENTER - COYOTE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42064	95.2	GEN652546 1-FT RANDAL'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42064	95.2	GEN657748 1-YOUNG 2 GENERATOR'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42064	95.2	GEN659103 1-ANTELOPE VALLEY UNIT1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42064	95.2	GEN659107 2-ANTELOPE VALLEY UNIT2'
FDNS	00NR	0	20L	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.43912	95.2	KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39521	95.2	GEN657749 1-YOUNG 1 GENERATOR'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39461	95.2	BELDEN - HOSKINS 115KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.38886	95.2	UTICA JCT (UJ KV3A) 230/115/13.2KV TRANSFORMER CKT 1'
FDNS	17ALL	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42098	95.2	LETCHER - SIOUX FALLS 230KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39677	95.2	GLENHAM - WHITLOK 230KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39527	95.2	CENTER 230/22.0KV TRANSFORMER CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39527	95.2	GEN615010 1-STANTON4'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39491	95.2	DENISON - SIOUX CITY 230KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.38915	95.2	UTICA JCT (UJ KV3A) 230/115/13.2KV TRANSFORMER CKT 1'
FDNSLock	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41922	95.2	BISON - HETINGER 230KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41908	95.1	GEN300003 1-THOMAS HILL UNIT 3'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41908	95.1	GEN563113 1-G15076_4_0.6500'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41908	95.1	GEN563114 1-G15076_5_0.6500'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41908	95.1	PROSE CAP7 115.00 - PROSE WIND7 115.00 115KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41908	95.1	PROSE CAP7 115.00 - SPLIT ROCK 115KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41885	95.1	G15088 T 345.00 - MOORE 345KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.41842	95.1	DIXONCO 230.00 - TWIN CHURCH 230KV CKT 1'
FDNS	00NR	0	1								

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39521	95.1	GEN652556 2-OAHE'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39521	95.1	GEN652557 4-OAHE'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39521	95.1	GEN652558 6-OAHE'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.38908	95.1	MITCHELL - TRIPP JCT 115KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.38908	95.1	MITCHELL - TRIPP JCT 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.40088	95	NAPA JCT7 115.00 - UTICA 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.40088	95	NAPA JCT7 115.00 - UTICA 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.40088	95	NAPA JCT7 115.00 - YANKON JCT 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.40088	95	NAPA JCT7 115.00 - YANKON JCT 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.40088	95	P12:115:UMZW:# 1910 #: YJ IN SD. YJ-UJ LINE FAULT'
FDNS	17ALL	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.42561	95	TYNDALL - WHITE SWAN 115KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39521	95	GEN652906 1-G09_00615 3 0.6900'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39378	95	RAUN - SIOUX CITY 345KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.39378	95	RAUN - SIOUX CITY 345KV CKT 1'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'GAVINS POINT - YANKON JCT 115KV CKT 1'	120	120	0.06482	99.3	ONEILL - SPENCER 115KV CKT 1'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'GAVINS POINT - YANKON JCT 115KV CKT 1'	120	120	0.06407	98.2	WATERTN-LNX3345.00 - WATERTOWN 345KV CKT Z'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'GAVINS POINT - YANKON JCT 115KV CKT 1'	120	120	0.06407	98.1	P12:345:UMZW:# 1747 #: WT2 IN SD. WT2-WHT LINE FAULT'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'GAVINS POINT - YANKON JCT 115KV CKT 1'	120	120	0.05865	97.6	BERSFORD - SIOUX FALLS 115KV CKT 1'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'GAVINS POINT - YANKON JCT 115KV CKT 1'	120	120	0.06483	95.9	GEN563113 1-G15076_4 0.6500'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'GAVINS POINT - YANKON JCT 115KV CKT 1'	120	120	0.06483	95.9	GEN563114 1-G15076_5 0.6500'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.10487	112.3793	KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08567	108.5988	P12:230:UMZB:# 116 #: ST IN SD. WSG-ST-VH'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08526	107.9755	STORLA - WESSINGTON 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	107.4603	GEN336821 1-GRAND GULF UNIT'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08647	107.2082	HANLON - STORLA 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	106.9871	GEN640011 2-GERALD GENTLEMAN STATION UNIT 2'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	106.9076	GEN344225 1-ICAL G1 25.000'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08597	106.8456	FT THOMPSON - LETCHER 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08597	106.8456	FT THOMPSON - LETCHER 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	106.6609	GEN336153 1-WATERFORD UNIT#3'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	106.6554	GEN337911 1-ARKANSAS NUCLEAR ONE UNIT #2'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	106.6484	GEN640010 1-GERALD GENTLEMAN STATION UNIT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	106.5234	GEN635024 4-WALTER SCOTT UNIT 4'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	106.2295	GEN335831 1-RIVERBEND UNIT#1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	106.0821	GEN337910 1-ARKANSAS NUCLEAR ONE UNIT #1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	106.0279	GEN635023 3-WALTER SCOTT UNIT 3'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08719	105.8248	KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08719	105.7962	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.10676	105.5452	G15089 T 230.00 - UTICA JCT 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.0941	105.5128	FT RANDAL - SIOUX CITY 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	105.4981	GEN337653 1-WHITE BLUFF UNIT #2'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	105.4807	GEN337652 1-WHITE BLUFF UNIT #1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	105.4243	GEN338146 1-INDEPENDENCE UNIT #2'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	105.4128	GEN338143 1-INDEPENDENCE UNIT #1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.0866	105.3482	LETCHER - SIOUX FALLS 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	105.2456	GEN501801 1-DOLET HILLS UNIT1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08641	105.1595	BUFFALO - JAMESTOWN 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08634	105.1373	CHISAGO COUNTY - FORBES 500KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.09357	105.1325	RAUN - SUB 3451 FT CAL 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.09357	105.1325	RAUN - SUB 3451 FT CAL 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08676	105.1273	WATERTN-LNX3345.00 - WHITE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08676	105.0648	P12:345:UMZW:# 1747 #: WT2 IN SD. WT2-WHT LINE FAULT'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08676	105.0567	WATERTN-LNX3345.00 - WATERTOWN 345KV CKT Z'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.07929	105.0444	GRAND ISLAND - SWEETWATER 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08641	105.0155	CENTER - JAMESTOWN 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	105.0106	GEN336252 1-NINEMILE POINT UNIT#5'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	104.9339	GEN501813 1-RODEMACHER UNIT 3'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	104.8596	GEN336831 1-BAXTER WILSON SES'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	104.8459	GEN336251 1-NINEMILE POINT UNIT#4'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	104.7688	GEN337041 1-GERALD ANDRUS'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08612	104.7436	G09_001IST 345.00 - WATERTOWN 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	104.7352	GEN344897 4-1LAB G4 20.000'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	104.7315	GEN344894 1-1LAB G1 20.000'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	104.7315	GEN344896 3-1LAB G3 20.000'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	104.7225	GEN641089 2-ENERGY CENTER 2'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	104.7217	GEN335206 1-NELSON UNIT 6'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.10487	104.6891	FT RANDAL - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08737	104.6768	HANLON - SIOUX FALLS 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	104.6721	GEN344895 2-1LAB G2 20.000'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	104.6604	GEN345670 1-1RUSH G1 18.000'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	104.6602	GEN345671 2-1RUSH G2 18.000'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08691	104.5985	ARROWHEAD - ARROWHEAD 230 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	104.5615	GEN501812 1-RODEMACHER UNIT 2'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08819	104.5427	FT THOMPSON - HURON 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08819	104.5427	FT THOMPSON - HURON 230KV CKT 1'

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08819	104.5427	FT THOMPSON - HURON 230KV CKT 2'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08819	104.5427	FT THOMPSON - HURON 230KV CKT 2'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08702	104.537	*SIDNEY - STEGALL 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	104.5353	*GEN334440 1-SABINE UNIT 4'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08983	104.5074	*P12:115:NPPD:WAPAG-FTRANDL7:ONEILL 7:BTB'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08983	104.5074	*P12:115:UMZB:# 115 #: SE IN NE. FR-SE-ON'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.09567	104.5042	*RASMUSIN - UTICA JCT 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08761	104.4743	*CARPENTER - HURON 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08699	104.4723	*AS KING - EAU CLAIRE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08983	104.4704	*FT RANDAL - SPENCER 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08661	104.4674	*P12:115:NPPD:1091:VALENTN7:MISSION7:BTB'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08612	104.4136	*G09_001ST 345.00 - GROTON 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08761	104.3889	*HURON - WATERTOWN 230KV CKT 2'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08761	104.3889	*HURON - WATERTOWN 230KV CKT 2'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	104.3887	*GEN336191 1-LITTLE GYPSY UNIT#3'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08983	104.3831	*ONEILL - SPENCER 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08661	104.3714	*MISSION - ST FRANCIS 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08699	104.3631	*GERALD GENTLEMAN STATION - KEYSTONE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08761	104.355	*CARPENTER - WATERTOWN 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08761	104.355	*CARPENTER - WATERTOWN 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.09567	104.3483	*RASMUSIN - SIOUX CITY 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08561	104.3409	*GERALD GENTLEMAN STATION - SWEETWATER 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	104.3373	*GEN338388 1-1PLUM PT U1 23.000'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08635	104.324	*BISON 3 345.00 - BUFFALO 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08661	104.3053	*HARMONY - ST FRANCIS 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	104.303	*GEN336801 1-BAXTER WILSON UNIT #1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08734	104.2988	*ARPIN B4 345.00 - EAU CLAIRE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.07093	104.2919	*FT THOMPSON - LAKE PLATT 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.07093	104.2919	*FT THOMPSON - LAKE PLATT 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	104.2843	*GEN335614 1-WILLOW GLENN UNIT#4'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	104.284	*GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	104.2702	*GEN336464 1-MICHOUD UNIT #3'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08788	104.2651	*PAHOJA - SIOUX FALLS 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08788	104.2302	*HAZLETON - MITCHLCO3 345.00 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.07054	104.2171	*FT RANDAL - FT THOMPSON 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.07054	104.2171	*FT RANDAL - FT THOMPSON 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	104.2088	*GEN334441 1-SABINE UNIT 5'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08661	104.1962	*HARMONY - VALENTINE 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	104.1882	*GEN335204 1-NELSON UNIT 4'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	104.1106	*GEN629075 1-OTTUMWA GENERATOR FOR OTTUMWA UNIT NO 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	104.0668	*GEN659118 1-LARAMIE RIVER UNIT1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	104.0422	*GEN334433 1-SABINE UNIT 3'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.07093	104.0362	*FT RANDAL - LAKE PLATT 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	104.0226	*GEN336222 1-LITTLE GYPSY UNIT#2'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08595	104.0222	*GROTON-LNX3 345.00 - LELAND1-LNX3345.00 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.0848	104.0127	*SPLIT ROCK - WHITE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.0848	104.0127	*SPLIT ROCK - WHITE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08595	104.0035	*GROTON - GROTON-LNX3 345.00 345KV CKT 2'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08595	104.0018	*LELAND OLDS - LELAND1-LNX3345.00 345KV CKT 2'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08595	103.9995	*P12:345:UMZB:# 109 #: LOS GRT IN ND. LOS GRT'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.09034	103.9722	*HOSKINS - SHELL CREEK 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08626	103.9637	*G15094 T 345.00 - SIDNEY2-LNX3345.00 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.961	*GEN303007 1-1BC2 U2'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.9579	*GEN303006 1-1BC2 U1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.0893	103.9516	*COLUMEA - SHELL CREEK 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08626	103.9485	*SIDNEY - SIDNEY2-LNX3345.00 345KV CKT 2'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08788	103.9484	*EAGLE 4 230.00 - PAHOJA 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08661	103.9477	*AINSWORTH - VALENTINE 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08575	103.939	*GERALD GENTLEMAN STATION - SWEETWATER 345KV CKT 2'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.9082	*GEN336152 1-WATERFORD UNIT#2'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.9078	*GEN336151 1-WATERFORD UNIT#1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.8868	*GEN531447 1-HOLCOMB GENERATOR'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.8802	*GEN303008 1-1BC2 U3'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.8778	*GEN532651 1-JEFFREY ENERGY CENTER UNIT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.087	103.8759	*PETERSBRG.N7115.00 - PETERSBURG 115KV CKT 21'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.8729	*GEN336170 1-GULF OXY U4'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.8689	*GEN532652 1-JEFFREY ENERGY CENTER UNIT 2'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.8686	*GEN532653 1-JEFFREY ENERGY CENTER UNIT 3'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08526	103.8684	*FT THOMPSON - WESSINGTON 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08526	103.8684	*FT THOMPSON - WESSINGTON 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08749	103.8631	*OAH - SULLY BUTTE 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.087	103.861	*P12:115:NPPD:11688:ALBION 7:PETERSBRG.N7:BTB'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08691	103.8427	*BROOKING COUNTY - LYON COUNTY 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08855	103.8261	*GRIMES - LEHIGH 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.0901	103.8215	*COLUMEA - NW68TH & HOLDREGE 345KV CKT 1'

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.0901	103.8215	COLUMEAST - NW68TH & HOLDREGE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.087	103.8078	ALBION - PETERSBURG 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08626	103.805	G15094_T 345.00 - LARAMIE RIVER 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.783	GEN642067 1-PLATTE'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.7787	GEN525562 1-TOLK GEN #2 24 KV'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.7767	GEN501811 1-RODEMACHER UNIT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.7721	GEN645012 2-NEBRASKA CITY 2'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08815	103.7716	LAKEFIELD 3 - NOBLES 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.0578	103.7646	FT RANDAL - G15089_T 230.00 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08665	103.7576	ARKANSAS NUCLEAR ONE - FT SMITH 500KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08665	103.7576	ARKANSAS NUCLEAR ONE - FT SMITH 500KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.7423	GEN542962 2-IATAN UNIT #2'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08749	103.735	SULLY BUTTE - SULLYBT-LNX3230.00 230KV CKT Z'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08749	103.734	SULLYBT-LNX3230.00 - WHITLOK 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.719	GEN645011 1-NEBRASKA CITY 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08714	103.6981	SIOUXCY-LNX3345.00 - SPLIT ROCK 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08714	103.6981	SIOUXCY-LNX3345.00 - SPLIT ROCK 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08749	103.6973	P12:230:UMZB:# 114 #: SB IN SD. SB-WK-GH'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08749	103.6973	P12:230:UMZB:# 117 #: WK IN SD. SB-WK-GH'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08626	103.693	CNTSHNT3 345.00 - PRAIRIE3 345.00 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.6827	GEN337766 1-TRACTEBEL UNIT 51'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.6817	GEN525561 1-TOLK GEN #1 24 KV'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.6793	GEN334071 1-LEWIS CREEK 2'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08714	103.6789	P12:345:UMZW:# 907 #: SC2-SR IN IA. SC2-SR 345 KV LINE'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.6734	GEN334070 1-LEWIS CREEK 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08714	103.6555	SIOUX CITY - SIOUXCY-LNX3345.00 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08749	103.6549	GLENHAM - WHITLOK 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08714	103.6523	KOSSUTH 3 345.00 - OBRIN 3 345.00 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08714	103.65	KOSSUTH 3 345.00 - WEBSTER 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.6443	P13:115-230:NPPD:NUCOR-3'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.637	GEN501910 1-ACADIA UNIT ST1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08625	103.6363	ELLENDALE - OAKES 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08625	103.6363	ELLENDALE - OAKES 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.087	103.6356	NELIGH - PETERSBRG.N7115.00 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08653	103.634	ALEXMRES3 345.00 - BISON 3 345.00 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.6119	GEN542957 1-IATAN UNIT #1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08618	103.6074	CENTER - COYOTE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08736	103.6063	DENISON - SIOUX CITY 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.6027	GEN542955 1-LACYGNE UNIT #1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.5975	P13:230-345:NPPD:NUCOR-1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08625	103.5861	FORMAN - OAKES 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.584	GEN345765 H-ISIOUX 2 18.000'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08761	103.578	BLOOMFIELD - CREIGHTON 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.5623	GEN337764 1-TRACTEBEL UNIT C1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.5623	GEN337765 1-TRACTEBEL UNIT C2'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08737	103.56	ADAMS - PLEASANT VALLEY 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.5592	P13:115-345:NPPD:NUCOR-2'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.5405	GEN345756 H-ISIOUX 1 18.000'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08788	103.5396	ADAMS - MITCHLCO3 345.00 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.5198	GEN336221 1-LITTLE GYPSY UNIT#1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08641	103.5184	BLAIR - GRANITE FALLS 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08641	103.5184	BLAIR - GRANITE FALLS 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.087	103.5149	ALBION - SPALDING 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.514	GEN336242 1-1NMIL ST1 18.000'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.5134	P13:230:UMZW:# 2218 #: FP IN MT. LOSS OF TRANSFORMER (AT2).'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.5081	COUNCIL BLUFFS - SUB 3456 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.5081	COUNCIL BLUFFS - SUB 3456 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.5078	GEN337757 1-DUKE HOTSPRINGS STG1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.4987	GEN334431 1-SABINE UNIT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.4987	GEN334432 1-SABINE UNIT 2'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.4961	GEN636641 1-LOUISA UNIT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.4817	GEN336446 1-MICHOUD UNIT #2'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.4751	GEN345832 1-1TS G1 13.800'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.4748	GEN345841 2-1TS G2 13.800'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.4719	GRAND GULF 500/22.0KV TRANSFORMER CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.4662	GEN334030 1-FRONTIER UNIT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.4659	GEN334031 1-FRONTIER UNIT 2'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.4612	GEN501970 1-EVANGELINE UNIT 7'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.09179	103.4521	NUNDRWD - WAYSIDE 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.4422	GEN514805 1-SOONER UNIT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.4417	GEN337430 1-PERYVILLE UNIT #3'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.4416	GEN514806 1-SOONER UNIT 2'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.4414	GEN337428 1-PERYVILLE UNIT #1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08484	103.4354	MENNO JCT - TRIPP JCT 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08858	103.4321	OAAE - PHILIP TAP 230KV CKT 1'

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.4295	GEN532722 1-EVANS ENERGY CENTER UNIT 2'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.4214	GEN523971 1-HARRINGTON GEN #1 24 KV'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.4214	GEN523972 1-HARRINGTON GEN #2 24 KV'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.4214	GEN523973 1-HARRINGTON GEN #3 24 KV'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08655	103.4191	APPLEDDORN 4 230.00 - WATERTOWN 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08655	103.4191	APPLEDDORN 4 230.00 - WATERTOWN 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.4157	GEN336240 1-1NML CT1 18.000'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.4157	GEN336241 1-1NML CT2 18.000'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08887	103.4141	P12:230:UMZW# 166 #: PL IN SD. TAP'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08887	103.4141	P12:230:UMZW# 167 #: PL IN SD. NU-PLT-OA & PLT-PL (PLT IS A TAP)'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.4124	GEN501912 1-ACADIA UNIT CT1B'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.4122	GEN501911 1-ACADIA UNIT CT1A'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.4104	PRAIRIE ISLAND 345/20.0KV TRANSFORMER CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.4069	PRAIRIE ISLAND 345/20.0KV TRANSFORMER CKT 2'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08633	103.4055	HANKINSON - WAHPETON 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.4029	GEN501971 1-EVANGELINE UNIT 7-1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.4029	GEN501972 1-EVANGELINE UNIT 7-2'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08619	103.3941	GARRISON - JAMES TOWN 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.3929	GEN335571 1-CARVILLE UNIT #1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.3926	GEN335570 1-CARVILLE CTG'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.0865	103.3916	NORTH ROCHESTER - PRAIRIE ISLAND 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.3897	GEN336167 1-GULF OXY U1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.3897	GEN336168 1-GULF OXY U2'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.3897	GEN336169 1-GULF OXY U3'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.3889	GEN501823 1-TECHE UNIT 3'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08661	103.3886	FRANKS - HUBEN 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08797	103.3865	GAVINS POINT - HARTINGTON 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.3864	GEN336944 1-REX BROWN'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.3841	GEN335612 1-WILLOW GLENN UNIT#2'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.384	P12:345:GRDA:CHOUTEAU-SPORTSMANACRES'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.3818	GEN345156 H-1MER 4 18.000'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08617	103.3816	OVEXFRMCOCVE'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08484	103.3798	MENNO JCT - UTICA 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08629	103.3794	P13:115-230:TSGT:SIDNEY-KV1A'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08628	103.3789	P13:230-345:NPPD:SIDNEY 3:KV2A'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08628	103.3789	SIDNEY - SIDNEY TRANSFORMER 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08628	103.3789	SIDNEY (SDQ KV2A) 345/230/13.8KV TRANSFORMER CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08748	103.3767	BISMARCK - L3 HAWDON 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08655	103.3747	APPLEDDORN 4 230.00 - GRANITE FALLS 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08655	103.3747	APPLEDDORN 4 230.00 - GRANITE FALLS 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.3696	GEN337432 1-PERYVILLE UNIT #5'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.0863	103.3642	FORMAN - HANKINSON 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08628	103.3627	G14-059T 230.00 - OGALLALA 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.3602	GEN334392 1-EXXON MOBIL IPP 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.3585	GEN527903 1-HOBBS PLANT #3 (ST)'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.3582	GEN334393 1-EXXON MOBIL IPP 2'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.3582	GEN334394 1-EXXON MOBIL IPP 3'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.3529	FINNEY SWITCHING STATION - PSCO LAMAR DC TIE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.3529	FINNEY SWITCHING STATION - PSCO LAMAR DC TIE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08484	103.3486	P12:115:UMZZ:# 237 #: MEN IN SD. MENNO JUNCTION IS A TAP (LU-MEN-TP)'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.3474	GEN338443 1-PANDA S1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.3461	WHITE BLUFF 500/26.0KV TRANSFORMER CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.3387	GEN337008 1-DUKE MCADAMS S1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.3333	GEN335644 1-EXXON UNITS'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.3305	GEN336854 1-DUKE LAKEOVER S1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	103.3189	GEN338500 1-MCCLELLAN UNIT #1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08551	102.7379	KELLY - SHELL CREEK 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08551	102.7359	SHELL CREEK (SHELLCREEKT1) 345/230/13.8KV TRANSFORMER CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08551	102.7359	SHELL CREEK (SHELLCREEKT1) 345/230/13.8KV TRANSFORMER CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08533	102.662	GRAND ISLAND - RIVERDALE 230KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08447	102.6063	HOLT.CO3 345.00 - THEDFRD3 345.00 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08696	102.5287	AXTELL - PAULINE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08483	102.5256	HOLCOMB - SETAB 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08483	102.5256	HOLCOMB - SETAB 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08613	102.5154	GRAND ISLAND (GRAND.ISD T5) 230/115/13.8KV TRANSFORMER CKT 2'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08613	102.5154	GRAND ISLAND (GRAND.ISD T5) 230/115/13.8KV TRANSFORMER CKT 2'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.5152	GEN300003 1-THOMAS HILL UNIT 3'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08613	102.5133	GRAND ISLAND (GRAND.ISD T2) 230/115/13.8KV TRANSFORMER CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08613	102.5133	GRAND ISLAND (GRAND.ISD T2) 230/115/13.8KV TRANSFORMER CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08495	102.4778	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08495	102.4778	Hitchland Interchange - WALKTAP7 345.00 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08393	102.4697	COOPER - MOORE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08624	102.4493	GRAND ISLAND (GI KU1B) 345/230/13.8KV TRANSFORMER CKT 2'
FDNS	17ALL	0	17SP	G15_089	*FROM->TO*	*GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720			

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08624	102.4484	GRAND ISLAND (GI KU1A) 345/230/13.8KV TRANSFORMER CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08667	102.4455	SUB 3455 - SUB 3740 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08667	102.4455	SUB 3455 - SUB 3740 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.0861	102.4256	MCCOOL (MCCOOL T2) 345/115/13.8KV TRANSFORMER CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.0861	102.4256	MCCOOL (MCCOOL T2) 345/115/13.8KV TRANSFORMER CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08495	102.4124	P12:345:SPS:J07.1.FINN.HITCH'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08703	102.4114	7MONTGMRY 345.00 - 7SPENCER 345.00 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08827	102.4062	MAXWELL - STAPLETON 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.4003	GEN590010 1-ERCOT EQUIVALENCE'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08621	102.3919	103RD & ROKEBY - MOORE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08621	102.3919	103RD & ROKEBY - MOORE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.0912	102.3823	FT THOMPSON - FTTHOM1-LNX3345.00 345KV CKT 2'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.3806	GEN615031 1-PLEASANT VALLEY'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.3803	GEN600125 2-FEP ST G 13.800'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08549	102.379	FIELD NORTH - LKFLDXL3 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.3787	GEN590011 2-ERCOT EQUIVALENCE'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.0912	102.3782	P12:345:UMZB:# 108 #: LOS FT IN ND. LOS FT'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.3762	GEN615032 2-PLEASANT VALLEY'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.3741	GEN672367 1-MERIDIAN GENERATOR 1 GT1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.3741	GEN672368 2-MERIDIAN GENERATOR 2 GT2'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08549	102.3723	FIELD SOUTH - WILMARTH 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08648	102.3716	QUAD 1 3-11 345.00 - ROCK CREEK NO 1 + NO 2 + NO 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08549	102.3713	FIELD NORTH - FIELD SOUTH 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.3702	GEN672350 1-NIPAWIN GENERATOR 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.3702	GEN672351 2-NIPAWIN GENERATOR 2'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.3701	GEN672352 3-NIPAWIN GENERATOR 3'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08682	102.3699	MAXWELL - NORTH PLATTE 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.3645	MITCHLCO3 345.00 345/34.5KV TRANSFORMER CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08536	102.3637	FINNEY SWITCHING STATION - WALKTAP7 345.00 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08536	102.3637	FINNEY SWITCHING STATION - WALKTAP7 345.00 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.3531	GEN672349 3-CORY COGEN GENERATOR 3 ST'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.3521	GEN600018 5-LS POWER STEAM'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08699	102.3453	LOUP CITY - NORTH LOUP 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08561	102.3448	HELENA - SHEAS LK3 345.00 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.3188	GEN657964 1-ASHZGEN9 0.5750'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.3155	GEN300007 1-NEW MADRID UNIT 2'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.3134	GEN562438 1-G13-032 0.6900'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.313	GEN640418 1-ELKHORN RIDGE WIND'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.3114	GEN563302 1-G15096 3 0.6900'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.31	GEN300006 1-NEW MADRID UNIT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.0912	102.3093	LELAND OLDS - LELAND2-LNX3345.00 345KV CKT 2'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08749	102.3079	ATCHSNT3 345.00 - COOPER 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08749	102.3079	ATCHSNT3 345.00 - COOPER 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.3069	GEN659453 1-G11414GEN W0.6900'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08567	102.3063	SHEAS LK3 345.00 - WILMARTH 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.2993	GEN652410 3-FT PECK'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08617	102.2986	FALLOW 3 345.00 - GRIMES 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.2857	GEN659141 1-K10215A'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.2847	GEN620324 3-HOOT LAKE 3 GEN'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.2833	GEN672339 16-QE 16G 13.800'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.2833	GEN672342 3-QUEEN ELIZABETH GENERATOR 3'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.2817	GEN600020 2-ANGUS ANSON1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.2771	GEN600021 3-ANGUS ANSON2'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.2698	GEN652173 1-G09_001IS 2 0.6900'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.2678	GEN672393 2-NBCST2G 13.800'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.2652	GEN629072 4-LANSING GENERATOR FOR UNITS NO4 EIA CODE 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08628	102.262	GRAND ISLAND (GI KU3A) 345/230/13.8KV TRANSFORMER CKT 3'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08628	102.262	GRAND ISLAND (GI KU3A) 345/230/13.8KV TRANSFORMER CKT 3'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.2534	GEN600012 2-BLACK DOG GEN 2'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08648	102.2522	LARAMIE RIVER - STEGALL 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08963	102.2512	STEGALL - STEGALL-LNX3230.00 230KV CKT 2'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.2496	GEN652414 4-FT PECK'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.2496	GEN652415 5-FT PECK'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08963	102.2487	STEGALL-LNX3230.00 - WAYSIDE 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08405	102.2479	G15061 T 345.00 - MINGO 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08586	102.2419	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.2309	GEN659156 2-LONESMCRK 2G13.800'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.2309	GEN659157 3-LONESMCRK 3G13.800'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08728	102.2227	G15088 T 345.00 - PAULINE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08612	102.2222	DBL-THIS-G15'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.2204	GEN652546 1-FT RANDAL'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.2133	GEN659158 2-PIONEER G213.800'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.2133	GEN659159 3-PIONEER G313.800'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 3					

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.1905	GEN652549 7-FT RANDAL'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.1895	EASTDC - ERCOT EQUIVALENC 345KV CKT 1'
FDNSLock	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08694	102.1888	CENTRAL CITY - GRAND ISLAND 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.1753	GEN652547 3-FT RANDAL'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08749	102.1698	ATCHSNT3 345.00 - BOONEVILLE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.0855	102.1633	POST ROCK (POSTROCK T1) 345/230/13.8KV TRANSFORMER CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08488	102.1628	DBL-IRON-CLR'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.1595	GEN615015 1-GRE-SPRITWDG13.200'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.1479	EMERY 161/18.0KV TRANSFORMER CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.1335	GEN600050 1-FEP'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.1171	GEN600046 1-MECST'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.0922	GEN600047 1-MECCT1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.0887	GEN600003 3-HURON WEST PARK'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08405	102.0751	G15061 T 345.00 - SETAB 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.0652	GEN600063 1-COLVILLE GEN 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.0652	GEN600064 2-COLVILLE GEN 2'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.0495	GEN600043 7-BLUE LAKES'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.0495	GEN600044 8-BLUE LAKE6'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.0158	GEN600065 7-HIGH BRIDGE'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.0158	GEN600066 8-HIGH BRIDGE'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08612	102.0157	DBL-G1524-WI'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.0112	GEN600001 2-ABERDEEN SIEBRECHT'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.0064	GEN600011 5-BLACK DOG GEN 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	102.0031	GEN600014 4-BLACK DOG GEN 4'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.9998	GEN600071 10-RIVER SIDE'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.9997	GEN600070 9-RIVER SIDE'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.9876	GEN600007 7-RIVERSIDE GEN 7'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.9867	BISONMPP4 230.00 - SQUARE BUTTE 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.9692	GEN600017 1-C-S POWER CT'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.9457	GEN615052 1-CAMBRIDGE GENERATING STATION'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.9345	GEN659031 1-G12_014IS_4 0.6900'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.9248	GEN600045 4-ANSON'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.9232	GEN615021 1-GRE-ER 14G 16.000'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.9205	LANSING WEST 161/22.0KV TRANSFORMER CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.9106	GEN652906 1-G09_006IS_2 0.6900'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.9071	GEN681522 3-GENOA 3'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08471	101.8262	GERALD GENTLEMAN STATION - RED WILLOW 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.8185	GEN600016 1-B_H WIND 0.7000'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.8007	GEN652907 1-G09_007IS_3 0.6900'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08728	101.7932	G15088 T 345.00 - MOORE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.7693	GEN672303 3-BOUNDARY DAM GENERATOR 3'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.7693	GEN672305 5-BOUNDARY DAM GENERATOR 5'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.7688	GEN659291 1-FT MP COLLECTOR'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.7532	GEN672392 1-NBCECT1G 18.000'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.7132	GEN562872 1-G15046_3 0.6900'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.7014	SQUARE BUTTE - YNG2 4 230.00 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.7006	GEN62101 1-WESSINGTON190.5750'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08488	101.6987	DBL-CLRK-THI'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.6631	GEN600067 9-HIGH BRIDGE'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.4632	GEN952511 1-G12_009IS_2 0.6900'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08278	101.4386	MINGO - RED WILLOW 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08278	101.4386	MINGO - RED WILLOW 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.4379	GEN652542 1-BIG BEND'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.4378	GEN652543 3-BIG BEND'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.437	GEN652544 5-BIG BEND'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.4353	GEN652545 7-BIG BEND'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.4074	GEN659125 1-COVEY'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.3847	GEN652460 4-GARRISON'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.3846	GEN652461 5-GARRISON'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.3476	STANTON 230/18.0KV TRANSFORMER CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.3446	GEN652457 1-GARRISON'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.3446	GEN652458 2-GARRISON'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.3446	GEN652459 3-GARRISON'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.3292	GEN659289 1-DAYCNTYWND W0.6900'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08076	101.3266	AXTELL - POST ROCK 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.3214	GEN681542 6-JP MADGETT'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.2015	GEN659018 1-G14_003IS_3 0.6900'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.1486	GEN652559 1-OAHE'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.1441	GEN659354 1-DEERCREEK STG18.000'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.1426	GEN659353 1-DEERCREEK CTG18.000'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	101.0256	CLAY BOSWELL 230/20.9KV TRANSFORMER CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	100.7946	RCDC EAST 4230.00 - RED CEDAR DC 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	100.79	P12.230:UMZB:# 112 #: NU IN SD. NU-RCDC & DRY CREEK XFMR'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	100.781	GEN652556 2-OAHE'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	100.781	GEN652557 4-OAHE'

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	100.781	GEN62558 6-OAHE'
FDNS	17ALL	0	20SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08362	100.6298	HOLT.CO3 345.00 - THEDFRD3 345.00 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	100.5941	GEN659296 2-SDPRAIRWIND1W0.6900'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08455	100.5637	AXTELL - SWEETWATER 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	100.4787	GEN672321 1-SHAND GENERATOR 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	100.4652	GEN672310 1-POPLAR RIVER GENERATOR 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	100.4652	GEN672311 2-POPLAR RIVER GENERATOR 2'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	100.3935	GEN672306 6-BOUNDARY DAM GENERATOR 6'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	100.3801	GEN615010 1-STANTON4'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	100.2242	GEN600004 2-PRAIRIE ISLAND G2'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	100.2198	GEN600003 1-PRAIRIE ISLAND G1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	100.1316	GEN657749 1-YOUNG 1 GENERATOR'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	100.0961	GEN563232 1-G15089_3 0.6900'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	100	GEN600006 1-AS KING'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	99.5	GEN659110 1-LELAND OLDS UNIT1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	99.4	GEN600005 1-MONTICELLO'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	98.9	GEN600001 2-SHERBURNE CNTY G2'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	98.8	GEN600000 1-SHERBURNECNTY G1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	98.7	GEN620315 1-BIG STONE GEN'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08281	98.6	MCCOOL - MOORE 345KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.07499	98.6	KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	98.3	GEN661015 1-COYTE'
FDNS	17ALL	0	25SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.07587	98.3	KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	97.8	GEN600002 3-SHERBURNE CNTY G3'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	97.8	GEN657748 1-YOUNG 2 GENERATOR'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	97.6	BIG STONE 230/24.0KV TRANSFORMER CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	97.4	SHERBURNE CO 345/24.0KV TRANSFORMER CKT 1'
FDNS	17ALL	0	20SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.05793	96.6	GERALD GENTLEMAN STATION - SWEETWATER 345KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.05882	96	GERALD GENTLEMAN STATION - SWEETWATER 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	95.9	GEN659111 2-LELAND OLDS UNIT2'
FDNS	17ALL	0	20SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.0472	95.4	GRAND ISLAND - SWEETWATER 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	95.3	GEN659103 1-ANTELOPE VALLEY UNIT1'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	95.3	GEN659107 2-ANTELOPE VALLEY UNIT2'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	95.2	GEN615001 1-COAL CREEK'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08215	95.2	GRAND ISLAND - MCCOOL 345KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.05807	95.2	GERALD GENTLEMAN STATION - SWEETWATER 345KV CKT 2'
FDNS	17ALL	0	17SP	G15_089	'FROM->TO'	'GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'	720	720	0.08616	95.1	GEN615002 2-COAL CREEK'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.10487	111.6194	KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08567	107.8511	P12:230-UMZB:# 116 #: ST IN SD. WSG-ST-VH'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08526	107.2393	STORLA - WESSINGTON 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	106.727	GEN336821 1-GRAND GULF UNIT'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08647	106.4775	HANLON - STORLA 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	106.2999	GEN640011 2-GERALD GENTLEMAN STATION UNIT 2'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	106.1781	GEN3344225 1-CAL G1 25.000'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08597	106.1183	FT THOMPSON - LETCHER 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08597	106.1183	FT THOMPSON - LETCHER 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	105.9614	GEN640010 1-GERALD GENTLEMAN STATION UNIT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	105.9359	GEN336153 1-WATERFORD UNIT#3'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	105.9306	GEN337911 1-ARKANSAS NUCLEAR ONE UNIT #2'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	105.7837	GEN635024 4-WALTER SCOTT UNIT 4'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	105.5092	GEN335831 1-RIVERBEND UNIT#1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	105.3635	GEN337910 1-ARKANSAS NUCLEAR ONE UNIT #1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	105.3009	GEN635023 3-WALTER SCOTT UNIT 3'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08719	105.1205	KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08719	105.0945	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT 2'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.10676	104.8243	G15089 T 230.00 - UTICA JCT 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.0941	104.7948	FT RANDAL - SIOUX CITY 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	104.7853	GEN337653 1-WHITE BLUFF UNIT #2'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	104.7681	GEN337652 1-WHITE BLUFF UNIT #1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	104.7121	GEN338146 1-INDEPENDENCE UNIT #2'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	104.7007	GEN338143 1-INDEPENDENCE UNIT #1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.0866	104.6367	LETCHER - SIOUX FALLS 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	104.5358	GEN501801 1-DOLET HILLS UNIT1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08641	104.4503	BUFFALO - JAMESTOWN 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08634	104.4283	CHISAGO COUNTY - FORBES 500KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.09357	104.4191	RAUN - SUB 3451 FT CAL 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.09357	104.4191	RAUN - SUB 3451 FT CAL 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08676	104.4183	WATERTN-LNX3345.00 - WHITE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08676	104.3561	P12:345-UMZW:# 1747 #: WT2 IN SD. WT2-WHT LINE FAULT'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08676	104.3489	WATERTN-LNX3345.00 - WATERTOWN 345KV CKT 2'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08641	104.3078	CENTER - JAMESTOWN 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	104.3029	GEN336252 1-NINEMILE POINT UNIT#5'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	104.2277	GEN501813 1-RODEMACHER UNIT 3'
FDNS	17ALL	0	17SP	G15_							

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	104.0666	GEN337041 1-GERALD ANDRUS'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08612	104.0419	G09_001IST 345.00 - WATERTOWN 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	104.0294	GEN344897 4-1LAB G4 20.000'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	104.0258	GEN344894 1-1LAB G1 20.000'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	104.0258	GEN344896 3-1LAB G3 20.000'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	104.0201	GEN335206 1-NELSON UNIT 6'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	104.0155	GEN641089 2-ENERGY CENTER 2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.10487	103.9898	FT RANDAL - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08737	103.9753	HANLON - SIOUX FALLS 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	103.9669	GEN344895 2-1LAB G2 20.000'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	103.9586	GEN345670 1-1RUSH G1 18.000'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	103.9585	GEN345671 2-1RUSH G2 18.000'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08691	103.8976	ARROWHEAD - ARROWHEAD 230 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	103.8616	GEN501812 1-RODEMACHER UNIT 2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08819	103.8429	FT THOMPSON - HURON 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08819	103.8429	FT THOMPSON - HURON 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08819	103.8429	FT THOMPSON - HURON 230KV CKT 2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08702	103.8424	SIDNEY - STEGALL 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	103.8357	GEN334440 1-SABINE UNIT 4'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08983	103.8083	P12:115:NPPD:WAPAG:FRANDL7:ONEILL 7:BTB'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08983	103.8083	P12:115:UMZB:# 115 #: SE IN NE. FR-SE-ON'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.09567	103.799	RASMUSN - UTICA JCT 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08761	103.775	CARPENTER - HURON 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08699	103.7726	AS KING - EAU CLAIRE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08983	103.7717	FT RANDAL - SPENCER 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08661	103.7696	P12:115:NPPD:1091:VALENTN7:MISSION7:BTB'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08612	103.7154	G09_001IST 345.00 - GROTON 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08761	103.6906	HURON - WATERTOWN 230KV CKT 2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08761	103.6906	HURON - WATERTOWN 230KV CKT 2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	103.6905	GEN336191 1-LITTLE GYPSY UNITH3'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08983	103.6855	ONEILL - SPENCER 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08661	103.6749	MISSION - ST FRANCIS 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.0869	103.673	GERALD GENTLEMAN STATION - KEYSTONE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08761	103.657	CARPENTER - WATERTOWN 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08761	103.657	CARPENTER - WATERTOWN 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.09567	103.6448	RASMUSN - SIOUX CITY 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	103.6394	GEN338388 1-1PLUM PT U1 23.000'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08635	103.6265	BISON 3 345.00 - BUFFALO 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08661	103.6095	HARMONY - ST FRANCIS 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	103.6057	GEN336801 1-BAXTER WILSON UNIT #1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08561	103.6048	GERALD GENTLEMAN STATION - SWEETWATER 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08734	103.601	ARPIN B4 345.00 - EAU CLAIRE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.07093	103.5972	FT THOMPSON - LAKE PLATT 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.07093	103.5972	FT THOMPSON - LAKE PLATT 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	103.5872	GEN335614 1-WILLOW GLENN UNIT#4'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	103.5764	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	103.5732	GEN336464 1-MICHOUD UNIT #3'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08788	103.5672	PAHOJA - SIOUX FALLS 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08788	103.5327	HAZLETON - MITCHLC03 345.00 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.07054	103.5229	FT RANDAL - FT THOMPSON 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.07054	103.5229	FT RANDAL - FT THOMPSON 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	103.5125	GEN334441 1-SABINE UNIT 5'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08661	103.5014	HARMONY - VALENTINE 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	103.4921	GEN335204 1-NELSON UNIT 4'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	103.4129	GEN629075 1-OTTUMWA GENERATOR FOR OTTUMWA UNIT NO 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	103.4071	GEN659118 1-LARAMIE RIVER UNIT1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	103.3476	GEN334433 1-SABINE UNIT 3'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.07093	103.3434	FT RANDAL - LAKE PLATT 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08595	103.329	GROTON-LNX3 345.00 - LELAND1-LNX3345.00 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	103.3281	GEN336222 1-LITTLE GYPSY UNIT#2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.0848	103.3186	SPLIT ROCK - WHITE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.0848	103.3186	SPLIT ROCK - WHITE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08595	103.31	GROTON - GROTON-LNX3 345.00 345KV CKT 2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08595	103.3082	LELAND OLDS - LELAND1-LNX3345.00 345KV CKT 2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08595	103.3062	P12:345:UMZB:# 109 #: LOS GRT IN ND. LOS GRT'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08626	103.2726	G15094 T 345.00 - SIDNEY2-LNX3345.00 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	103.2671	GEN303007 1-1BC2 U2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.09034	103.2647	HOSKINS - SHELL CREEK 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	103.2641	GEN303006 1-1BC2 U1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08626	103.258	SIDNEY - SIDNEY2-LNX3345.00 345KV CKT 2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.0893	103.2562	COLUMEAST - SHELL CREEK 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08661	103.255	AINSWORTH - VALENTINE 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08788	103.2542	EAGLE 4 230.00 - PAHOJA 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08575	103.2322	GERALD GENTLEMAN STATION - SWEETWATER 345KV CKT 2'

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08616	103.2149	GEN336152 1-WATERFORD UNIT#2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08616	103.2145	GEN336151 1-WATERFORD UNIT#1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08616	103.1976	GEN531447 1-HOLCOMB GENERATOR'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08616	103.1872	GEN303008 1-1BC2 U3'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08616	103.18	GEN336170 1-GULF OXY U4'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08616	103.176	GEN532651 1-JEFFREY ENERGY CENTER UNIT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08526	103.1746	FT THOMPSON - WESSINGTON 230KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08526	103.1746	FT THOMPSON - WESSINGTON 230KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08616	103.173	GEN640009 1-COOPER NUCLEAR STATION'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.087	103.1722	PETERSBRG.N7115.00 - PETERSBURG 115KV CRT 21'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08749	103.1704	OAHE - SULLY BUTTE 230KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08616	103.1671	GEN532652 1-JEFFREY ENERGY CENTER UNIT 2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08616	103.1668	GEN532653 1-JEFFREY ENERGY CENTER UNIT 3'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.087	103.159	P12:115:NPPD:11688:ALBION 7:PETERSBRG.N7:BTB'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08691	103.1496	BROOKING COUNTY - LYON COUNTY 345KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08855	103.1323	GRIMES - LEHIGH 345KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.0901	103.1176	COLUMEAST - NW68TH & HOLDREGE 345KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.0901	103.1176	COLUMEAST - NW68TH & HOLDREGE 345KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08626	103.1156	G15094 T 345.00 - LARAMIE RIVER 345KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.087	103.107	ALBION - PETERSBURG 115KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08616	103.0869	GEN525562 1-TOLK GEN #2 24 KV'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08616	103.085	GEN501811 1-RODEMACHER UNIT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08815	103.0791	LAKEFIELD 3 - NOBLES 345KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08616	103.0764	GEN642067 1-PLATTE'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.0578	103.0709	FT RANDAL - G15089 T 230.00 230KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08665	103.0668	ARKANSAS NUCLEAR ONE - FT SMITH 500KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08665	103.0668	ARKANSAS NUCLEAR ONE - FT SMITH 500KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08616	103.0628	GEN645012 2-NEBRASKA CITY 2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08749	103.0437	SULLY BUTTE - SULLYBT-LNX3230.00 230KV CRT 2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08749	103.0427	SULLYBT-LNX3230.00 - WHITLOK 230KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08616	103.0356	GEN542962 2-IATAN UNIT #2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08616	103.0115	GEN645011 1-NEBRASKA CITY 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08714	103.0068	SIouxCY-LNX3345.00 - SPLIT ROCK 345KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08714	103.0068	SIouxCY-LNX3345.00 - SPLIT ROCK 345KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08749	103.0063	P12:230:UMZB:# 114 #: SB IN SD. SB-WK-GH'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08749	103.0063	P12:230:UMZB:# 117 #: WK IN SD. SB-WK-GH'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08626	103.0021	CNTSHT3 345.00 - PRAIRIE3 345.00 345KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08616	102.992	GEN337766 1-TRACTEBEL UNIT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08616	102.991	GEN525561 1-TOLK GEN #1 24 KV'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08616	102.9886	GEN334071 1-LEWIS CREEK 2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08714	102.9877	P12:345:UMZW:# 907 #: SC2-SR IN IA. SC2-SR 345 KV LINE'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08616	102.9828	GEN334070 1-LEWIS CREEK 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08714	102.9646	SIoux CITY - SIouxCY-LNX3345.00 345KV CRT 2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08749	102.9643	GLENHAM - WHITLOK 230KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08714	102.9608	KOSSUTH 3 345.00 - OBRIEN 3 345.00 345KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08714	102.9585	KOSSUTH 3 345.00 - WEBSTER 345KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08616	102.9527	P13:115-230:NPPD:NUCOR-3'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08616	102.9467	GEN501910 1-ACADIA UNIT ST1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08625	102.9459	ELLENDALE - OAKES 230KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08625	102.9459	ELLENDALE - OAKES 230KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08653	102.9437	ALEXMRESS 345.00 - BISON 3 345.00 345KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.087	102.9435	NELIGH - PETERSBRG.N7115.00 115KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08618	102.917	CENTER - COYOTE 345KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08736	102.915	DENISON - SIoux CITY 230KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08616	102.9104	GEN542957 1-IATAN UNIT #1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08616	102.907	P13:230-345:NPPD:NUCOR-1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08616	102.9034	GEN542955 1-LACYGENE UNIT #1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08625	102.8964	FORMAN - OAKES 230KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08616	102.8939	GEN345765 H-1SIoux 2 18.000'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08761	102.8878	BLOOMFIELD - CREIGHTON 115KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08616	102.8727	GEN337764 1-TRACTEBEL UNIT C1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08616	102.8727	GEN337765 1-TRACTEBEL UNIT C2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08737	102.87	ADAMS - PLEASANT VALLEY 345KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08616	102.8688	P13:115-345:NPPD:NUCOR-2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08616	102.8508	GEN345756 H-1SIoux 1 18.000'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08788	102.8499	ADAMS - MITCHCO3 345.00 345KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08616	102.8307	GEN336221 1-LITTLE GYPSY UNIT#1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08641	102.829	BLAIR - GRANITE FALLS 230KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08641	102.829	BLAIR - GRANITE FALLS 230KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08616	102.8249	GEN336242 1-1NML ST1 18.000'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.0925	102.8247	COLUMWEST - KELLY 230KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08616	102.8243	P13:230:UMZW:# 2218 #: FP IN MT. LOSS OF TRANSFORMER (AT2) 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08616	102.8187	GEN337757 1-DUKE HOTSPRINGS STG1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.087	102.8177	ALBION - SPALDING 115KV CRT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CRT 1'	720	720	0.08616	102.816	COUNCIL BLUFFS - SUB 3456 345KV CRT 1'

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.816	COUNCIL BLUFFS - SUB 3456 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.8099	GEN334432 1-SABINE UNIT 2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.8098	GEN334431 1-SABINE UNIT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.8096	GEN542956 2-LACYGNE UNIT #2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.8059	GEN636641 1-LOUISIA UNIT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.7993	GEN336446 1-MICHOUD UNIT #2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.7862	GEN345832 1-1T5 G1 13.800'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.7859	GEN345841 2-1T5 G2 13.800'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.7839	GRAND GULF 500/22.0KV TRANSFORMER CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.7777	GEN334030 1-FRONTIER UNIT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.7774	GEN334031 1-FRONTIER UNIT 2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.7727	GEN501970 1-EVANGELINE UNIT 7'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.767	GEN640020 2-SHELDON STATION UNIT 2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.09179	102.7654	UNDRWD - WAYSIDE 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.7534	GEN337430 1-PERYVILLE UNIT #3'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.7531	GEN337428 1-PERYVILLE UNIT #1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.7514	GEN514805 1-SOONER UNIT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.7507	GEN514806 1-SOONER UNIT 2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08494	102.7478	MENNO JCT - TRIPP JCT 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08858	102.7455	OAHE - PHILIP TAP 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.7395	GEN532722 1-EVANS ENERGY CENTER UNIT 2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.7334	GEN523971 1-HARRINGTON GEN #1 24 KV'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.7334	GEN523972 1-HARRINGTON GEN #2 24 KV'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.7334	GEN523973 1-HARRINGTON GEN #3 24 KV'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08655	102.7307	APPLEDORN 4 230.00 - WATERTOWN 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08655	102.7307	APPLEDORN 4 230.00 - WATERTOWN 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.7276	GEN336240 1-INMIL CT1 18.000'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.7276	GEN336241 1-INMIL CT2 18.000'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08887	102.7275	'P12:230:UMZW# 166 #: PL IN SD. TAP'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08887	102.7275	'P12:230:UMZW# 167 #: PL IN SD. NU-PLT-OA & PLT-PL (PLT IS A TAP)'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.7244	GEN501912 1-ACADIA UNIT CT1B'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.7242	GEN501911 1-ACADIA UNIT CT1A'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.7223	PRAIRIE ISLAND 345/20.0KV TRANSFORMER CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.7188	PRAIRIE ISLAND 345/20.0KV TRANSFORMER CKT 2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08633	102.7173	HANKINSON - WAHPETON 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.715	GEN501971 1-EVANGELINE UNIT 7-1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.715	GEN501972 1-EVANGELINE UNIT 7-2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08619	102.7064	GARRISON - JAMES TOWN 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.705	GEN335571 1-CARVILLE UNIT #1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.7047	GEN335570 1-CARVILLE CTG'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.0865	102.7035	NORTH ROCHESTER - PRAIRIE ISLAND 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.7019	GEN336167 1-GULF OXY U1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.7019	GEN336168 1-GULF OXY U2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.7019	GEN336169 1-GULF OXY U3'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08661	102.7013	FRANKS - HUBEN 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.7013	GEN501823 1-TECHE UNIT 3'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08797	102.6985	GAVINS POINT - HARTINGTON 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.6985	GEN336944 1-REX BROWN'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.6974	'P12:345:GRDA:CHOUTEAU-SPORTSMANACRES'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.6964	GEN335612 1-WILLOW GLENN UNIT#2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08629	102.6939	'P13:115-230:TSGT:SIDNEY-KV1A'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.6938	GEN345156 H-1MER 4 18.000'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08617	102.693	OVEXFRMCCOVE'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08484	102.692	MENNO JCT - UTICA 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08628	102.6911	'SIDNEY (SDQ KV2A) 345/230/13.8KV TRANSFORMER CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08628	102.691	'P13:230-345:NPPD:SIDNEY 3:KV2A'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08628	102.691	'SIDNEY - SIDNEY TRANSFORMER 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08748	102.6891	BISMARCK - L3 HAWDON 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08655	102.6868	APPLEDORN 4 230.00 - GRANITE FALLS 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08655	102.6868	APPLEDORN 4 230.00 - GRANITE FALLS 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.682	GEN337432 1-PERYVILLE UNIT #5'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.0863	102.6767	FORMAN - HANKINSON 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08628	102.6746	G14-059T 230.00 - OGALLALA 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.6728	GEN334392 1-EXXON MOBIL IPP 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.671	GEN527903 1-HOBBS PLANT #3 (ST)'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.6708	GEN334393 1-EXXON MOBIL IPP 2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.6708	GEN334394 1-EXXON MOBIL IPP 3'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.6676	FINNEY SWITCHING STATION - PSCO LAMAR DC TIE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.6676	FINNEY SWITCHING STATION - PSCO LAMAR DC TIE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08484	102.6619	'P12:115:UMZZ:# 237 #: MEN IN SD. MENNO JUNCTION IS A TAP (UJ-MEN-TP)'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.66	GEN338443 1-PANDA 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.6591	WHITE BLUFF 500/26.0KV TRANSFORMER CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.6514	GEN337008 1-DUKE MCADAMS S1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.6461	GEN335644 1-EXXON UNITS'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	102.6433	GEN336854 1-DUKE LAKEOVER S1'

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08447	101.9339	HOLT.CO3 345.00 - THEDFRD3 345.00 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.0912	101.8449	FTTHOM1-LNX3345.00 - LELAND2-LNX3345.00 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08696	101.8299	AXTELL - PAULINE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08393	101.7742	COOPER - MOORE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.0861	101.7347	MCCOOL (MCCOOL T2) 345/115/13.8KV TRANSFORMER CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.0861	101.7347	MCCOOL (MCCOOL T2) 345/115/13.8KV TRANSFORMER CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08495	101.7305	P12:345:SPS:J07.1.FINN.HITCH'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.7197	GEN590010 1-ERCOT EQUIVALENCE'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.0912	101.7086	FT THOMPSON - FTTHOM1-LNX3345.00 345KV CKT 2'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08621	101.7064	103RD & ROKEBY - MOORE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08621	101.7064	103RD & ROKEBY - MOORE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.0912	101.7046	P12:345:UMZB:# 108 #: LOS FT IN ND. LOS FT'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08549	101.7017	FIELD NORTH - LKFLDX3 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.6981	GEN590011 2-ERCOT EQUIVALENCE'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.6968	GEN672367 1-MERIDIAN GENERATOR 1 GT1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.6968	GEN672368 2-MERIDIAN GENERATOR 2 GT2'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08549	101.6951	FIELD SOUTH - WILMARTH 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08648	101.6945	QUAD 1 3-11 345.00 - ROCK CREEK NO 1 + NO 2 + NO 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08549	101.6941	FIELD NORTH - FIELD SOUTH 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.693	GEN672350 1-NIPAWIN GENERATOR 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.693	GEN672351 2-NIPAWIN GENERATOR 2'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.6929	GEN672352 3-NIPAWIN GENERATOR 3'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.6875	MITCHLCO3 345.00 345/34.5KV TRANSFORMER CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08536	101.6817	FINNEY SWITCHING STATION - WALKTAP7 345.00 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08536	101.6817	FINNEY SWITCHING STATION - WALKTAP7 345.00 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08682	101.6805	MAXWELL - NORTH PLATTE 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.6762	GEN672349 3-CORY COGEN GENERATOR 3 ST'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.6751	GEN600018 5-LS POWER STEAM'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08561	101.6678	HELENA - SHEAS LK3 345.00 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08699	101.666	LOUP CITY - NORTH LOUP 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.6422	GEN657964 1-ASH2GEN9 0.5750'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.637	GEN562438 1-G13-032 0.6900'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.6367	GEN640418 1-ELKHORN RIDGE WIND'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.6347	GEN563302 1-G15096 3 0.6900'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.6339	GEN300007 1-NEW MADRID UNIT 2'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08749	101.6326	ATCHSNT3 345.00 - COOPER 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08749	101.6326	ATCHSNT3 345.00 - COOPER 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.6302	GEN659453 1-G11414GEN W0.6900'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08567	101.6299	SHEAS LK3 345.00 - WILMARTH 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.6285	GEN300006 1-NEW MADRID UNIT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08617	101.6228	FALLOW 3 345.00 - GRIMES 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.6227	GEN652410 3-FT PECK'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.6092	GEN659141 1-K10215A'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.6085	GEN620324 3-HOOT LAKE 3 GEN'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.607	GEN672339 16-QE 166 13.800'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.607	GEN672342 3-QUEEN ELIZABETH GENERATOR 3'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.6058	GEN600020 2-ANGUS ANSON1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.6013	GEN600021 3-ANGUS ANSON2'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.5934	GEN652173 1-G09_001IS 0.2 6.900'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.5918	GEN672393 2-NBECST2G 13.800'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.5891	GEN629072 4-LANSING GENERATOR FOR UNITS NO4 EIA CODE 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08628	101.5826	GRAND ISLAND (GI KU3A) 345/230/13.8KV TRANSFORMER CKT 3'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08628	101.5826	GRAND ISLAND (GI KU3A) 345/230/13.8KV TRANSFORMER CKT 3'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.5776	GEN600012 2-BLACK DOG GEN 2'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.5735	GEN652414 4-FT PECK'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.5735	GEN652415 5-FT PECK'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08963	101.5724	STEGALL - STEGALL-LNX3230.00 230KV CKT 2'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08648	101.5724	LARAMIE RIVER - STEGALL 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08963	101.5699	STEGALL-LNX3230.00- WAYSIDE 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08586	101.5627	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08405	101.5562	G15061 T 345.00 - MINGO 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.5549	GEN659156 2-LONESMCRK 2G13.800'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.5549	GEN659157 3-LONESMCRK 3G13.800'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.5453	GEN652546 1-FT RANDAL'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08612	101.541	DBL-THIS-G15'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.5375	GEN659158 2-PIONEER G213.800'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.5375	GEN659159 3-PIONEER G313.800'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08728	101.5306	G15088 T 345.00 - PAULINE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.5305	GEN659407 1-ANTEPHILLSW0.6900'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0		

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08749	101.4946	ATCHSNT3 345.00 - BOONEVILLE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.0855	101.4917	POST ROCK (POSTROCK T1) 345/230/13.8KV TRANSFORMER CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.4845	GEN615015 1-GRE-SPRITWDG13.200'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08488	101.4825	DBL-IRON-CLR'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.4733	EMERY 161/18.0KV TRANSFORMER CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.4589	GEN600050 1-FEP'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.4428	GEN600046 1-MECST'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.4182	GEN600047 1-MECCT1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.4145	GEN600003 3-HURON WEST PARK'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.3913	GEN600063 1-COLVILLE GEN 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.3913	GEN600064 2-COLVILLE GEN 2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08405	101.3807	G15061 T 345.00 - SETAB 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.3758	GEN600043 7-BLUE LAKES'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.3758	GEN600044 8-BLUE LAKE6'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.3424	GEN600065 7-HIGH BRIDGE'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.3424	GEN600066 8-HIGH BRIDGE'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.3375	GEN600001 2-ABERDEN SIEBRECHT'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08612	101.3349	DBL-G1524-WI'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.3332	GEN600011 5-BLACK DOG GEN 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.3299	GEN600014 4-BLACK DOG GEN 4'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.3266	GEN600071 10-RIVER SIDE'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.3265	GEN600070 9-RIVER SIDE'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.3146	GEN600007 7-RIVERSIDE GEN 7'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.3135	BISONMPP4 230.00 - SQUARE BUTTE 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.2964	GEN600017 C-LS POWER CT'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.2731	GEN615052 1-CAMBRIDGE GENERATING STATION'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.2614	GEN659031 1-G12_014IS_4 0.6900'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.253	GEN600045 4-ANSON'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.2508	GEN615021 1-GRE-ER 14G 16.000'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.2485	LANSING WEST 161/22.0KV TRANSFORMER CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.2405	GEN652906 1-G09_006IS_3 0.6900'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.2347	GEN681522 3-GENOA 3'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.1471	GEN660016 1-B_H WIND 0.7000'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.132	GEN652907 1-G09_007IS_3 0.6900'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08728	101.109	G15088 T 345.00 - MOORE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08471	101.1059	GERALD GENTLEMAN STATION - RED WILLOW 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.0985	GEN672303 3-BOUNDARY DAM GENERATOR 3'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.0985	GEN672305 5-BOUNDARY DAM GENERATOR 5'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.0976	GEN659291 1-FT MP COLLECTOR'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.0826	GEN672392 1-NBCECT1G 18.000'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.0425	GEN562872 1-G15046_3 0.6900'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.031	SQUARE BUTTE - YNG2 4 230.00 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	101.0301	GEN662101 1-WESSINGTON190.5750'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08488	101.0169	DBL-CLR-K-THI'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	100.9935	GEN600067 9-HIGH BRIDGE'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	100.7965	GEN652511 1-G12_009IS_2 0.6900'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	100.7699	GEN652542 1-BIG BEND'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	100.7698	GEN652543 3-BIG BEND'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	100.7691	GEN652544 5-BIG BEND'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	100.7674	GEN652545 7-BIG BEND'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	100.7398	GEN659125 1-COVEY'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08278	100.718	MINGO - RED WILLOW 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08278	100.718	MINGO - RED WILLOW 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	100.7172	GEN652460 4-GARRISON'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	100.717	GEN652461 5-GARRISON'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	100.6811	STANTON 230/18.0KV TRANSFORMER CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	100.6774	GEN652457 1-GARRISON'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	100.6774	GEN652458 2-GARRISON'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	100.6774	GEN652459 3-GARRISON'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	100.6623	GEN659289 1-DAYCNTYWND W0.6900'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08076	100.6583	AXTELL - POST ROCK 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	100.6553	GEN681542 6-JP MADGETT'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	100.5361	GEN659018 1-G14_003IS_3 0.6900'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	100.4839	GEN652559 1-OAHE'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	100.4789	GEN659354 1-DEERCREEK STG18.000'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	100.4775	GEN659353 1-DEERCREEK CTG18.000'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	100.3626	CLAY BOSWELL 230/20.9KV TRANSFORMER CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	100.1371	RCDC EAST 4230.00 - RED CEDAR DC 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	100.1325	P12:230:UMZB:# 112 #: NU IN SD. NU-RCDC & DRY CREEK XFMR'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	100.1198	GEN652556 2-OAHE'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	100.1198	GEN652557 4-OAHE'
FDNS	17ALL	0	17SP	G15_0							

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	99.8	GEN672306 6-BOUNDARY DAM GENERATOR G'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	99.8	GEN672310 1-POPLAR RIVER GENERATOR 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	99.8	GEN672311 2-POPLAR RIVER GENERATOR 2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08455	99.8	AXTELL - SWEETWATER 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	99.7	GEN615010 1-STANTON4'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	99.6	GEN600003 1-PRAIRIE ISLAND G1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	99.6	GEN600004 2-PRAIRIE ISLAND G2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	99.5	GEN657749 1-YOUNG 1 GENERATOR'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	99.4	GEN563232 1-G15089 3 0.6900'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	99.3	GEN600006 1-AS KING'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	98.9	GEN659110 1-LELAND OLDS UNIT1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	98.8	GEN600005 1-MONTICELLO'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	98.3	GEN600001 2-SHERBURNE CNTY G2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	98.2	GEN600000 1-SHERBURNECNTY G1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	98.1	GEN620315 1-BIG STONE GEN'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.07499	97.9	KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08281	97.8	MCCOOL - MOORE 345KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.07587	97.7	KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	97.6	GEN661015 1-COYOTE'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	97.2	GEN600002 3-SHERBURNE CNTY G3'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	97.2	GEN657748 1-YOUNG 2 GENERATOR'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	97	BIG STONE 230/24.0KV TRANSFORMER CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	96.8	SHERBURNE CO 345/24.0KV TRANSFORMER CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.05793	96	GERALD GENTLEMAN STATION - SWEETWATER 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.08616	95.3	GEN659111 2-LELAND OLDS UNIT2'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	'GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'	720	720	0.05882	95.3	GERALD GENTLEMAN STATION - SWEETWATER 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.18684	120.8829	G15089_T 230.00 - UTICA JCT 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12892	120.1507	GRPRARI-LNX3345.00 - YANKTON 345KV CKT 2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12892	120.1168	GRPRARI-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12768	117.8868	GRPRARI-LNX3345.00 - YANKTON 345KV CKT 2'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12768	117.854	GRPRARI-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.18493	117.6605	G15089_T 230.00 - UTICA JCT 230KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.18448	117.4437	G15089_T 230.00 - UTICA JCT 230KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.1272	117.0964	GRPRARI-LNX3345.00 - YANKTON 345KV CKT 2'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.1272	117.0722	GRPRARI-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.13656	116.6559	FT RANDAL - SIOUX CITY 230KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12139	116.0078	GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12139	115.9432	GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT 2'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12094	115.8059	GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12094	115.7346	GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT 2'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.13445	113.7692	FT RANDAL - SIOUX CITY 230KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.1349	113.7586	FT RANDAL - SIOUX CITY 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.13319	111.0975	RASMUSN - UTICA JCT 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12486	110.9509	P12:115:NPPD:WAPAG:FRANDL7:ONEILL 7:BTB'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12486	110.9509	P12:115:UMZB:# 115 #: SE IN NE. FR-SE-ON'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12486	110.9318	FT RANDAL - SPENCER 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.13319	110.6914	RASMUSN - SIOUX CITY 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12486	110.6905	ONEILL - SPENCER 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12601	109.9348	HOSKINS - SHELL CREEK 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	109.907	GEN635024 4-WALTER SCOTT UNIT 4'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	109.5086	GEN336821 1-GRAND GULF UNIT'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	109.4408	GEN635023 3-WALTER SCOTT UNIT 3'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	109.3138	GEN344225 1-ICAL G1 25.000'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12359	109.0687	P12:115:NPPD:WAPAG:FRANDL7:ONEILL 7:BTB'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12359	109.0687	P12:115:UMZB:# 115 #: SE IN NE. FR-SE-ON'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12359	109.0503	FT RANDAL - SPENCER 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	108.978	GEN336153 1-WATERFORD UNIT#3'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	108.9597	GEN337911 1-ARKANSAS NUCLEAR ONE UNIT #2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11919	108.8943	HANLON - STORLA 230KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12359	108.8105	ONEILL - SPENCER 115KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.13115	108.744	RASMUSN - UTICA JCT 230KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.13158	108.7306	RASMUSN - UTICA JCT 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12884	108.7189	UTICA JCT - VFODNES 230KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12317	108.7094	P12:115:NPPD:WAPAG:FRANDL7:ONEILL 7:BTB'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12317	108.7094	P12:115:UMZB:# 115 #: SE IN NE. FR-SE-ON'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12317	108.6941	FT RANDAL - SPENCER 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	108.6715	GEN335831 1-RIVERBEND UNIT#1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	108.5627	GEN337910 1-ARKANSAS NUCLEAR ONE UNIT #1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12317	108.4599	ONEILL - SPENCER 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11935	108.4084	P12:230:UMZB:# 116 #: ST IN SD. WSG-ST-VH'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12239	108.4079	RAUN - SUB 3451 FT CAL 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12239	108.4079	RAUN - SUB 3451 FT CAL 345KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12396	108.3655	HOSKINS - SHELL

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	108.1897	GEN337653 1-WHITE BLUFF UNIT #2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	108.1783	GEN337652 1-WHITE BLUFF UNIT #1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11986	108.164	PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	108.1569	GEN338146 1-INDEPENDENCE UNIT #2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11944	108.1536	KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	108.1517	GEN338143 1-INDEPENDENCE UNIT #1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11944	108.132	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z'
FDNS	17ALL	0	16WVP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.18449	108.1215	G15089_T 230.00 - UTICA JCT 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12068	108.115	FT RANDAL - WHITE SWAN 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12089	108.0891	BLOOMFIELD - CREIGHTON 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11986	108.0807	P12:115:NPPD:11688:ALBION 7:PETERSBRG.N7:BTB'
FDNS	17ALL	0	25SSP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	108.0698	GEN635024 4-WALTER SCOTT UNIT 4'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11986	108.0434	ALBION - PETERSBURG 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11907	108.0316	FT THOMPSON - LETCHER 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11907	108.0316	FT THOMPSON - LETCHER 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12068	108.0268	TYNDALL - WHITE SWAN 115KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	108.0173	GEN635024 4-WALTER SCOTT UNIT 4'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	107.9945	GEN501801 1-DOLET HILLS UNIT1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12351	107.9921	HOSKINS - SHELL CREEK 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12068	107.9261	P12:115:UMZW:# 1901 #: TY IN SD. TY-WSW LINE FAULT'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12068	107.9261	P12:115:UMZW:# 537 #: TY IN SD. TY-YJ LINE FAULT'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12068	107.9261	P13:115:UMZW:# 1902 #: TY IN SD. LOSS OF TRANSFORMER (KY1A).'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11936	107.9179	P12:115:NPPD:1091:VALENTN7:MISSION7:BTB'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	107.8697	GEN336252 1-NINEMILE POINT UNIT#5'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	107.849	GEN640009 1-COOPER NUCLEAR STATION'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	107.8332	GEN645012 2-NEBRASKA CITY 2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	107.811	GEN501813 1-RODEMACHER UNIT 3'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	107.7656	GEN336831 1-BAXTER WILSON SES'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12583	107.7654	SIOUX FALLS - VFODNES 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	107.7609	GEN344897 4-1LAB G4 20.000'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	107.7583	GEN344894 1-1LAB G1 20.000'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	107.7583	GEN344896 3-1LAB G3 20.000'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	107.7554	GEN336251 1-NINEMILE POINT UNIT#4'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	107.7534	GEN645011 1-NEBRASKA CITY 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11986	107.7439	NELIGH - PETERSBRG.N7115.00 115KV CKT 1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.18558	107.7181	G15089_T 230.00 - UTICA JCT 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	107.7169	GEN344895 2-1LAB G2 20.000'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11988	107.7147	PAHOJA - SIOUX FALLS 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	107.7146	GEN640028 1-COLUMCOGENERATION'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	107.7092	GEN337041 1-GERALD ANDRUS'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11936	107.7071	MISSION - ST FRANCIS 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11916	107.707	CHISAGO COUNTY - FORBES 500KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12019	107.697	ANTELOPE 3345.00 - HOSKINS 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	107.6941	GEN345670 1-1RUSH G1 18.000'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	107.6939	GEN345671 2-1RUSH G2 18.000'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12019	107.6902	ANTELOPE 3345.00 (ANTELOPE T1) 345/115/13.8KV TRANSFORMER CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11953	107.6852	HANLON - SIOUX FALLS 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11917	107.6823	BUFFALO - JAMESTOWN 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11936	107.6769	HARMONY - ST FRANCIS 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	107.6657	GEN335206 1-NELSON UNIT 6'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.1215	107.6643	GAVINS POINT - HARTINGTON 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11926	107.6389	WATERTN-LNX3345.00 - WHITE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12046	107.6108	BELDEN - HOSKINS 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11936	107.6092	ARROWHEAD - ARROWHEAD 230 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11926	107.6062	P12:345:UMZW:# 1747 #: WT2 IN SD. WT2-WHT LINE FAULT'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11921	107.605	LETCHER - SIOUX FALLS 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11926	107.6047	WATERTN-LNX3345.00 - WATERTOWN 345KV CKT Z'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11917	107.6014	CENTER - JAMESTOWN 345KV CKT 1'
FDNS	17ALL	0	25SSP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	107.5962	GEN635023 3-WALTER SCOTT UNIT 3'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11936	107.5873	HARMONY - VALENTINE 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11941	107.5852	AS KING - EAU CLAIRE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	107.5608	GEN501812 1-RODEMACHER UNIT 2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	107.5418	GEN334440 1-SABINE UNIT 4'
FDNS	17ALL	0	25SSP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	107.5267	GEN336821 1-GRAND GULF UNIT'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	107.5161	GEN635023 3-WALTER SCOTT UNIT 3'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	107.5138	GEN640011 2-GERALD GENTLEMAN STATION UNIT 2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	107.5006	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	107.4993	GEN629075 1-OTTUMWA GENERATOR FOR OTTUMWA UNIT NO 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	107.4846	GEN336821 1-GRAND GULF UNIT'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11954	107.4696	ARPIN B4 345.00 - EAU CLAIRE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11957	107.4664	CARPENTER - HURON 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11997	107.4623	DENISON - SIOUX CITY 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12025	107.4572	LAKEFIELD 3 - NOBLES 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	107.4541	GEN336191 1-LITTLE GYPSY UNIT#3'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11938	107.4534	SIDNEY - STEGALL 345KV CKT 1'

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11976	107.4518	HAZLETON - MITCHLCO3 345.00 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	107.4354	GEN338388 1-1PLUM PT U1 23.000'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11988	107.4215	EAGLE 4 230.00 - PAHOJA 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	107.4187	GEN640010 1-GERALD GENTLEMAN STATION UNIT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11936	107.4164	AINSWORTH - VALENTINE 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11957	107.4111	HURON - WATERTOWN 230KV CKT 2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11957	107.4111	HURON - WATERTOWN 230KV CKT 2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	107.3989	GEN336801 1-BAXTER WILSON UNIT #1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11957	107.3909	CARPENTER - WATERTOWN 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11957	107.3909	CARPENTER - WATERTOWN 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	107.3848	GEN335614 1-WILLOW GLENN UNIT#4'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.1195	107.3795	BROOKING COUNTY - LYON COUNTY 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11966	107.3793	FT THOMPSON - HURON 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11966	107.3793	FT THOMPSON - HURON 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11966	107.3793	FT THOMPSON - HURON 230KV CKT 2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	107.3764	GEN336464 1-MICHOUD UNIT #3'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12287	107.3445	CLEARWATER - ONEILL 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12287	107.3341	P12:115:NPPD:1164:ONEILL 7:JEFFREY9:BTB'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	107.3281	GEN334441 1-SABINE UNIT 5'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	107.2139	GEN344225 1-ICAL G1 25.000'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	107.1607	GEN344225 1-ICAL G1 25.000'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	106.9614	GEN336153 1-WATERFORD UNIT#3'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	106.9416	GEN337911 1-ARKANSAS NUCLEAR ONE UNIT #2'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	106.9214	GEN336153 1-WATERFORD UNIT#3'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	106.8843	GEN337911 1-ARKANSAS NUCLEAR ONE UNIT #2'
FDNS	17ALL	0	20WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.18194	106.7846	G15089_T 230.00 - UTICA JCT 230KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12733	106.7823	UTICA JCT - VFODNES 230KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	106.6776	GEN335831 1-RIVERBEND UNIT#1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	106.6231	GEN335831 1-RIVERBEND UNIT#1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11774	106.5997	HANLON - STORLA 230KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	106.5535	GEN337910 1-ARKANSAS NUCLEAR ONE UNIT #1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12693	106.55	UTICA JCT - VFODNES 230KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	106.4919	GEN337910 1-ARKANSAS NUCLEAR ONE UNIT #1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11733	106.4122	HANLON - STORLA 230KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12062	106.376	RAUN - SUB 3451 FT CAL 345KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12062	106.376	RAUN - SUB 3451 FT CAL 345KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11939	106.2859	BLOOMFIELD - CREIGHTON 115KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12768	106.2747	FTTHOM2-LNX3345.00 - GRPRAR2-LNX3345.00 345KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12768	106.2425	FT THOMPSON - FTTHOM2-LNX3345.00 345KV CKT 2'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12768	106.2364	GRPRAR2-LNX3345.00 - YANKTON 345KV CKT 2'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	106.2307	GEN337652 1-WHITE BLUFF UNIT #1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	106.2299	GEN338146 1-INDEPENDENCE UNIT #2'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	106.2051	GEN338143 1-INDEPENDENCE UNIT #1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12019	106.167	RAUN - SUB 3451 FT CAL 345KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12019	106.167	RAUN - SUB 3451 FT CAL 345KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	106.1586	GEN337653 1-WHITE BLUFF UNIT #2'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11789	106.1303	P12:230:UMZB:# 116 #: ST IN SD. WSG-ST-VH'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11887	106.1074	LAKEFIELD 3 - NOBLES 345KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11898	106.1064	BLOOMFIELD - CREIGHTON 115KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	106.0742	GEN337653 1-WHITE BLUFF UNIT #2'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	106.0312	GEN337652 1-WHITE BLUFF UNIT #1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	106.0125	GEN338146 1-INDEPENDENCE UNIT #2'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	106.0092	GEN338143 1-INDEPENDENCE UNIT #1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	106.0025	GEN501801 1-DOLET HILLS UNIT1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	105.9764	GEN336252 1-NINEMILE POINT UNIT#5'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11748	105.935	P12:230:UMZB:# 116 #: ST IN SD. WSG-ST-VH'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	105.9102	GEN336251 1-NINEMILE POINT UNIT#4'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11846	105.9069	LAKEFIELD 3 - NOBLES 345KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	105.9038	GEN501801 1-DOLET HILLS UNIT1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11834	105.8846	PETERSBURG.N7115.00 - PETERSBURG 115KV CKT Z1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	105.8802	GEN336831 1-BAXTER WILSON SES'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11774	105.8705	BUFFALO - JAMESTOWN 345KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	105.8625	GEN336252 1-NINEMILE POINT UNIT#5'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11997	105.8605	GAVINS POINT - HARTINGTON 115KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11787	105.8529	KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11787	105.8427	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT 2'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	105.8352	GEN337041 1-GERALD ANDRUS'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11834	105.8158	P12:115:NPPD:11688:ALBION 7:PETERSBURG.N7:BTB'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11762	105.8019	FT THOMPSON - LETCHER 230KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11762	105.8019	FT THOMPSON - LETCHER 230KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	105.7935	GEN336251 1-NINEMILE POINT UNIT#4'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	105.781	GEN336831 1-BAXTER WILSON SES'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	105.7772	GEN501813 1-RODEMACHER UNIT 3'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11834	105.7771	ALBION - PETERSBURG 115KV CKT 1'

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	105.7412	GEN337041 1-GERALD ANDRUS'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11955	105.738	GAVINS POINT - HARTINGTON 115KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	105.7004	GEN344897 4-1LAB G4 20.000'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	105.6993	GEN344894 1-1LAB G1 20.000'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	105.6992	GEN344895 2-1LAB G2 20.000'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	105.6991	GEN344896 3-1LAB G3 20.000'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	105.6903	GEN640009 1-COOPER NUCLEAR STATION'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	105.6814	GEN501813 1-RODEMACHER UNIT 3'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11793	105.6812	PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11801	105.6727	BROOKING COUNTY - LYON COUNTY 345KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11746	105.6679	KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11895	105.6678	BELDEN - HOSKINS 115KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	105.6584	GEN645012 2-NEBRASKA CITY 2'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11746	105.6553	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT Z'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	105.6526	GEN345671 2-1RUSH G2 18.000'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.1177	105.6511	CENTER - JAMESTOWN 345KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	105.6488	GEN345670 1-1RUSH G1 18.000'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11916	105.6453	FT RANDAL - WHITE SWAN 115KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11721	105.6439	FT THOMPSON - LETCHER 230KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11721	105.6439	FT THOMPSON - LETCHER 230KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	105.6396	GEN335206 1-NELSON UNIT 6'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	105.6375	GEN640028 1-COLUMCOGENERATION'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11838	105.635	PAHOJA - SIOUX FALLS 230KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	105.6147	GEN334440 1-SABINE UNIT 4'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	105.6094	GEN344897 4-1LAB G4 20.000'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	105.6079	GEN344894 1-1LAB G1 20.000'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	105.6079	GEN344895 2-1LAB G2 20.000'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	105.6079	GEN344896 3-1LAB G3 20.000'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	105.605	GEN338388 1-PLUM PT U1 23.000'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11793	105.603	P12:115:NPPD:11688:ALBION 7:PETERSBRG.N7:BTB'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.1272	105.5913	FTTHOM2-LNX3345.00 - GRPRAR2-LNX3345.00 345KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	105.5859	GEN629075 1-OTTUMWA GENERATOR FOR OTTUMWA UNIT NO 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.1177	105.5711	CHISAGO COUNTY - FORBES 500KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11793	105.5682	ALBION - PETERSBURG 115KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.1177	105.5678	CHISAGO COUNTY - CHISAGO COUNTY 500KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.1272	105.5617	FT THOMPSON - FTTHOM2-LNX3345.00 345KV CKT Z'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	105.5607	GEN345671 2-1RUSH G2 18.000'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	105.5583	GEN645011 1-NEBRASKA CITY 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.1173	105.5573	BUFFALO - JAMESTOWN 345KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	105.5568	GEN345670 1-1RUSH G1 18.000'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11916	105.5517	TYNDALL - WHITE SWAN 115KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.1272	105.5492	GRPRAR2-LNX3345.00 - YANKTON 345KV CKT Z'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11854	105.5468	BELDEN - HOSKINS 115KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	105.5396	GEN335206 1-NELSON UNIT 6'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	105.5357	GEN652542 1-BIG BEND'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	105.5356	GEN652543 3-BIG BEND'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	105.5351	GEN652544 5-BIG BEND'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	105.534	GEN652545 7-BIG BEND'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11787	105.5335	P12:115:NPPD:1091:VALENTN7:MISSION7:BTB'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	105.5326	GEN336191 1-LITTLE GYPSY UNIT#3'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	105.5324	GEN652457 1-GARRISON'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	105.5324	GEN652458 2-GARRISON'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	105.5324	GEN652459 3-GARRISON'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	105.5312	GEN501812 1-RODEMACHER UNIT 2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12079	105.5247	GREGORY - WINNER 115KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11834	105.5157	NELIGH - PETERSBRG.N7115.00 115KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	105.5122	GEN629075 1-OTTUMWA GENERATOR FOR OTTUMWA UNIT NO 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11863	105.503	ANTELOPE 3345.00 - HOSKINS 345KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11797	105.4996	PAHOJA - SIOUX FALLS 230KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	105.4983	GEN334440 1-SABINE UNIT 4'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11863	105.4954	ANTELOPE 3345.00 (ANTELOPE T1) 345/115/13.8KV TRANSFORMER CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11875	105.4926	FT RANDAL - WHITE SWAN 115KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11916	105.4876	P12:115:UMZW:# 1901 #: TY IN SD. TY-WSW LINE FAULT'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11916	105.4876	P12:115:UMZW:# 537 #: TY IN SD. TY-YJ LINE FAULT'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11916	105.4876	P13:115:UMZW:# 1902 #: TY IN SD. LOSS OF TRANSFORMER (KY1A)'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	105.4849	GEN645012 2-NEBRASKA CITY 2'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11822	105.4836	ANTELOPE 3345.00 - HOSKINS 345KV CKT 1'
FDNSLock	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11898	105.4797	COLUMBUS - SCHUYLER 115KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	105.4784	GEN640028 1-COLUMCOGENERATION'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	105.4736	GEN600045 4-ANSON'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	105.4711	GEN335614 1-WILLOW GLENN UNIT#4'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	105.469	GEN336801 1-BAXTER WILSON UNIT #1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	105.4663	GEN640009 1-COOPER NUCLEAR STATION'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	105.461	GEN336464 1-MICHOUD UNIT #3'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11822	105.4562	ANTELOPE 3345.00 (ANTELOPE T1) 345/115/13.8KV TRANSFORMER CKT 1'

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11761	105.4469	BROOKING COUNTY - LYON COUNTY 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	105.4412	GEN659018 1-G14_003IS_3 0.6900'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12079	105.4405	P12:115:UMZW:# 172 #: WI IN SD.'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11807	105.4398	HANLON - SIOUX FALLS 230KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	105.4367	GEN334441 1-SABINE UNIT 5'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	105.4267	GEN335204 1-NELSON UNIT 4'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	105.4264	GEN501812 1-RODEMACHER UNIT 2'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	105.4262	GEN338388 1-PLUM PT U1 23.000'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	105.4227	GEN659289 1-DAYCNTYWND W0.6900'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	105.4171	GEN336191 1-LITTLE GYPSY UNIT#3'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	105.4124	GEN645011 1-NEBRASKA CITY 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11773	105.4118	CHISAGO COUNTY - FORBES 500KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11775	105.4065	LETCHER - SIOUX FALLS 230KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11875	105.4054	TYNDALL - WHITE SWAN 115KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11773	105.3901	CHISAGO COUNTY - CHISAGO COUNTY 500KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11788	105.3844	AS KING - EAU CLAIRE 345KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11773	105.3656	CENTER - JAMESTOWN 345KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	105.3628	GEN335614 1-WILLOW GLENN UNITH4'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11787	105.3569	MISSION - ST FRANCIS 115KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	105.3563	GEN336801 1-BAXTER WILSON UNIT #1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11725	105.3536	COLUMEAST - SHELL CREEK 345KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	105.3526	GEN336464 1-MICHOUD UNIT #3'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	105.3473	GEN681542 6-JP MADGETT'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11862	105.3446	GRIMES - LEHIGH 345KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11875	105.3424	P12:115:UMZW:# 1901 #: TY IN SD. TY-WSW LINE FAULT'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11875	105.3424	P12:115:UMZW:# 537 #: TY IN SD. TY-YI LINE FAULT'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11875	105.3424	P13:115:UMZW:# 1902 #: TY IN SD. LOSS OF TRANSFORMER (K1YA)'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11845	105.3396	DENISON - SIOUX CITY 230KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11746	105.3244	P12:115:NPPD:1091-VALENTN7:MISSION7:BTB'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11767	105.3224	HANLON - SIOUX FALLS 230KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	105.3209	GEN334433 1-SABINE UNIT 3'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	105.3208	GEN335204 1-NELSON UNIT 4'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11793	105.3203	NELIGH - PETERSBRG.N7115.00 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	105.3202	GEN652559 1-OAHE'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11838	105.3167	EAGLE 4 230.00 - PAHOJA 230KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	105.3096	GEN334441 1-SABINE UNIT 5'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12393	105.3077	SIOUX FALLS - VFDONES 230KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11787	105.3005	HARMONY - ST FRANCIS 115KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	105.2846	GEN336222 1-LITTLE GYPSY UNITH2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.113	105.2773	COLUMWEST - KELLY 230KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11748	105.2598	AS KING - EAU CLAIRE 345KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11734	105.2572	LETCHER - SIOUX FALLS 230KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11805	105.2296	DENISON - SIOUX CITY 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	105.2143	CLAY BOSWELL 230/20.9KV TRANSFORMER CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11797	105.1997	EAGLE 4 230.00 - PAHOJA 230KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	105.1977	GEN334433 1-SABINE UNIT 3'
FDNSLock	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12079	105.1897	WINNER - WITTEN 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	105.1816	GEN659354 1-DEERCREEK STG18.000'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	105.1805	GEN659353 1-DEERCREEK CTG18.000'
FDNSLock	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12079	105.1637	MISSION - WITTEN 115KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11744	105.1618	ARROWHEAD - ARROWHEAD 230 230KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11746	105.1561	MISSION - ST FRANCIS 115KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	105.1547	GEN336222 1-LITTLE GYPSY UNIT#2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	105.1001	GEN652556 2-OAHE'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	105.1001	GEN652557 4-OAHE'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	105.1001	GEN652558 6-OAHE'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	105.0994	GEN660016 1-B H WIND 0.7000'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	104.9449	GEN615010 1-STANTON4'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	104.9431	RCDC EAST 4230.00 - RED CEDAR DC 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	104.9406	P12:230:UMZB:# 112 #: NU IN SD. NU-RCDC & DRY CREEK XFMR'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	104.9134	GEN652353 2-GR PRAIRIEG 0.6900'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	104.8928	GEN672321 1-SHAND GENERATOR 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	104.8836	GEN672310 1-POPLAR RIVER GENERATOR 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	104.8836	GEN672311 2-POPLAR RIVER GENERATOR 2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	104.86	GEN652906 1-G09 006IS_3 0.6900'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	104.8374	GEN672306 6-BOUNDARY DAM GENERATOR 6'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	104.8139	GEN652546 1-FT RANDAL'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11825	104.7996	KELLY (KELLY T1) 230/115/13.2KV TRANSFORMER CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11825	104.7996	P13:115-230:NPPD:COLUMBUS4:T1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11825	104.7959	COLUMBUS - KELLY 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	104.7765	GEN657749 1-YOUNG 1 GENERATOR'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	104.7373	GEN659296 2-SDPRAIRIWND1W0.6900'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	104.6737	GEN652907 1-G09_007IS_3 0.6900'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	104.5539	GEN652548 5-FT RANDAL'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	104.5539	GEN652549 7-FT RANDAL'

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	104.5482	GEN600004 2-PRAIRIE ISLAND G2'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	104.5451	GEN600003 1-PRAIRIE ISLAND G1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	104.511	GEN62547 3-FT RANDAL'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	104.4524	GEN659110 1-LELAND OLDS UNIT1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	104.3562	GEN600006 1-AS KING'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.13386	104.3078	FT RANDAL - LAKE PLATT 230KV CKT 1'
FDNSLock	17ALL	0	17G	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12766	104.2653	GRPRARI-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'
FDNSLock	17ALL	0	17G	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12766	104.2525	GRPRARI-LNX3345.00 - YANKTON 345KV CKT Z'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11771	104.1425	COLUMEAST - KELLY 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11771	104.1301	COLUMEAST (COL.EAST T3) 230/115/13.8KV TRANSFORMER CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11771	104.1301	COLUMEAST (COL.EAST T3) 230/115/13.8KV TRANSFORMER CKT 1'
FDNS	17ALL	0	17G	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.13532	104.0292	FT RANDAL - SIOUX CITY 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	103.9862	GEN600005 1-MONTICELLO'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.13424	103.9805	FT RANDAL - FT THOMPSON 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.13424	103.9805	FT RANDAL - FT THOMPSON 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.13386	103.847	FT THOMPSON - LAKE PLATT 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.13386	103.847	FT THOMPSON - LAKE PLATT 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11236	103.8005	COLUMEAST - NW68TH & HOLDREGE 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11236	103.8005	COLUMEAST - NW68TH & HOLDREGE 345KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.13425	103.7495	FT RANDAL - SIOUX CITY 230KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12635	103.6029	GRPRARI-LNX3345.00 - YANKTON 345KV CKT Z'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	103.6025	GEN600001 2-SHERBURNE CNTY G2'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	103.6022	GEN661015 1-COYOTE'
FDNS	17ALL	0	16WP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12635	103.5847	GRPRARI-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	103.5457	GEN600000 1-SHERBURNECNTY G1'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12475	103.5231	GAVINS POINT - YANKON JCT 115KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12475	103.5231	GAVINS POINT - YANKON JCT 115KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11928	103.5038	WINNER - WITTEN 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	103.499	GEN620315 1-BIG STONE GEN'
FDNS	17ALL	0	20WP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11847	103.4961	GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	103.494	GEN600045 4-ANSON'
FDNS	17ALL	0	20WP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11847	103.417	GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT Z'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	103.4151	GEN659018 1-G14_003IS_3 0.6900'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	103.4024	GEN652544 5-BIG BEND'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	103.3975	GEN659289 1-DAYCNTYWND W0.6900'
FDNS	17ALL	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12434	103.3726	GAVINS POINT - YANKON JCT 115KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12434	103.3726	GAVINS POINT - YANKON JCT 115KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	103.371	GEN652460 4-GARRISON'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	103.371	GEN652461 5-GARRISON'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	103.3468	GEN652457 1-GARRISON'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	103.3468	GEN652458 2-GARRISON'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	103.3468	GEN652459 3-GARRISON'
FDNS	17ALL	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11889	103.3403	WINNER - WITTEN 115KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	103.3395	GEN652542 1-BIG BEND'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	103.3394	GEN652543 3-BIG BEND'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	103.332	GEN657748 1-YOUNG 2 GENERATOR'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11583	103.3021	COLUMEAST - SHELL CREEK 345KV CKT 1'
FDNSLock	17ALL	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11701	103.2643	COLUMBUS - SCHUYLER 115KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	103.2568	GEN659018 1-G14_003IS_3 0.6900'
FDNS	17ALL	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	103.2502	GEN659289 1-DAYCNTYWND W0.6900'
FDNS	17ALL	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	103.2241	GEN652460 4-GARRISON'
FDNS	17ALL	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	103.224	GEN652461 5-GARRISON'
FDNS	17ALL	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	103.1992	GEN652457 1-GARRISON'
FDNS	17ALL	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	103.1992	GEN652458 2-GARRISON'
FDNS	17ALL	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	103.1991	GEN652459 3-GARRISON'
FDNS	17ALL	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	103.1933	GEN652542 1-BIG BEND'
FDNS	17ALL	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	103.1905	GEN652543 4-BIG BEND'
FDNS	17ALL	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	103.1792	GEN652544 5-BIG BEND'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	103.1469	GEN659354 1-DEERCREEK STG18.000'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	103.1457	GEN659353 1-DEERCREEK CTG18.000'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11736	103.1353	HIGHLND 3 345.00 - OBRIEN 3 345.00 345KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11544	103.1257	COLUMEAST - SHELL CREEK 345KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11953	103.0978	P12:115:UMZW:# 173 #: WI-WE-MS IN SD. WITTEN IS A TAP'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	103.0754	GEN652353 2-GR PRAIRIEG 0.6900'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	103.0743	GEN660016 1-B H WIND 0.7000'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	103.0213	GEN652906 1-G09_006IS_3 0.6900'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	103.0134	GEN672310 1-POPLAR RIVER GENERATOR 1'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	103.0134	GEN672311 2-POPLAR RIVER GENERATOR 2'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	103.0113	GEN615010 1-STANTON4'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	103.0003	GEN672321 1-SHAND GENERATOR 1'
FDNS	17ALL	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	102.9993	GEN659354 1-DEERCREEK STG18.000'
FDNS	17ALL	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	102.9983	GEN659353 1-DEERCREEK CTG18.000'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	102.956	P12:230:UMZB:# 112 #: NU IN SD. NU-RCDC & DRY CREEK XFMR'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	102.9538	RCDC EAST 4230.00 - RED CEDAR DC 230KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	102.9537	GEN672306 6-BOUNDARY DAM GENERATOR 6'

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	102.9364	GEN652353 2-GR PRAIRIE 0.6900'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	102.9324	GEN660016 1-B H WIND 0.7000'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	102.9104	GEN672321 1-SHAND GENERATOR 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11914	102.9062	[P12:115:UMZW# 173 #: WI-WE-MS IN SD. WITTEN IS A TAP]
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11477	102.9049	KELLY - SHELL CREEK 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11477	102.8983	SHELL CREEK (SHELLCREEK1) 345/230/13.8KV TRANSFORMER CKT 1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11477	102.8983	SHELL CREEK (SHELLCREEK1) 345/230/13.8KV TRANSFORMER CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	102.8909	GEN615010 1-STANTON4'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	102.8899	GEN952511 1-G12_0091S_2 6.9000'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11414	102.8871	COLUMWEST - KELLY 230KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	102.8863	GEN652906 1-G09_0061S_3 0.6900'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	102.8777	GEN672310 1-POPLAR RIVER GENERATOR 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	102.8777	GEN672311 2-POPLAR RIVER GENERATOR 2'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	102.8659	GEN672306 6-BOUNDARY DAM GENERATOR 6'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	102.8613	GEN652907 1-G09_0071S_3 0.6900'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	102.8447	BIG STONE 230/24.0KV TRANSFORMER CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	102.8287	GEN652556 2-OAHE'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	102.8286	GEN652557 4-OAHE'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	102.8286	GEN652558 6-OAHE'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	102.8242	[P12:230:UMZB# 112 #: NU IN SD. NU-RCDC & DRY CREEK XFMR]
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	102.8221	[RCDC EAST 4230.00 - RED CEDAR DC 230KV CKT 1']
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	102.8165	GEN600004 2-PRAIRIE ISLAND G2'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	102.8138	GEN600003 1-PRAIRIE ISLAND G1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11676	102.8086	COLUMBUS - KELLY 115KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11676	102.8076	KELLY (KELLY T1) 230/115/13.2KV TRANSFORMER CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11676	102.8075	[P13:115-230:NPPD:COLUMBUS4:T1]
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	102.8002	GEN600002 3-SHERBURNE CNTY G3'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	102.7995	GEN652546 1-FT RANDAL'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.13207	102.7913	FT RANDAL - LAKE PLATT 230KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	102.7297	GEN600004 2-PRAIRIE ISLAND G2'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	102.7278	GEN652907 1-G09_0071S_3 0.6900'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	102.7277	GEN600003 1-PRAIRIE ISLAND G1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	102.7169	GEN659296 2-SDPRAIRWIND1W0.6900'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.13168	102.6885	FT RANDAL - LAKE PLATT 230KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	102.684	GEN652556 2-OAHE'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	102.684	GEN652557 4-OAHE'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	102.684	GEN652558 6-OAHE'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	102.6764	SHERBURNE CO 345/24.0KV TRANSFORMER CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	102.6568	GEN652546 1-FT RANDAL'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	102.6473	GEN657749 1-YOUNG 1 GENERATOR'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11636	102.6467	COLUMBUS - KELLY 115KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11636	102.6466	KELLY (KELLY T1) 230/115/13.2KV TRANSFORMER CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11636	102.6466	[P13:115-230:NPPD:COLUMBUS4:T1]
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	102.6158	GEN600006 1-AS KING'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	102.5706	GEN659296 2-SDPRAIRWIND1W0.6900'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	102.5522	GEN657749 1-YOUNG 1 GENERATOR'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	102.5311	GEN652548 5-FT RANDAL'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	102.5311	GEN652549 7-FT RANDAL'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	102.5299	GEN600006 1-AS KING'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11118	102.5067	COLUMWEST - KELLY 230KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	102.4887	GEN652547 3-FT RANDAL'
FDNS	17ALL	0	20WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.13194	102.486	FT RANDAL - SIOUX CITY 230KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.13244	102.4606	FT RANDAL - FT THOMPSON 230KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.13244	102.4606	FT RANDAL - FT THOMPSON 230KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	102.437	GEN659110 1-LELAND OLDS UNIT1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	102.3874	GEN652548 5-FT RANDAL'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	102.3874	GEN652549 7-FT RANDAL'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.13205	102.3715	FT RANDAL - FT THOMPSON 230KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.13205	102.3715	FT RANDAL - FT THOMPSON 230KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	102.3661	CLAY BOSWELL 230/20.9KV TRANSFORMER CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	102.3451	GEN652547 3-FT RANDAL'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	102.328	GEN659111 2-LELAND OLDS UNIT2'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	102.2984	GEN659110 1-LELAND OLDS UNIT1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.13207	102.2834	FT THOMPSON - LAKE PLATT 230KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.13207	102.2834	FT THOMPSON - LAKE PLATT 230KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.13168	102.2012	FT THOMPSON - LAKE PLATT 230KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.13168	102.2012	FT THOMPSON - LAKE PLATT 230KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11623	102.1985	COLUMEAST - KELLY 230KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11623	102.1972	COLUMEAST (COL.EAST T3) 230/115/13.8KV TRANSFORMER CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11623	102.1972	COLUMEAST (COL.EAST T3) 230/115/13.8KV TRANSFORMER CKT 1'
FDNS	17ALL	0	20WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12439	102.1664	[GRPRAR1-LNX3345.00 - YANKTON 345KV CKT 2']
FDNS	17ALL	0	20WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12439	102.1476	[GRPRAR1-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1']
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	102.0454	GEN600005 1-MONTICELLO'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11583	102.0292	COLUMEAST - KELLY 230KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11583	102.0286	COLUMEAST (COL.EAST T3) 230/115/13.8KV TRANSFORMER CKT 1'

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11583	102.0286	COLUMEAST (COL.EAST T3) 230/115/13.8KV TRANSFORMER CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	101.9945	GEN661015 1-COYOTE'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	101.9745	GEN600005 1-MONTICELLO'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	101.9611	GEN661015 1-COYOTE'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	101.943	GEN600001 2-SHERBURNE CNTY G2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	101.932	GEN659103 1-ANTELOPE VALLEY UNIT1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	101.932	GEN659107 2-ANTELOPE VALLEY UNIT2'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.1112	101.9178	COLUMEAST - NW68TH & HOLDREGE 345KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.1112	101.9178	COLUMEAST - NW68TH & HOLDREGE 345KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	101.8924	GEN600000 1-SHERBURNECNTY G1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	101.8718	GEN600001 2-SHERBURNE CNTY G2'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	101.8279	GEN600000 1-SHERBURNECNTY G1'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	101.7478	GEN615001 1-COAL CREEK'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	101.7416	GEN620315 1-BIG STONE GEN'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	101.6886	GEN615002 2-COAL CREEK'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	101.6433	GEN620315 1-BIG STONE GEN'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11085	101.5305	COLUMEAST - NW68TH & HOLDREGE 345KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11085	101.5305	COLUMEAST - NW68TH & HOLDREGE 345KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	101.4999	GEN657748 1-YOUNG 2 GENERATOR'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11327	101.4791	*KELLY - SHELL CREEK 230KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11327	101.4743	SHELL CREEK (SHELLCREEKT1) 345/230/13.8KV TRANSFORMER CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11327	101.4743	SHELL CREEK (SHELLCREEKT1) 345/230/13.8KV TRANSFORMER CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	101.2471	GEN600002 3-SHERBURNE CNTY G3'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	101.2078	GEN600002 3-SHERBURNE CNTY G3'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	101.1908	GEN657748 1-YOUNG 2 GENERATOR'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	100.9917	BIG STONE 230/24.0KV TRANSFORMER CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	100.9613	SHERBURNE CO 345/24.0KV TRANSFORMER CKT 1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	100.8986	GEN952511 1-G12_0091S_2 0.6900'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11289	100.8817	*KELLY - SHELL CREEK 230KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11289	100.8787	SHELL CREEK (SHELLCREEKT1) 345/230/13.8KV TRANSFORMER CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11289	100.8787	SHELL CREEK (SHELLCREEKT1) 345/230/13.8KV TRANSFORMER CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	100.8222	SHERBURNE CO 345/24.0KV TRANSFORMER CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	100.7594	GEN952511 1-G12_0091S_2 0.6900'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	100.333	GEN659111 2-LELAND OLDS UNIT2'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	100.2065	GEN659111 2-LELAND OLDS UNIT2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	100.1418	GEN562528 1-G14_031_2 0.6900'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	100.1149	GEN615001 1-COAL CREEK'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	100.1	GEN615001 1-COAL CREEK'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	100.0514	GEN615002 2-COAL CREEK'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	100	GEN615002 2-COAL CREEK'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	100	GEN659103 1-ANTELOPE VALLEY UNIT1'
FDNS	17ALL	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	100	GEN659107 2-ANTELOPE VALLEY UNIT2'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.1247	99.8	HOSKINS - SHELL CREEK 345KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	99.8	GEN659103 1-ANTELOPE VALLEY UNIT1'
FDNS	17ALL	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	99.8	GEN659107 2-ANTELOPE VALLEY UNIT2'
FDNS	17ALL	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11911	99.6	GEN563232 1-G15089_3 0.6900'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07592	99.4	BUFFALO - JAMESTOWN 345KV CKT 1'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07697	99.4	RAUN - SUB 3451 FT CAL 345KV CKT 1'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07697	99.4	RAUN - SUB 3451 FT CAL 345KV CKT 1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.13203	99.2	RASMUSN - UTICA JCT 230KV CKT 1'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	99.2	BASE CASE'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	99.2	GEN344225 1-1CAL G1 25.000'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.09218	99.1	P13:230:UMZW:# 253 #: FR IN SD. LOSS OF TRANSFORMER (E'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07577	99.1	P12:230:UMZB:# 116 #: ST IN SD. WSG-ST-VH'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07512	99.1	SIOUXCY-LNX3345.00 - SPLIT ROCK 345KV CKT 1'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07512	99.1	SIOUXCY-LNX3345.00 - SPLIT ROCK 345KV CKT 1'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07628	99.1	GEN635024 4-WALTER SCOTT UNIT 4'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	99	GEN336153 1-WATERFORD UNIT#3'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	99	GEN337911 1-ARKANSAS NUCLEAR ONE UNIT #2'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07512	99	P12:345:UMZW:# 907 #: SC2-SR IN IA. SC2-SR 345 KV LINE'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07512	99	SIOUX CITY - SIOUXCY-LNX3345.00 345KV CKT 2'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.13203	98.9	RASMUSN - SIOUX CITY 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07623	98.9	BROOKING COUNTY - LYON COUNTY 345KV CKT 1'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.078	98.7	CLEARWATER - ONEILL 115KV CKT 1'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.078	98.7	P12:115:NPPD:1164:ONEILL 7:JEFFREY9:BTB'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	98.7	GEN335831 1-RIVERBEND UNIT#1'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	98.7	GEN337911 1-ARKANSAS NUCLEAR ONE UNIT #1'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07622	98.7	PAHOJA - SIOUX FALLS 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07581	98.7	G09_001IST 345.00 - WATERTOWN 345KV CKT 1'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07508	98.7	KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07508	98.7	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT 2'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07628	98.7	GEN635023 3-WALTER SCOTT UNIT 3'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.13105	98.6	RASMUSN - UTICA JCT 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07567	98.6	FT THOMPSON - LETCHER 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	36			

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07646	98.6	'LAKEFIELD 3 - NOBLES 345KV CKT 1'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07645	98.5	'COOPER - MOORE 345KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07701	98.5	'BLOOMFIELD - CREIGHTON 115KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07627	98.5	'NUNDRWD - WAYSIDE 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07568	98.5	'P12:345:UMZW:# 1747 #: WT2 IN SD. WT2-WHT LINE FAULT'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07568	98.5	'WATERTN-LNX3345.00 - WATERTOWN 345KV CKT 2'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07568	98.5	'WATERTN-LNX3345.00 - WHITE 345KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07815	98.5	'RAUN - SIOUX CITY 345KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07815	98.5	'RAUN - SIOUX CITY 345KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07554	98.5	'HANLON - STORLA 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07753	98.4	'FT RANDAL - WHITE SWAN 115KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07701	98.4	'BLOOMFIELD - GAVINS POINT 115KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07639	98.4	'GRIMES - LEHIGH 345KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07603	98.4	'BISON 3 345.00 - BUFFALO 345KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07603	98.4	'CHISAGO COUNTY - FORBES 500KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07592	98.4	'CENTER - JAMESTOWN 345KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07628	98.4	'GEN336821 1-GRAND GULF UNIT'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07589	98.4	'BUFFALO - JAMESTOWN 345KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07753	98.3	'TYNDALL - WHITE SWAN 115KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	98.3	'GEN337652 1-WHITE BLUFF UNIT #1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	98.3	'GEN337653 1-WHITE BLUFF UNIT #2'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07622	98.3	'EAGLE 4 230.00 - PAHOJA 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07616	98.3	'ARROWHEAD - ARROWHEAD 230 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07607	98.3	'HAZLETON - MITCHLC03 345.00 345KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.13105	98.2	'RASMUSN - SIOUX CITY 230KV CKT 1'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0782	98.2	'BONESTEEL - FT RANDAL 115KV CKT 1'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0782	98.2	'BONESTEEL - GREGORY 115KV CKT 1'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0782	98.2	'P12:115:UMZW:# 150 #: GY-B0-FR IN SD. GY-B0-FR BONESTEEL HAS FAULT INTERRUPTING DEVICES (NOT BREAKERS)'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0776	98.2	'ANTELOP-LNX3345.00 - BRDLAND-LNX3345.00 345KV CKT 1'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	98.2	'GEN600045 4-ANSON'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.08601	98.2	'UTICA JCT - VFODNES 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.078	98.2	'CLEARWATER - NELIGH 115KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07753	98.2	'P12:115:UMZW:# 1901 #: TY IN SD. TY-WSW LINE FAULT'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07753	98.2	'P12:115:UMZW:# 537 #: TY IN SD. TY-YJ LINE FAULT'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07753	98.2	'P13:115:UMZW:# 1902 #: TY IN SD. LOSS OF TRANSFORMER (KY1A).'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07685	98.2	'BELDEN - HOSKINS 115KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	98.2	'GEN338143 1-INDEPENDENCE UNIT #1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	98.2	'GEN338146 1-INDEPENDENCE UNIT #2'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	98.2	'GEN501801 1-DOLET HILLS UNIT1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07621	98.2	'AS KING - EAU CLAIRE 345KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07617	98.2	'P12:115:NPPD:1091-VALENTN7:MISSION7:8TB'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07614	98.2	'HANLON - SIOUX FALLS 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07586	98.2	'LETCHER - SIOUX FALLS 230KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.09213	98.2	'P13:230:UMZW:# 253 #: FR IN SD. LOSS OF TRANSFORMER (E)'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07724	98.1	'GAVINS POINT - HARTINGTON 115KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07664	98.1	'NOBLES - SPLIT ROCK 345KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	98.1	'GEN336252 1-NINEMILE POINT UNIT#5'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	98.1	'GEN562528 1-G14_031_2 0.6900'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07628	98.1	'GEN344225 1-1CAL G1 25.000'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0776	98	'BRDLAND-LNX3345.00 - HURON 345KV CKT 2'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0776	98	'BROADLAND - HURON 230KV CKT 1'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0776	98	'HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0776	98	'HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0776	98	'P12:345:UMZB:# 102 #: AVS BD IN ND. AVS BRD LR'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0776	98	'P12:345:UMZB:# 103 #: BD IN SD. LOSS OF LINE'
FDNS	17ALL	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	98	'GEN562528 1-G14_031_2 0.6900'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07696	98	'PLYMOUTH - SIOUX CITY 161KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07696	98	'PLYMOUTH - SIOUX CITY 161KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07666	98	'DENISON - SIOUX CITY 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07666	98	'PETERSBRG.N7115.00 - PETERSBURG 115KV CKT 21'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	98	'GEN336251 1-NINEMILE POINT UNIT#4'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	98	'GEN336831 1-BAXTER WILSON SES'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	98	'GEN337041 1-GERALD ANDRUS'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	98	'GEN501813 1-RODEMACHER UNIT 3'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	98	'GEN563222 1-G15088 3 0.6900'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07622	98	'ARPIN B4 345.00 - EAU CLAIRE 345KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07617	98	'MISSION - ST FRANCIS 115KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07203	98	'COLUMWEST - GRAND ISLAND 230KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07574	98	'P12:230:UMZB:# 116 #: ST IN SD. WSG-ST-VH'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07508	98	'SIOUXCY-LNX3345.00 - SPLIT ROCK 345KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07508	98	'SIOUXCY-LNX3345.00 - SPLIT ROCK 345KV CKT 1'
FDNS	17ALL	0	17G	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11796	97.9	'GEN635024 4-WALTER SCOTT UNIT 4'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07925	97.9	'MT VERN - STORLA 115KV CKT 1'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0776	97.9	'ANTELOP-LNX3345.00 - ANTELOPE VALLEY 345KV CKT 2'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	97.9	'GEN625242 1-BIG BEND'

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	97.9	'GEN681542 6-JP MADGETT'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07578	97.9	'COLUMEAST - SHELL CREEK 345KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07666	97.9	'ALBION - PETERSBURG 115KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07666	97.9	'P12:115:NPPD:11688:ALBION 7:PETERSBRG.N7:BTB'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07617	97.9	'HARMONY - ST FRANCIS 115KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07628	97.9	'GEN336153 1-WATERFORD UNIT#3'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07628	97.9	'GEN337911 1-ARKANSAS NUCLEAR ONE UNIT #2'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07508	97.9	'P12:345:UMZW:# 907 #: SC2-SR IN IA, SC2-SR 345 KV LINE'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07505	97.9	'KEYSTONE - SIDNEY-LNX3345.00 345KV CKT 1'
FDNS	17ALL	0	17G	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12765	97.8	'UTICA JCT - VFODNES 230KV CKT 1'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0782	97.8	'GREGORY - WINNER 115KV CKT 1'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	97.8	'GEN659354 1-DEERCREEK STG18.000'
FDNS	00NR	0	20WP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07617	97.8	'GRPRARI-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'
FDNS	00NR	0	20WP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07617	97.8	'GRPRARI-LNX3345.00 - YANKTON 345KV CKT 2'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07619	97.8	'BROOKING COUNTY - LYON COUNTY 345KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07508	97.8	'SIOUX CITY - SIOUXCY-LNX3345.00 345KV CKT 2'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07505	97.8	'SIDNEY - SIDNEY-LNX3345.00 345KV CKT 2'
FDNSLock	00NR	0	20WP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.14077	97.8	'G15089_T 230.00 - UTICA JCT 230KV CKT 1'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0782	97.7	'P12:115:UMZW:# 172 #: WI IN SD.'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	97.7	'GEN659353 1-DEERCREEK CTG18.000'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	97.7	'GEN659411 1-CAMPBLCNTY W0.6900'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	97.7	'GEN660016 1-B_H WIND 0.7000'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	97.7	'P13:230-345:NPPD:NUCOR-1'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07628	97.7	'GEN335831 1-RIVERBEND UNIT#1'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07578	97.7	'G09_001IST 345.00 - WATERTOWN 345KV CKT 1'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	97.6	'CLAY BOSWELL 230/20.9KV TRANSFORMER CKT 1'
FDNS	17ALL	0	20WP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.1288	97.6	'RASMUSIN - UTICA JCT 230KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11764	97.6	'GEN563232 1-G15089 3 0.6900'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07628	97.6	'GEN337910 1-ARKANSAS NUCLEAR ONE UNIT #1'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07618	97.6	'PAHOJA - SIOUX FALLS 230KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.076	97.6	'CHISAGO COUNTY - FORBES 500KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07563	97.6	'FT THOMPSON - LETCHER 230KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07563	97.6	'FT THOMPSON - LETCHER 230KV CKT 1'
FDNS	17ALL	0	17G	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11796	97.5	'GEN635023 3-WALTER SCOTT UNIT 3'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0782	97.5	'MISSION - WITTEN 115KV CKT 1'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0782	97.5	'P12:115:UMZW:# 173 #: WI-WE-MS IN SD. WITTEN IS A TAP'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0782	97.5	'WINNER - WITTEN 115KV CKT 1'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	97.5	'GEN615010 1-STANTON4'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	97.5	'GEN652546 1-FT RANDAL'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	97.5	'GEN659110 1-LELAND OLDS UNIT1'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07601	97.5	'COLUMBUS - KELLY 115KV CKT 1'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07601	97.5	'KELLY (KELLY T1) 230/115/13.2KV TRANSFORMER CKT 1'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07601	97.5	'P13:115-230:NPPD:COLUMBUS4:1'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07796	97.5	'CLEARWATER - ONEILL 115KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07796	97.5	'P12:115:NPPD:1164:ONEILL 7:JEFFREY9:BTB'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07697	97.5	'BLOOMFIELD - CREIGHTON 115KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.117	97.4	'GEN635024 4-WALTER SCOTT UNIT 4'
FDNS	17ALL	0	17G	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11903	97.4	'ANTELOPE 3345.00 - HOSKINS 345KV CKT 1'
FDNS	17ALL	0	17G	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11796	97.4	'GEN336821 1-GRAND GULF UNIT'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	97.4	'GEN563302 1-G15096 3 0.6900'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	97.4	'GEN652906 1-G09_006I5 3 0.6900'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	97.4	'GEN659141 1-K10215A'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	97.4	'GEN659453 1-G11414GEN W0.6900'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	97.4	'GEN672310 1-POPLAR RIVER GENERATOR 1'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	97.4	'GEN672311 2-POPLAR RIVER GENERATOR 2'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	97.4	'GEN672321 1-SHAND GENERATOR 1'
FDNS	17ALL	0	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	97.4	'GEN563232 1-G15089 3 0.6900'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0775	97.4	'FT RANDAL - WHITE SWAN 115KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07697	97.4	'BLOOMFIELD - GAVINS POINT 115KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07636	97.4	'GRIMES - LEHIGH 345KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07628	97.4	'GEN640009 1-COOPER NUCLEAR STATION'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07625	97.4	'NUNDRWD - WAYSIDE 230KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07605	97.4	'HAZLETON - MITCHLCO3 345.00 345KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.076	97.4	'BISON 3 345.00 - BUFFALO 345KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07588	97.4	'CENTER - JAMESTOWN 345KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07565	97.4	'WATERLN-LNX3345.00 - WHITE 345KV CKT 1'
FDNS	17ALL	0	17G	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11903	97.3	'ANTELOPE 3345.00 (ANTELOPE T3) 345/115/13.8KV TRANSFORMER CKT 1'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	97.3	'GEN652556 2-OAHE'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	97.3	'GEN652557 4-OAHE'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	97.3	'GEN652558 6-OAHE'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	97.3	'GEN657749 1-YOUNG 1 GENERATOR'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	97.3	'GEN672306 6-BOUNDARY DAM GENERATOR 6'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.08598	97.3	'UTICA JCT - VFODNES 230KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0775	97.3	'TYNDALL - WHITE SWAN 115KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07628	97.3	'GEN337652 1-WHITE BLUFF UNIT #1'

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07628	97.3	GEN338143 1-INDEPENDENCE UNIT #1'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07628	97.3	GEN338146 1-INDEPENDENCE UNIT #2'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07617	97.3	AS KING - EAU CLAIRE 345KV CKT 1'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07613	97.3	ARROWHEAD - ARROWHEAD 230 230KV CKT 1'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07565	97.3	P12:345:UMZW:# 1747 #: WT2 IN SD. WT2-WHT LINE FAULT'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07565	97.3	WATERTN-LNX3345.00 - WATERTOWN 345KV CKT 2'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12666	97.2	UTICA JCT - VFODNES 230KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.1236	97.2	HOSKINS - SHELL CREEK 345KV CKT 1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12118	97.2	RAUN - SUB 3451 FT CAL 345KV CKT 1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12118	97.2	RAUN - SUB 3451 FT CAL 345KV CKT 1'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07698	97.2	DIXONCO 230.00 - TWIN CHURCH 230KV CKT 1'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	97.2	GEN652548 5-FT RANDAL'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	97.2	GEN652549 7-FT RANDAL'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	97.2	GEN652907 1-G09_007IS 3 0.6900'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	97.2	GEN659296 2-SDPRAIRWIND1W0.6900'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	97.2	P12:230:UMZB:# 112 #: NU IN SD. NU-RCDC & DRY CREEK XFMR'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	97.2	RCDC EAST 4230.00 - RED CEDAR DC 230KV CKT 1'
FDNS	17ALL	0	20WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.1288	97.2	RASMUSN - SIOUX CITY 230KV CKT 1'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0775	97.2	P12:115:UMZW:# 1901 #: TY IN SD. TY-WSW LINE FAULT'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0775	97.2	P12:115:UMZW:# 537 #: TY IN SD. TY-YJ LINE FAULT'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0775	97.2	P13:115:UMZW:# 1902 #: TY IN SD. LOSS OF TRANSFORMER (KY1A).'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07681	97.2	BELDEN - HOSKINS 115KV CKT 1'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07628	97.2	GEN337653 1-WHITE BLUFF UNIT #2'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07618	97.2	EAGLE 4 230.00 - PAHOJA 230KV CKT 1'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07613	97.2	P12:115:NPPD:1091:VALENTN7:MISSION7:BTB'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07582	97.2	LETCHER - SIOUX FALLS 230KV CKT 1'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	97.1	GEN652547 3-FT RANDAL'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	97.1	GEN659407 1-ANTEPLHILLSW0.6900'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0772	97.1	GAVINS POINT - HARTINGTON 115KV CKT 1'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07628	97.1	GEN336252 1-NINEMILE POINT UNIT#5'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07628	97.1	GEN501801 1-DOLET HILLS UNIT1'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0761	97.1	HANLON - SIOUX FALLS 230KV CKT 1'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07602	97.1	GERALD GENTLEMAN STATION - SWEETWATER 345KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.117	97	GEN635023 3-WALTER SCOTT UNIT 3'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11796	97	GEN337911 1-ARKANSAS NUCLEAR ONE UNIT #2'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0785	97	FTTHOM1-LNX3345.00 - LELAND2-LNX3345.00 345KV CKT 1'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	97	GEN600003 1-PRAIRIE ISLAND G1'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	97	GEN600004 2-PRAIRIE ISLAND G2'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07663	97	P12:115:NPPD:11688:ALBION 7:PETERSBRG.N7:BTB'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07663	97	PETERSBRG.N7115.00 - PETERSBURG 115KV CKT 21'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07662	97	DENISON - SIOUX CITY 230KV CKT 1'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07628	97	GEN336251 1-NINEMILE POINT UNIT#4'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07628	97	GEN336831 1-BAXTER WILSON SES'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07618	97	ARPIN B4 345.00 - EAU CLAIRE 345KV CKT 1'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07613	97	HARMONY - ST FRANCIS 115KV CKT 1'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07613	97	MISSION - ST FRANCIS 115KV CKT 1'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07609	97	KOSSUTH 3 345.00 - WEBSTER 345KV CKT 1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11806	96.9	HANLON - STORLA 230KV CKT 1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11796	96.9	GEN336153 1-WATERFORD UNIT#3'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0785	96.9	FT THOMPSON - FTTHOM1-LNX3345.00 345KV CKT 2'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0785	96.9	P12:345:UMZB:# 108 #: LOS FT IN ND. LOS FT'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	96.9	GEN600006 1-AS KING'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	96.9	GEN652173 1-G09_001IS 2 0.6900'
FDNS	17ALL	0	20WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11501	96.9	GEN635024 4-WALTER SCOTT UNIT 4'
FDNS	00NR	0	20WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07594	96.9	GR ISLD-LNX3345.00 - GRAND ISLAND 345KV CKT 2'
FDNS	00NR	0	20WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07594	96.9	GR ISLD-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07796	96.9	CLEARWATER - NELIGH 115KV CKT 1'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07692	96.9	PLYMOUTH - SIOUX CITY 161KV CKT 1'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07692	96.9	PLYMOUTH - SIOUX CITY 161KV CKT 1'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07663	96.9	ALBION - PETERSBURG 115KV CKT 1'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07628	96.9	GEN337041 1-GERALD ANDRUS'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07628	96.9	GEN501813 1-RODEMACHER UNIT 3'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07628	96.9	GEN563222 1-G15088 3 0.6900'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07613	96.9	HARMONY - VALENTINE 115KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.117	96.8	GEN336821 1-GRAND GULF UNIT'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0785	96.8	LELAND OLDS - LELAND2-LNX3345.00 345KV CKT 2'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07575	96.8	COLUMEAST - KELLY 230KV CKT 1'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07575	96.8	COLUMEAST (COL.EAST T3) 230/115/13.8KV TRANSFORMER CKT 1'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07575	96.8	COLUMEAST (COL.EAST T3) 230/115/13.8KV TRANSFORMER CKT 1'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07546	96.8	GERALD GENTLEMAN STATION - KEYSTONE 345KV CKT 1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12466	96.7	SIOUX FALLS - VFODNES 230KV CKT 1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.1182	96.7	KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.1182	96.7	SIDNEY - SIDNEY1-LNX3345.00 345KV CKT 2'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11796	96.7	GEN335831 1-RIVERBEND UNIT#1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11796	96.7	GEN337910 1-ARKANSAS NUCLEAR ONE UNIT #1'

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	96.7	'GEN652353 2-GR PRAIRIE 0.6900'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	96.7	'BASE CASE'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07628	96.7	'P13:230-345-NPPD-NUCOR-1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11807	96.6	'ANTELOPE 3345.00 - HOSKINS 345KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11807	96.6	'ANTELOPE 3345.00 (ANTELOPE T1) 345/115/13.8KV TRANSFORMER CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.117	96.6	'GEN344225 1-CAL G1 25.000'
FDNS	17ALL	0	20WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12106	96.6	'HOSKINS - SHELL CREEK 345KV CKT 1'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07201	96.6	'COLUMWEST - GRAND ISLAND 230KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11711	96.5	'ROSEAU - ROSEAUM 2 500.00 500KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11706	96.5	'HANLON - STORLA 230KV CKT 1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12363	96.5	'FT RANDAL - SPENCER 115KV CKT 1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12363	96.5	'P12:115-NPPD:WAPAG-FTRANDL7:ONEILL 7:BTB'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12363	96.5	'P12:115:UMZB:# 115 #: SE IN NE. FR-SE-ON'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11821	96.5	'P12:230:UMZB:# 116 #: ST IN SD. WSG-ST-VH'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	96.5	'GEN600005 1-MONTICELLO'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12265	96.4	'FT RANDAL - SPENCER 115KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12265	96.4	'P12:115-NPPD:WAPAG-FTRANDL7:ONEILL 7:BTB'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12265	96.4	'P12:115:UMZB:# 115 #: SE IN NE. FR-SE-ON'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11711	96.4	'FORBES - ROSEAUM 500KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11711	96.4	'ROSEAUM - ROSEAUM 2 500.00 500KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.117	96.4	'GEN336153 1-WATERFORD UNIT#3'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.117	96.4	'GEN337911 1-ARKANSAS NUCLEAR ONE UNIT #2'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11106	96.4	'COLUMWEST - GRAND ISLAND 230KV CKT 1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11796	96.4	'GEN337653 1-WHITE BLUFF UNIT #2'
FDNS	17ALL	0	20WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11501	96.4	'GEN635023 3-WALTER SCOTT UNIT 3'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12363	96.3	'ONEILL - SPENCER 115KV CKT 1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11896	96.3	'GRIMES - LEHIGH 345KV CKT 1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11796	96.3	'GEN337652 1-WHITE BLUFF UNIT #1'
FDNS	17ALL	0	20WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12469	96.3	'UTICA JCT - VFODNES 230KV CKT 1'
FDNS	00NR	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.08977	96.2	'FT RANDAL - SIOUX CITY 230KV CKT 1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.1217	96.2	'CLEARWATER - ONEILL 115KV CKT 1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.1217	96.2	'P12:115-NPPD:1164:ONEILL 7:JEFFREY9:BTB'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11928	96.2	'BELDEN - HOSKINS 115KV CKT 1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11869	96.2	'ALBION - PETERSBURG 115KV CKT 1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11869	96.2	'P12:115-NPPD:11688:ALBION 7:PETERSBRG.N7:BTB'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11869	96.2	'PETERSBRG.N7115.00 - PETERSBURG 115KV CKT 21'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11864	96.2	'HAZLETON - MITCHLCO3 345.00 345KV CKT 1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11796	96.2	'GEN338143 1-INDEPENDENCE UNIT #1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11796	96.2	'GEN338146 1-INDEPENDENCE UNIT #2'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11796	96.2	'GEN501801 1-DOLET HILLS UNIT1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11796	96.2	'GEN640028 1-COLUMCOGENERATION'
FDNS	17NR	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07933	96.2	'HOSKINS - SHELL CREEK 345KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12367	96.1	'SIOUX FALLS - VFODNES 230KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12265	96.1	'ONEILL - SPENCER 115KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.117	96.1	'GEN335831 1-RIVERBEND UNIT#1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.117	96.1	'GEN337910 1-ARKANSAS NUCLEAR ONE UNIT #1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12127	96.1	'CLEARWATER - NELIGH 115KV CKT 1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11826	96.1	'AS KING - EAU CLAIRE 345KV CKT 1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11815	96.1	'GERALD GENTLEMAN STATION - KEYSTONE 345KV CKT 1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11796	96.1	'GEN640009 1-COOPER NUCLEAR STATION'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	96.1	'GEN61015 1-COYOTE'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07388	96.1	'KELLY - SHELL CREEK 230KV CKT 1'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07388	96.1	'SHELL CREEK (SHELLCREEKT1) 345/230/13.8KV TRANSFORMER CKT 1'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07388	96.1	'SHELL CREEK (SHELLCREEKT1) 345/230/13.8KV TRANSFORMER CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11726	96	'KEYSTONE - SIDNEY1-LNX3345.00 345KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11726	96	'SIDNEY - SIDNEY1-LNX3345.00 345KV CKT 2'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11722	96	'P12:230:UMZB:# 116 #: ST IN SD. WSG-ST-VH'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12031	96	'GAVINS POINT - HARTINGTON 115KV CKT 1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11971	96	'BLOOMFIELD - CREIGHTON 115KV CKT 1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11953	96	'FT RANDAL - WHITE SWAN 115KV CKT 1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11953	96	'TYNDALL - WHITE SWAN 115KV CKT 1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11881	96	'DENISON - SIOUX CITY 230KV CKT 1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.1184	96	'HANLON - SIOUX FALLS 230KV CKT 1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11801	96	'CENTER - JAMESTOWN 345KV CKT 1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11796	96	'GEN344894 1-1LAB G1 20.000'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11796	96	'GEN344896 3-1LAB G3 20.000'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11796	96	'GEN344897 4-1LAB G4 20.000'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11794	96	'FT THOMPSON - LETCHER 230KV CKT 1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11794	96	'FT THOMPSON - LETCHER 230KV CKT 1'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	96	'GEN600000 1-SHERBURNECNYT G1'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07626	96	'COOPER - MOORE 345KV CKT 1'
FDNS	17ALL	0	20WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11501	96	'GEN336821 1-GRAND GULF UNIT'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.13246	95.9	'FT RANDAL - LAKE PLATT 230KV CKT 1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12022	95.9	'ARMOUR - FT RANDAL 115KV CKT 1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12022	95.9	'P12:115:UMZW:# 128 #: AR IN SD. MV-AR-FR 115'

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11953	95.9	'P12:115:UMZW:# 1901 #: TY IN SD. TY-WSW LINE FAULT'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11953	95.9	'P12:115:UMZW:# 537 #: TY IN SD. TY-YJ LINE FAULT'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11953	95.9	'P13:115:UMZW:# 1902 #: TY IN SD. LOSS OF TRANSFORMER (KY1A)'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11912	95.9	'LAKEFIELD 3 - NOBLES 345KV CKT 1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11821	95.9	'P12:115:NPPD:1091:VALENTIN7:MISSION7:BTB'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11818	95.9	'SIDNEY - STEGALL 345KV CKT 1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11807	95.9	'LETCHER - SIOUX FALLS 230KV CKT 1'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11796	95.9	'GEN35206 1-NELSON UNIT 6'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11796	95.9	'GEN344895 2-1LAB G2 20.000'
FDNS	17ALL	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11796	95.9	'GEN345670 1-RUSH G1 18.000'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	95.9	'GEN657748 1-YOUNG 2 GENERATOR'
FDNS	17ALL	0	20WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11501	95.9	'GEN344225 1-CAL G1 25.000'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12011	95.8	'RAUN - SUB 3451 FT CAL 345KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12011	95.8	'RAUN - SUB 3451 FT CAL 345KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11855	95.8	'FT RANDAL - WHITE SWAN 115KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11773	95.8	'AS KING - EAU CLAIRE 345KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.117	95.8	'GEN337653 1-WHITE BLUFF UNIT #2'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	95.8	'GEN659111 2-LELAND OLDS UNIT2'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07741	95.8	'ANTELOP-LNX3345.00 - BRDLAND-LNX3345.00 345KV CKT 1'
FDNS	17ALL	0	20WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12082	95.8	'P12:115:NPPD:WAPAG:FTRANDL7:ONEILL 7:BTB'
FDNS	17ALL	0	20WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12082	95.8	'P12:115:UMZB:# 115 #: SE IN NE. FR-SE-ON'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11929	95.7	'ARMOUR - FT RANDAL 115KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11929	95.7	'P12:115:UMZW:# 128 #: AR IN SD. MV-AR-FR 115'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11855	95.7	'P12:115:UMZW:# 1901 #: TY IN SD. TY-WSW LINE FAULT'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11855	95.7	'P12:115:UMZW:# 537 #: TY IN SD. TY-YJ LINE FAULT'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11855	95.7	'P13:115:UMZW:# 1902 #: TY IN SD. LOSS OF TRANSFORMER (KY1A)'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11855	95.7	'TYNDALL - WHITE SWAN 115KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11773	95.7	'PETERSBURG.N7115.00 - PETERSBURG 115KV CKT 21'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11767	95.7	'HAZLETON - MITCHCO3 345.00 345KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.117	95.7	'GEN337652 1-WHITE BLUFF UNIT #1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.117	95.7	'GEN501801 1-DOLET HILLS UNIT1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11695	95.7	'FT THOMPSON - LETCHER 230KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11695	95.7	'FT THOMPSON - LETCHER 230KV CKT 1'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	95.7	'GEN562872 1-G15046 3 0.6900'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07382	95.7	'COLUMEAST - NW68TH & HOLDREGE 345KV CKT 1'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07382	95.7	'COLUMEAST - NW68TH & HOLDREGE 345KV CKT 1'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07741	95.7	'BRDLAND-LNX3345.00 - HURON 345KV CKT 2'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07741	95.7	'BROADLAND - HURON 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07741	95.7	'HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07741	95.7	'HURON (BD KU2A) 345/230/13.8KV TRANSFORMER CKT 1'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07741	95.7	'P12:345:UMZB:# 102 #: AVS BD IN ND. AVS BRD LK'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07741	95.7	'P12:345:UMZB:# 103 #: BD IN SD. LOSS OF LINE'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07621	95.7	'COLUMBUS - SCHUYLER 115KV CKT 1'
FDNS	17ALL	0	20WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12082	95.7	'FT RANDAL - SPENCER 115KV CKT 1'
FDNS	17ALL	0	20WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11511	95.7	'FORBES - ROSEAU 500KV CKT 1'
FDNS	17ALL	0	20WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11511	95.7	'RIEL - ROSEAU 500KV CKT 1'
FDNS	17ALL	0	20WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11511	95.7	'ROSEAU - ROSEAU 2 500.00 500KV CKT 1'
FDNS	17ALL	0	20WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11511	95.7	'ROSEAU - ROSEAU 2 500.00 500KV CKT 1'
FDNS	00NR	0	25SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07628	95.7	'BASE CASE'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11833	95.6	'BELDEN - HOSKINS 115KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11773	95.6	'ALBION - PETERSBURG 115KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11773	95.6	'P12:115:NPPD:1168B:ALBION 7:PETERSBURG.N7:BTB'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11705	95.6	'BUFFALO - JAMESTOWN 345KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.117	95.6	'GEN338143 1-INDEPENDENCE UNIT #1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.117	95.6	'GEN338146 1-INDEPENDENCE UNIT #2'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.117	95.6	'GEN640009 1-COOPER NUCLEAR STATION'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.117	95.6	'GEN640028 1-COLUMCOGENERATION'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07741	95.6	'ANTELOP-LNX3345.00 - ANTELOPE VALLEY 345KV CKT 2'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	95.6	'GEN652542 1-BIG BEND'
FDNS	17ALL	0	20WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11597	95.6	'ANTELOPE 3345.00 - HOSKINS 345KV CKT 1'
FDNS	17ALL	0	20WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11597	95.6	'ANTELOPE 3345.00 (ANTELOPE T1) 345/115/13.8KV TRANSFORMER CKT 1'
FDNS	17ALL	0	20WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11506	95.6	'HANLON - STORLA 230KV CKT 1'
FDNS	17ALL	0	20WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11501	95.6	'GEN336153 1-WATERFORD UNIT#3'
FDNS	17ALL	0	20WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11501	95.6	'GEN337911 1-ARKANSAS NUCLEAR ONE UNIT #2'
FDNS	17ALL	0	20WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.1093	95.6	'COLUMWEST - GRAND ISLAND 230KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12071	95.5	'CLEARWATER - ONEILL 115KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12071	95.5	'P12:115:NPPD:1164:ONEILL 7:JEFFREY9:BTB'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11803	95.5	'LAKEFIELD 3 - NOBLES 345KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11756	95.5	'FT THOMPSON - HURON 230KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11756	95.5	'FT THOMPSON - HURON 230KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11756	95.5	'FT THOMPSON - HURON 230KV CKT 2'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11756	95.5	'FT THOMPSON - HURON 230KV CKT 2'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11741	95.5	'HANLON - SIOUX FALLS 230KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11725	95.5	'ARROWHEAD - ARROWHEAD 230 230KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.117	95.5	'GEN501813 1-ROUEMACHER UNIT 3'

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.117	95.5	GEN645012 2-NEBRASKA CITY 2'
FDNS	17NR	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.08897	95.5	RASMUSN - UTICA JCT 230KV CKT 1'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	95.5	GEN600001 2-SHERBURNE CNTY G2'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	95.5	GEN659103 1-ANTELOPE VALLEY UNIT1'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	95.5	GEN659107 2-ANTELOPE VALLEY UNIT2'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07825	95.5	GREGORY - WINNER 115KV CKT 1'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07825	95.5	P12:115:UMZW:# 172 #: WI IN SD.'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	95.5	GEN 11123 1-G736-GEN1 0.6900'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	95.5	GEN 11133 1-J442-GEN1 0.6900'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	95.5	GEN659354 1-DEERCREK STG18.000'
FDNS	17ALL	0	20WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12082	95.5	ONELL - SPENCER 115KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12071	95.4	CLEARWATER - NELIGH 115KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11936	95.4	GAVINS POINT - HARTINGTON 115KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11875	95.4	BLOOMFIELD - CREIGHTON 115KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11795	95.4	GRIMES - LEHIGH 345KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11785	95.4	DENISON - SIOUX CITY 230KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11777	95.4	PAHOJA - SIOUX FALLS 230KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11745	95.4	CARPENTER - HURON 230KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11724	95.4	P12:115:NPPD:1091-VALENT7-MISSION7:8TB'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.1172	95.4	GERALD GENTLEMAN STATION - KEYSTONE 345KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11708	95.4	LETCHER - SIOUX FALLS 230KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.117	95.4	GEN335206 1-NELSON UNIT 6'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.117	95.4	GEN344894 1-LAB G1 20.000'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.117	95.4	GEN344895 2-LAB G2 20.000'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.117	95.4	GEN344896 3-LAB G3 20.000'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.117	95.4	GEN344897 4-LAB G4 20.000'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.117	95.4	GEN645011 1-NEBRASKA CITY 1'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	95.4	GEN620315 1-BIG STONE GEN'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07889	95.4	MT VERN - STORLA 115KV CKT 1'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	95.4	GEN659411 1-CAMPBLCNTY W0.6900'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07563	95.4	COLUMEAST - SHELL CREEK 345KV CKT 1'
FDNS	17ALL	0	20WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11501	95.4	GEN335831 1-RIVERBEND UNIT#1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11705	95.3	CENTER - JAMESTOWN 345KV CKT 1'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.117	95.3	GEN345670 1-IRUSH G1 18.000'
FDNS	17ALL	0	16WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.117	95.3	GEN345671 2-IRUSH G2 18.000'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	95.3	GEN645063 W-PR BRZ1W 0.6900'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	95.3	GEN645064 W-PR BRZ2W 0.6900'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	95.3	GEN615010 1-STANTON4'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	95.3	GEN652559 1-OAHE'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	95.3	GEN652906 1-G09_006IS_3 0.6900'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	95.3	GEN659353 1-DEERCREK CTG18.000'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	95.3	GEN660016 1-B H WIND 0.7000'
FDNS	17ALL	0	20WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11501	95.3	GEN337910 1-ARKANSAS NUCLEAR ONE UNIT #1'
FDNS	17NR	0	17G	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.08897	95.2	RASMUSN - SIOUX CITY 230KV CKT 1'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.0765	95.2	GEN600002 3-SHERBURNE CNTY G3'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07825	95.2	WINNER - WITTEN 115KV CKT 1'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	95.2	GEN563302 1-G15096_3 0.6900'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	95.2	GEN659110 1-LELAND OLDS UNIT1'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	95.2	GEN659141 1-K10215A'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	95.2	GEN659453 1-G11414GEN W0.6900'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	95.2	GEN672306 6-BOUNDARY DAM GENERATOR 6'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	95.2	GEN672310 1-POPLAR RIVER GENERATOR 1'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	95.2	GEN672311 2-POPLAR RIVER GENERATOR 2'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	95.2	GEN672321 1-SHAND GENERATOR 1'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	95.1	GEN652353 2-GR PRAIRIEG 0.6900'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	95.1	GEN652546 1-FT RANDAL'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	95.1	GEN652556 2-OAHE'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	95.1	GEN652557 4-OAHE'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	95.1	GEN652558 6-OAHE'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	95.1	GEN652907 1-G09_007IS_3 0.6900'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	95.1	P12:230:UMZB:# 112 #: NU IN SD. NU-RCDC & DRY CREEK XFMR'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	95.1	RCDC EAST 4230.00 - RED CEDAR DC 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07579	95.1	COLUMBUS - KELLY 115KV CKT 1'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07579	95.1	KELLY (KELLY T1) 230/115/13.2KV TRANSFORMER CKT 1'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07579	95.1	P13:115-230:NPPD:COLUMBUS4:T1'
FDNS	17ALL	0	20WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11521	95.1	P12:230:UMZB:# 116 #: ST IN SD. WSG-ST-VH'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07828	95	FTTHOMI-LNX3345.00 - LELAND2-LNX3345.00 345KV CKT 1'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	95	GEN600003 1-PRAIRIE ISLAND G1'
FDNS	00NR	0	20SP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.07631	95	GEN600004 2-PRAIRIE ISLAND G2'
FDNS	17ALL	0	20WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12169	95	SIOUX FALLS - VFDONES 230KV CKT 1'
FDNS	17ALL	0	20WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11784	95	RAUN - SUB 3451 FT CAL 345KV CKT 1'
FDNS	17ALL	0	20WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11784	95	RAUN - SUB 3451 FT CAL 345KV CKT 1'
FDNS	17ALL	0	20WP	G15_089	"TO->FROM"	*KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11501	95	GEN337653 1-WHITE BLUFF UNIT #2'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*NAPA JCT7 115.00 - UTICA 115KV CKT 1'	120	120	0.06245	95.8	TYNDALL - YANKON JCT 115KV CKT 1'
FDNS	00NR	0	17SP	G15_089	"TO->FROM"	*NAPA JCT7 115.00 - UTICA 115KV CKT 1'	120	120	0.06245	95.6	P12:115:UMZW:# 1901 #: TY IN SD. TY-WSW LINE FAULT'

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'NAPA JCT7 115.00 - UTICA 115KV CKT 1'	120	120	0.06245	95.6	'P12:115:UMZW:# 537 #: TY IN SD. TY-YJ LINE FAULT'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'NAPA JCT7 115.00 - UTICA 115KV CKT 1'	120	120	0.06245	95.6	'P13:115:UMZW:# 1902 #: TY IN SD. LOSS OF TRANSFORMER (KY1A).'
FDNS	00NR	0	17SP	G15_089	'FROM->TO'	'NAPA JCT7 115.00 - YANKON JCT 115KV CKT 1'	120	120	0.06245	95.5	'TYNDALL - YANKON JCT 115KV CKT 1'
FDNS	00NR	0	17SP	G15_089	'FROM->TO'	'NAPA JCT7 115.00 - YANKON JCT 115KV CKT 1'	120	120	0.06245	95.3	'P12:115:UMZW:# 1901 #: TY IN SD. TY-WSW LINE FAULT'
FDNS	00NR	0	17SP	G15_089	'FROM->TO'	'NAPA JCT7 115.00 - YANKON JCT 115KV CKT 1'	120	120	0.06245	95.3	'P12:115:UMZW:# 537 #: TY IN SD. TY-YJ LINE FAULT'
FDNS	00NR	0	17SP	G15_089	'FROM->TO'	'NAPA JCT7 115.00 - YANKON JCT 115KV CKT 1'	120	120	0.06245	95.3	'P13:115:UMZW:# 1902 #: TY IN SD. LOSS OF TRANSFORMER (KY1A).'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.04873	108.8798	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.04047	106.1971	'MISSION - ST FRANCIS 115KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.04858	105.4534	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.04739	104.6416	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.04047	104.6044	'HARMONY - ST FRANCIS 115KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.04047	102.9358	'P12:115:NPPD:1091:VALENTN7:MISSION7:8TB'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.04047	102.3893	'HARMONY - VALENTINE 115KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.04384	101.332	'GRPRARI-LNX3345.00 - YANKTON 345KV CKT 2'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.04384	101.2884	'GRPRARI-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.04132	101.2573	'MISSION - ST FRANCIS 115KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.04132	100.0633	'HARMONY - ST FRANCIS 115KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.02945	99.1	'MT VERN - STORLA 115KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.06307	99	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.04132	98.9	'P12:115:NPPD:1091:VALENTN7:MISSION7:8TB'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.02945	98.8	'GREGORY - WINNER 115KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.02945	98.7	'P12:115:UMZW:# 172 #: WI IN SD.'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.04132	98.5	'HARMONY - VALENTINE 115KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.02945	97.7	'WINNER - WITTEN 115KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.03273	97.6	'FT RANDAL - LAKE PLATT 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.04047	97.3	'AINSWORTH - VALENTINE 115KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.02948	97.3	'MT VERN - STORLA 115KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.04118	97.2	'MISSION - ST FRANCIS 115KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.03289	97.2	'FT RANDAL - FT THOMPSON 230KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.03289	97.2	'FT RANDAL - FT THOMPSON 230KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.04369	97.1	'GRPRARI-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.04369	97.1	'GRPRARI-LNX3345.00 - YANKTON 345KV CKT 2'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.03273	97	'FT THOMPSON - LAKE PLATT 230KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.03273	97	'FT THOMPSON - LAKE PLATT 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.02948	96.8	'GREGORY - WINNER 115KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.03279	96.8	'AINSWORTH - BASSETT 7115.00 115KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.02948	96.7	'P12:115:UMZW:# 172 #: WI IN SD.'
FDNS	17ALL	0	20SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.04118	96.1	'HARMONY - ST FRANCIS 115KV CKT 1'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.03108	95.8	'FT RANDAL - LAKE PLATT 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.02948	95.8	'WINNER - WITTEN 115KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.06294	95.6	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.03275	95.6	'FT RANDAL - LAKE PLATT 230KV CKT 1'
FDNS	17ALL	0	17SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.06127	95.5	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'
FDNS	00NR	0	25SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.02972	95.5	'P12:115:UMZW:# 173 #: WI-WE-MS IN SD. WITTEN IS A TAP'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.03123	95.3	'FT RANDAL - FT THOMPSON 230KV CKT 1'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.03123	95.3	'FT RANDAL - FT THOMPSON 230KV CKT 1'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.03108	95.3	'FT THOMPSON - LAKE PLATT 230KV CKT 1'
FDNS	00NR	0	17SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.03108	95.3	'FT THOMPSON - LAKE PLATT 230KV CKT 1'
FDNSLock	0	0	17SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.03417	95.3	'MAXWELL - STAPLETON 115KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.04604	95.2	'FT RANDAL - SIOUX CITY 230KV CKT 1'
FDNS	0	0	25SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.03455	95.2	'AINSWORTH - AINSWORTH 115KV CKT 1'
FDNS	17ALL	0	25SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.03279	95.2	'BASSETT 7115.00 - STUART 115KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.03291	95.1	'FT RANDAL - FT THOMPSON 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.03291	95.1	'FT RANDAL - FT THOMPSON 230KV CKT 1'
FDNS	17ALL	0	20SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.04118	95	'P12:115:NPPD:1091:VALENTN7:MISSION7:8TB'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.03275	95	'FT THOMPSON - LAKE PLATT 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.03275	95	'FT THOMPSON - LAKE PLATT 230KV CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'SIOUX CITY (SC KV1A) 230/161/13.8KV TRANSFORMER CKT 1'	250	313	0.04491	95.2	'SIOUX CITY (SC KV5A) 230/161/13.8KV TRANSFORMER CKT 1'
FDNS	00NR	0	20SP	G15_089	'FROM->TO'	'SIOUX CITY (SC KV5A) 230/161/13.8KV TRANSFORMER CKT 1'	250	313	0.04499	95.4	'SIOUX CITY (SC KV1A) 230/161/13.8KV TRANSFORMER CKT 1'
FDNS	17ALL	2	17SP	G15_089	'TO->FROM'	'ALBION - PETERSBURG 115KV CKT 1'	137	137	0.04152	154.5088	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL	2	25SP	G15_089	'TO->FROM'	'ALBION - PETERSBURG 115KV CKT 1'	137	137	0.04263	149.3666	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL	2	20SP	G15_089	'TO->FROM'	'ALBION - PETERSBURG 115KV CKT 1'	137	137	0.04246	148.483	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL	2	16WP	G15_089	'TO->FROM'	'ALBION - PETERSBURG 115KV CKT 1'	137	137	0.04068	126.7672	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL	2	20WP	G15_089	'TO->FROM'	'ALBION - PETERSBURG 115KV CKT 1'	137	137	0.04157	120.2091	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL	2	17G	G15_089	'TO->FROM'	'ALBION - PETERSBURG 115KV CKT 1'	137	137	0.04106	119.6641	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL	2	20L	G15_089	'TO->FROM'	'ALBION - PETERSBURG 115KV CKT 1'	137	137	0.03936	104.3002	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL	2	17G	G15_089	'FROM->TO'	'COLUMEAST (COL.EAST T3) 230/115/13.8KV TRANSFORMER CKT 1'	187	187	0.04026	98.3	'COLUMEAST - SHELL CREEK 345KV CKT 1'
FDNS	17ALL	2	17SP	G15_089	'FROM->TO'	'COLUMEAST (COL.EAST T3) 230/115/13.8KV TRANSFORMER CKT 1'	187	187	0.04039	97.8	'COLUMEAST - SHELL CREEK 345KV CKT 1'
FDNS	17ALL	2	20SP	G15_089	'FROM->TO'	'COLUMEAST (COL.EAST T3) 230/115/13.8KV TRANSFORMER CKT 1'	187	187	0.03977	97.4	'COLUMEAST - SHELL CREEK 345KV CKT 1'
FDNS	17ALL	2	17G	G15_089	'FROM->TO'	'COLUMEAST (COL.EAST T3) 230/115/13.8KV TRANSFORMER CKT 1'	187	187	0.04026	97.3	'COLUMEAST - SHELL CREEK 345KV CKT 1'
FDNS	17ALL	2	17SP	G15_089	'FROM->TO'	'COLUMEAST (COL.EAST T3) 230/115/13.8KV TRANSFORMER CKT 1'	187	187	0.04039	97.3	'COLUMEAST - SHELL CREEK 345KV CKT 1'
FDNS	17ALL	2	20SP	G15_089	'FROM->TO'	'COLUMEAST (COL.EAST T3) 230/115/13.8KV TRANSFORMER CKT 1'	187	187	0.03977	97	'COLUMEAST - SHELL CREEK 345KV CKT 1'
FDNS	17ALL	2	20WP	G15_089	'FROM->TO'	'COLUMEAST (COL.EAST T3) 230/115/13.8KV TRANSFORMER CKT 1'	187	187	0.03882	96.7	'COLUMEAST - SHELL CREEK 345KV CKT 1'
FDNS	17ALL	2	16WP	G15_089	'FROM->TO'	'COLUMEAST (COL.EAST T3) 230/115/13.8KV TRANSFORMER CKT 1'	187	187	0.03956	96.1	'COLUMEAST - SHELL CREEK 345KV CKT 1'
FDNS	17ALL	2	20WP	G15_089	'FROM->TO'	'COLUMEAST (COL.EAST T3) 230/115/13.8KV TRANSFORMER CKT 1'	187	187	0.03882	95.9	'COLUMEAST - SHELL CREEK 345KV CKT 1'

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	17ALL	2	16WP	G15_089	'FROM->TO'	'COLUMEAST (COL.EAST T3) 230/115/13.8KV TRANSFORMER CKT 1'	187	187	0.03956	95.4	'COLUMEAST - SHELL CREEK 345KV CKT 1'
FDNS	00NR	2	20SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.03466	98.6	'G15089 T 230.00 - SIOUX CITY 230KV CKT 1'
FDNS	17ALL	2	25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.04429	98.5	'GRPRARI-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'
FDNS	17ALL	2	25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.04429	98.5	'GRPRARI-LNX3345.00 - YANKTON 345KV CKT 2'
FDNS	00NR	2	25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.02969	98.2	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	00NR	2	17SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.03516	97.9	'FT RANDAL - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	00NR	2	25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.02937	96.9	'MEADOWGROVE 115.00 - PETERSBRG.N7115.00 115KV CKT 1'
FDNS	00NR	2	25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.02937	96.9	'MEADOWGROVE4230.00 (MEADOWGROVE) 230/115/13.8KV TRANSFORMER CKT 1'
FDNS	00NR	2	25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.03051	96.8	'RASMUSN - UTICA JCT 230KV CKT 1'
FDNS	00NR	2	25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.03051	96.3	'RASMUSN - SIOUX CITY 230KV CKT 1'
FDNS	00NR	2	25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.02993	96.3	'FT RANDAL - WHITE SWAN 115KV CKT 1'
FDNS	00NR	2	20SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.02972	96.2	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	00NR	2	25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.02993	96	'P12:115:UMZW:# 1901 #: TY IN SD. TY-WSW LINE FAULT'
FDNS	00NR	2	25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.02993	96	'P12:115:UMZW:# 537 #: TY IN SD. TY-YJ LINE FAULT'
FDNS	00NR	2	25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.02993	96	'P13:115:UMZW:# 1902 #: TY IN SD. LOSS OF TRANSFORMER (KY1A).'
FDNS	00NR	2	25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.02993	96	'TYNDALL - WHITE SWAN 115KV CKT 1'
FDNS	00NR	2	16WP	G15_089	'FROM->TO'	'FTCAL S'	803	803	0.02968	95.4	'BASE CASE'
FDNS	00NR	2	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - SIOUX CITY 230KV CKT 1'	320	320	0.23807	95.7	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'
FDNS	00NR	2	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.2826	99.3	'WATERTN-LNX3345.00 - WATERTOWN 345KV CKT 2'
FDNS	00NR	2	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.2826	99.2	'P12:345:UMZW:# 1747 #: WT2 IN SD. WT2-WHT LINE FAULT'
FDNS	00NR	2	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.28336	98.7	'G09_001IST 345.00 - WATERTOWN 345KV CKT 1'
FDNS	17ALL	2	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.31234	98.6	'HANLON - STORLA 230KV CKT 1'
FDNS	17ALL	2	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.31579	98.4	'GRPRARI-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'
FDNS	17ALL	2	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.31579	98.4	'GRPRARI-LNX3345.00 - YANKTON 345KV CKT 2'
FDNS	00NR	2	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.29161	98	'FT RANDAL - WHITE SWAN 115KV CKT 1'
FDNS	00NR	2	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.29969	98	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL	2	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.31253	97.9	'P12:230:UMZB:# 116 #: ST IN SD. WSG-ST-VH'
FDNS	00NR	2	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.27992	97.9	'SPLIT ROCK - WHITE 345KV CKT 1'
FDNS	00NR	2	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.27992	97.9	'SPLIT ROCK - WHITE 345KV CKT 1'
FDNS	17ALL	2	20WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.32689	97.8	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	00NR	2	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.29976	97.8	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	00NR	2	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.29161	97.6	'TYNDALL - WHITE SWAN 115KV CKT 1'
FDNS	00NR	2	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.27917	97.2	'MENNO JCT - TRIPP JCT 115KV CKT 1'
FDNS	00NR	2	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.28533	96.7	'HANLON - STORLA 230KV CKT 1'
FDNS	00NR	2	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.2854	96.7	'HANLON - STORLA 230KV CKT 1'
FDNS	00NR	2	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.28323	96.6	'LETCHER - SIOUX FALLS 230KV CKT 1'
FDNS	00NR	2	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.27917	96.6	'MENNO JCT - UTICA 115KV CKT 1'
FDNS	00NR	2	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.27917	96.5	'P12:115:UMZZ:# 237 #: MEN IN SD. MENNO JUNCTION IS A TAP (UI-MEN-TP).'
FDNS	00NR	2	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.28987	96.3	'P12:115:NPPD:WAPAG-FTRANDL7:ONEILL 7:BTB'
FDNS	00NR	2	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.28987	96.3	'P12:115:UMZB:# 115 #: SE IN NE. FR-SE-ON'
FDNS	00NR	2	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.28987	96.2	'FT RANDAL - SPENCER 115KV CKT 1'
FDNS	17ALL	2	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.32947	96.2	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	00NR	2	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.28555	96.1	'P12:230:UMZB:# 116 #: ST IN SD. WSG-ST-VH'
FDNS	00NR	2	25SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.28562	96.1	'P12:230:UMZB:# 116 #: ST IN SD. WSG-ST-VH'
FDNS	00NR	2	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.28331	96	'ANTELOPE 3345.00 - HOLT.CO3 345.00 345KV CKT 1'
FDNS	17ALL	2	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.31065	95.9	'HANLON - STORLA 230KV CKT 1'
FDNS	00NR	2	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.29161	95.9	'P12:115:UMZW:# 1901 #: TY IN SD. TY-WSW LINE FAULT'
FDNS	00NR	2	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.29161	95.9	'P12:115:UMZW:# 537 #: TY IN SD. TY-YJ LINE FAULT'
FDNS	00NR	2	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.29161	95.9	'P13:115:UMZW:# 1902 #: TY IN SD. LOSS OF TRANSFORMER (KY1A).'
FDNS	00NR	2	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.28987	95.9	'ONEILL - SPENCER 115KV CKT 1'
FDNS	17ALL	2	20SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.32916	95.5	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	00NR	2	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.28421	95.3	'ANTELOPE 3345.00 - HOSKINS 345KV CKT 1'
FDNS	00NR	2	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.28336	95.2	'G09_001IST 345.00 - GROTON 345KV CKT 1'
FDNS	17ALL	2	16WP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.31084	95.1	'P12:230:UMZB:# 116 #: ST IN SD. WSG-ST-VH'
FDNS	17ALL	2	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.31155	95.1	'FT THOMPSON - LETCHER 230KV CKT 1'
FDNS	17ALL	2	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.31155	95.1	'FT THOMPSON - LETCHER 230KV CKT 1'
FDNS	17ALL	2	17SP	G15_089	'FROM->TO'	'G15089 T 230.00 - UTICA JCT 230KV CKT 1'	320	320	0.34714	95	'FT RANDAL - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL	2	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12344	103.8877	'MEADOWGROVE4230.00 (MEADOWGROVE) 230/115/13.8KV TRANSFORMER CKT 1'
FDNS	17ALL	2	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12344	103.8811	'MEADOWGROVE 115.00 - PETERSBRG.N7115.00 115KV CKT 1'
FDNS	17ALL	2	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11403	102.9945	'PETERSBRG.N7115.00 - PETERSBURG 115KV CKT 21'
FDNS	17ALL	2	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11403	102.8881	'P12:115:NPPD:11688:ALBION 7:PETERSBRG.N7:BTB'
FDNS	17ALL	2	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11403	102.3599	'ALBION - PETERSBURG 115KV CKT 1'
FDNS	17ALL	2	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12294	102.0979	'MEADOWGROVE4230.00 (MEADOWGROVE) 230/115/13.8KV TRANSFORMER CKT 1'
FDNS	17ALL	2	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12294	102.0406	'MEADOWGROVE 115.00 - PETERSBRG.N7115.00 115KV CKT 1'
FDNS	17ALL	2	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12254	101.8263	'MEADOWGROVE4230.00 (MEADOWGROVE) 230/115/13.8KV TRANSFORMER CKT 1'
FDNS	17ALL	2	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12254	101.8207	'MEADOWGROVE 115.00 - PETERSBRG.N7115.00 115KV CKT 1'
FDNS	17ALL	2	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11308	100.4051	'PETERSBRG.N7115.00 - PETERSBURG 115KV CKT 1'
FDNS	17ALL	2	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11348	100.4027	'PETERSBRG.N7115.00 - PETERSBURG 115KV CKT 21'
FDNS	17ALL	2	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11308	100.3475	'P12:115:NPPD:11688:ALBION 7:PETERSBRG.N7:BTB'
FDNS	17ALL	2	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11348	100.3373	'P12:115:NPPD:11688:ALBION 7:PETERSBRG.N7:BTB'
FDNS	17ALL	2	20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11308	99.8	'ALBION - PETERSBURG 115KV CKT 1'
FDNS	17ALL	2	25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11348	99.8	'ALBION - PETERSBURG 115KV CKT 1'
FDNS	17ALL	2	17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11318	99.2	'GRPRARI-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'
FDNS	17ALL	2									

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	17ALL		2 25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11237	97.1	GRPRARI-LNX3345.00 - YANKTON 345KV CKT Z'
FDNS	17ALL		2 20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11194	97	GRPRARI-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'
FDNS	17ALL		2 20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11194	97	GRPRARI-LNX3345.00 - YANKTON 345KV CKT Z'
FDNS	17ALL		2 17G	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11294	96.6	P12:115:NPPD:11688:ALBION 7:PETERSBRG.N7:BTB'
FDNS	17ALL		2 17G	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11294	96.5	PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1'
FDNS	17ALL		2 17G	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11294	96.4	ALBION - PETERSBURG 115KV CKT 1'
FDNS	17ALL		2 17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11321	96.4	HOSKINS - SHELL CREEK 345KV CKT 1'
FDNS	17ALL		2 17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.14283	95.9	G15089_T 230.00 - UTICA JCT 230KV CKT 1'
FDNS	17ALL		2 16WP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.112	95.5	P12:115:NPPD:11688:ALBION 7:PETERSBRG.N7:BTB'
FDNS	17ALL		2 16WP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.112	95.5	PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1'
FDNS	17ALL		2 16WP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.112	95.3	ALBION - PETERSBURG 115KV CKT 1'
FDNS	17ALL		2 17G	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11214	95.2	HOSKINS - SHELL CREEK 345KV CKT 1'
FDNS	17ALL		2 20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11171	95.1	HOSKINS - SHELL CREEK 345KV CKT 1'
FDNS	17ALL		2 17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.10687	95	ANTELOPE 3345.00 - HOSKINS 345KV CKT 1'
FDNS	00NR		2 25SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.04072	97.9	G15089_T 230.00 - UTICA JCT 230KV CKT 1'
FDNS	00NR		2 25SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.03464	96.1	G15089_T 230.00 - SIOUX CITY 230KV CKT 1'
FDNS	00NR		2 20SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.04074	95.8	G15089_T 230.00 - UTICA JCT 230KV CKT 1'
FDNS	17ALL		2 17SP	G15_089	'FROM->TO'	'PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1'	137	137	0.04152	158.7796	KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL		2 25SP	G15_089	'FROM->TO'	'PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1'	137	137	0.04263	153.7183	KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL		2 20SP	G15_089	'FROM->TO'	'PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1'	137	137	0.04246	152.5569	KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL		2 16WP	G15_089	'FROM->TO'	'PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1'	137	137	0.04068	128.1896	KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL		2 20WP	G15_089	'FROM->TO'	'PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1'	137	137	0.04157	121.5658	KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL		2 17G	G15_089	'FROM->TO'	'PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1'	137	137	0.04106	120.4689	KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL		2 20L	G15_089	'FROM->TO'	'PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1'	137	137	0.03936	104.8835	KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	00NR		2 20SP	G15_089	'FROM->TO'	'SIOUX CITY (SC KV1A) 230/161/13.8KV TRANSFORMER CKT 1'	250	313	0.0489	95.2	'SIOUX CITY (SC KV5A) 230/161/13.8KV TRANSFORMER CKT 1'
FDNS	00NR		2 20SP	G15_089	'FROM->TO'	'SIOUX CITY (SC KV5A) 230/161/13.8KV TRANSFORMER CKT 1'	250	313	0.04899	95.3	'SIOUX CITY (SC KV1A) 230/161/13.8KV TRANSFORMER CKT 1'
FDNS	17ALL		3 17SP	G15_089	'TO->FROM'	'ALBION - PETERSBURG 115KV CKT 1'	137	137	0.04137	154.3867	KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL		3 25SP	G15_089	'TO->FROM'	'ALBION - PETERSBURG 115KV CKT 1'	137	137	0.04247	149.2446	KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL		3 20SP	G15_089	'TO->FROM'	'ALBION - PETERSBURG 115KV CKT 1'	137	137	0.04231	148.369	KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL		3 16WP	G15_089	'TO->FROM'	'ALBION - PETERSBURG 115KV CKT 1'	137	137	0.04053	126.6394	KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL		3 20WP	G15_089	'TO->FROM'	'ALBION - PETERSBURG 115KV CKT 1'	137	137	0.04142	120.0893	KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL		3 17G	G15_089	'TO->FROM'	'ALBION - PETERSBURG 115KV CKT 1'	137	137	0.04091	119.5027	KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL		3 20L	G15_089	'TO->FROM'	'ALBION - PETERSBURG 115KV CKT 1'	137	137	0.03921	104.2022	KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL		3 17G	G15_089	'FROM->TO'	'COLUMEAST (COL.EAST T3) 230/115/13.8KV TRANSFORMER CKT 1'	187	187	0.04017	98.2	COLUMEAST - SHELL CREEK 345KV CKT 1'
FDNS	17ALL		3 17SP	G15_089	'FROM->TO'	'COLUMEAST (COL.EAST T3) 230/115/13.8KV TRANSFORMER CKT 1'	187	187	0.0403	97.8	COLUMEAST - SHELL CREEK 345KV CKT 1'
FDNS	17ALL		3 17SP	G15_089	'FROM->TO'	'COLUMEAST (COL.EAST T3) 230/115/13.8KV TRANSFORMER CKT 1'	187	187	0.0403	97.3	COLUMEAST - SHELL CREEK 345KV CKT 1'
FDNS	17ALL		3 20SP	G15_089	'FROM->TO'	'COLUMEAST (COL.EAST T3) 230/115/13.8KV TRANSFORMER CKT 1'	187	187	0.03967	97.3	COLUMEAST - SHELL CREEK 345KV CKT 1'
FDNS	17ALL		3 17G	G15_089	'FROM->TO'	'COLUMEAST (COL.EAST T3) 230/115/13.8KV TRANSFORMER CKT 1'	187	187	0.04017	97.2	COLUMEAST - SHELL CREEK 345KV CKT 1'
FDNS	17ALL		3 20SP	G15_089	'FROM->TO'	'COLUMEAST (COL.EAST T3) 230/115/13.8KV TRANSFORMER CKT 1'	187	187	0.03967	97	COLUMEAST - SHELL CREEK 345KV CKT 1'
FDNS	17ALL		3 20WP	G15_089	'FROM->TO'	'COLUMEAST (COL.EAST T3) 230/115/13.8KV TRANSFORMER CKT 1'	187	187	0.03872	96.7	COLUMEAST - SHELL CREEK 345KV CKT 1'
FDNS	17ALL		3 16WP	G15_089	'FROM->TO'	'COLUMEAST (COL.EAST T3) 230/115/13.8KV TRANSFORMER CKT 1'	187	187	0.03947	96.1	COLUMEAST - SHELL CREEK 345KV CKT 1'
FDNS	17ALL		3 20WP	G15_089	'FROM->TO'	'COLUMEAST (COL.EAST T3) 230/115/13.8KV TRANSFORMER CKT 1'	187	187	0.03872	95.9	COLUMEAST - SHELL CREEK 345KV CKT 1'
FDNS	17ALL		3 16WP	G15_089	'FROM->TO'	'COLUMEAST (COL.EAST T3) 230/115/13.8KV TRANSFORMER CKT 1'	187	187	0.03947	95.3	COLUMEAST - SHELL CREEK 345KV CKT 1'
FDNS	00NR		3 20SP	G15_089	'FROM->TO'	'FT RANDAL - MEADOWGROVE4230.00 230KV CKT 1'	320	320	0.08473	95.2	GRPRARI-LNX3345.00 - YANKTON 345KV CKT Z'
FDNS	00NR		3 20SP	G15_089	'FROM->TO'	'FT RANDAL - MEADOWGROVE4230.00 230KV CKT 1'	320	320	0.08473	95.1	GRPRARI-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'
FDNS	17ALL		3 20SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.0344	98.4	G15089_T 230.00 - SIOUX CITY 230KV CKT 1'
FDNS	17ALL		3 25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.0441	98.4	GRPRARI-LNX3345.00 - YANKTON 345KV CKT Z'
FDNS	17ALL		3 25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.0441	98.3	GRPRARI-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'
FDNS	00NR		3 25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.02951	98.1	KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	00NR		3 17SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.03494	97.7	FT RANDAL - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	00NR		3 25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.02919	96.8	MEADOWGROVE 115.00 - PETERSBRG.N7115.00 115KV CKT 1'
FDNS	00NR		3 25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.02919	96.8	MEADOWGROVE4230.00 (MEADOWGROVE) 230/115/13.8KV TRANSFORMER CKT 1'
FDNS	00NR		3 25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.0304	96.7	RASMUSN - UTICA JCT 230KV CKT 1'
FDNS	00NR		3 25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.0304	96.3	RASMUSN - SIOUX CITY 230KV CKT 1'
FDNS	00NR		3 20SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.02954	96.1	KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	00NR		3 25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.02973	96.1	FT RANDAL - WHITE SWAN 115KV CKT 1'
FDNS	00NR		3 25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.02973	95.8	P12:115:UMZW# 1901 #: TY IN SD. TY-WSW LINE FAULT'
FDNS	00NR		3 25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.02973	95.8	P12:115:UMZW# 537 #: TY IN SD. TY-YI LINE FAULT'
FDNS	00NR		3 25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.02973	95.8	P13:115:UMZW# 1902 #: TY IN SD. LOSS OF TRANSFORMER (KV1A)'
FDNS	00NR		3 25SP	G15_089	'FROM->TO'	'FT RANDAL - SPENCER 115KV CKT 1'	120	120	0.02973	95.8	TYNDALL - WHITE SWAN 115KV CKT 1'
FDNS	00NR		3 16WP	G15_089	'FROM->TO'	'FTCAL S'	803	803	0.02982	95.4	BASE CASE'
FDNS	00NR		3 20SP	G15_089	'FROM->TO'	'G15089_T 230.00 - SIOUX CITY 230KV CKT 1'	320	320	0.23807	95.7	G15089_T 230.00 - UTICA JCT 230KV CKT 1'
FDNS	17ALL		3 17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12289	103.7172	MEADOWGROVE4230.00 (MEADOWGROVE) 230/115/13.8KV TRANSFORMER CKT 1'
FDNS	17ALL		3 17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12289	103.71	MEADOWGROVE 115.00 - PETERSBRG.N7115.00 115KV CKT 1'
FDNS	17ALL		3 17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11355	102.8504	PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1'
FDNS	17ALL		3 17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11355	102.7392	P12:115:NPPD:11688:ALBION 7:PETERSBRG.N7:BTB'
FDNS	17ALL		3 17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11355	102.2154	ALBION - PETERSBURG 115KV CKT 1'
FDNS	17ALL		3 25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12238	101.9444	MEADOWGROVE4230.00 (MEADOWGROVE) 230/115/13.8KV TRANSFORMER CKT 1'
FDNS	17ALL		3 25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12238	101.8868	MEADOWGROVE 115.00 - PETERSBRG.N7115.00 115KV CKT 1'
FDNS	17ALL		3 20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12199	101.6729	MEADOWGROVE4230.00 (MEADOWGROVE) 230/115/13.8KV TRANSFORMER CKT 1'
FDNS	17ALL		3 20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.12199	101.6675	MEADOWGROVE 115.00 - PETERSBRG.N7115.00 115KV CKT 1'
FDNS	17ALL		3 20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11261	100.2805	PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1'
FDNS	17ALL		3 25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.113	100.2714	PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1'
FDNS	17ALL		3 20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.1126		

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEA (MVA)	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	17ALL		3 20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11261	99.7	'ALBION - PETERSBURG 115KV CKT 1'
FDNS	17ALL		3 25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.113	99.7	'ALBION - PETERSBURG 115KV CKT 1'
FDNS	17ALL		3 17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.1127	99	'GRPRARI-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'
FDNS	17ALL		3 17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.1127	99	'GRPRARI-LNX3345.00 - YANKTON 345KV CKT 2'
FDNS	17ALL		3 20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11146	96.9	'GRPRARI-LNX3345.00 - YANKTON 345KV CKT 2'
FDNS	17ALL		3 25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11189	96.9	'GRPRARI-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'
FDNS	17ALL		3 25SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11189	96.9	'GRPRARI-LNX3345.00 - YANKTON 345KV CKT 2'
FDNS	17ALL		3 20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11146	96.8	'GRPRARI-LNX3345.00 - HOLT.CO3 345.00 345KV CKT 1'
FDNS	17ALL		3 17G	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11247	96.4	'P12.115:NPPD:11688:ALBION 7:PETERSBRG.N7:BTB'
FDNS	17ALL		3 17G	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11247	96.4	'PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1'
FDNS	17ALL		3 17G	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11247	96.3	'ALBION - PETERSBURG 115KV CKT 1'
FDNS	17ALL		3 17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11279	96.3	'HOSKINS - SHELL CREEK 345KV CKT 1'
FDNS	17ALL		3 17SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.14283	95.9	'G15089_T 230.00 - UTICA JCT 230KV CKT 1'
FDNS	17ALL		3 16WP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11152	95.4	'P12.115:NPPD:11688:ALBION 7:PETERSBRG.N7:BTB'
FDNS	17ALL		3 16WP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11152	95.4	'PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1'
FDNS	17ALL		3 16WP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11152	95.2	'ALBION - PETERSBURG 115KV CKT 1'
FDNS	17ALL		3 17G	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11172	95	'HOSKINS - SHELL CREEK 345KV CKT 1'
FDNS	17ALL		3 20SP	G15_089	'TO->FROM'	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'	368	368	0.11129	95	'HOSKINS - SHELL CREEK 345KV CKT 1'
FDNS	00NR		3 25SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.04072	97.9	'G15089_T 230.00 - UTICA JCT 230KV CKT 1'
FDNS	00NR		3 20SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.04074	95.8	'G15089_T 230.00 - UTICA JCT 230KV CKT 1'
FDNS	00NR		3 25SP	G15_089	'TO->FROM'	'ONEILL - SPENCER 115KV CKT 1'	120	120	0.03438	95.8	'G15089_T 230.00 - SIOUX CITY 230KV CKT 1'
FDNS	17ALL		3 17SP	G15_089	'FROM->TO'	'PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1'	137	137	0.04137	158.6567	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL		3 25SP	G15_089	'FROM->TO'	'PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1'	137	137	0.04247	153.5957	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL		3 20SP	G15_089	'FROM->TO'	'PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1'	137	137	0.04231	152.4432	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL		3 16WP	G15_089	'FROM->TO'	'PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1'	137	137	0.04053	128.0616	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL		3 20WP	G15_089	'FROM->TO'	'PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1'	137	137	0.04142	121.4459	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL		3 17G	G15_089	'FROM->TO'	'PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1'	137	137	0.04091	120.3079	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	17ALL		3 20L	G15_089	'FROM->TO'	'PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1'	137	137	0.03921	104.7855	'KELLY - MEADOWGROVE4230.00 230KV CKT 1'
FDNS	00NR		3 20SP	G15_089	'FROM->TO'	'SIOUX CITY (SC KV1A) 230/161/13.8KV TRANSFORMER CKT 1'	250	313	0.04899	95.2	'SIOUX CITY (SC KV5A) 230/161/13.8KV TRANSFORMER CKT 1'
FDNS	00NR		3 20SP	G15_089	'FROM->TO'	'SIOUX CITY (SC KV5A) 230/161/13.8KV TRANSFORMER CKT 1'	250	313	0.04909	95.4	'SIOUX CITY (SC KV1A) 230/161/13.8KV TRANSFORMER CKT 1'
FDNS	00NR		4 16WP	G15_089	'FROM->TO'	'FTCAL_S'	803	803	0.02981	95.4	'BASE CASE'
FDNS	00NR		4 20SP	G15_089	'FROM->TO'	'SIOUX CITY (SC KV1A) 230/161/13.8KV TRANSFORMER CKT 1'	250	313	0.04899	95.2	'SIOUX CITY (SC KV5A) 230/161/13.8KV TRANSFORMER CKT 1'
FDNS	00NR		4 20SP	G15_089	'FROM->TO'	'SIOUX CITY (SC KV5A) 230/161/13.8KV TRANSFORMER CKT 1'	250	313	0.04908	95.4	'SIOUX CITY (SC KV1A) 230/161/13.8KV TRANSFORMER CKT 1'

11.10 H-T-AS: Affected System Thermal Power Flow Analysis (Constraints for Potential Upgrades)

Currently no Affected System Voltage constraints identified.

11.11 H-V-AS: Affected System Voltage Power Flow Analysis (Constraints for Potential Upgrades)

Currently no Affected System Voltage constraints identified.

11.12 I: Power Flow Analysis (Constraints from Multi-Contingencies)

To be performed; results will be available upon request. Contact SPP Generator Interconnection Studies for details.

11.13 J: Dynamic Stability Analysis Report

Southwestern Power Pool Inc. (SPP)



Preliminary Impact Study PISIS-2015-002 (Group 17)



Report Submitted to
Southwest Power Pool Inc.
April 2016

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1. Executive Summary

The PISIS-2015-002 (Group 17) Impact Study is a generation interconnection study performed by POWER-tek Global Inc. for Southwest Power Pool (SPP). This report presents the results of impact study comprising of power factor, short circuit, and stability analyses for cluster scenarios of the proposed interconnection projects under PISIS-2015-002 (Group 17) (“The Projects”) as described in Table 1.1 below:

Table 1.1: Interconnection Request

Request	Size (MW)	Generator Model	Point of Interconnection (POI)
GEN-2015-089	200.6	G.E. 1.7 MW wind	Fort Randall (652509) – Utica Jct (652526) 230kV line

Power factor analysis, short circuit analysis up to 5 Buses away from the point of interconnection (POI), and transient stability simulations were performed for the Projects in service at its full output. SPP provided three base cases for Winter-2016, Summer-2017, and Summer-2025, each comprising of a power flow, sequence data and corresponding dynamics database. The previous queued request projects were already modeled in the base cases. The power factor analysis consists of running all N-1, three phase contingencies shown in the Fault Definitions table (Table 3 in the RFP) in power flow to advise the necessary power factor at the POI for each contingency.

The power factor analysis indicates that interconnection requests i.e., GEN-2015-089 is required to provide reactive power as indicated in Tables 3.2.2 through 3.2.4.

Per the SPP OATT, the Interconnection Customer will be required to provide 95% lagging (supplying vars) and 95% leading (absorbing vars) at the POI.

To offset the capacitive effects of the collector system and transmission line of the wind farm under low wind or no wind conditions, the inductive reactive support analysis for wind generator GEN-2015-089 was performed for Summer-2017 scenario. This analysis indicates that at POI (Fort Randall (652509) – Utica Jct (652526) 230kV line) 16.4 MVAR reactor is required at Bus 652594 to maintain zero MVAR flow at POI. Maintaining zero MVARs flow at the POI at all times is not possible with static reactor banks. It will be determined on a case by case basis for each generator as to whether additional reactor banks are required for low wind conditions.

There are no impacts on the stability performance of the SPP system during cluster scenario for the contingencies tested on the provided base cases. The study machines stayed on-line and stable for all simulated faults. The Project stability simulations with thirty seven (37) specified test disturbances did not show instability problems in the SPP system. Any oscillations were damped out.

2. Introduction

2.1. Project Overview and Assumptions

The PISIS-2015-002 (Group 17) Impact Study is a generation interconnection study performed by POWER-tek Global Inc. for SPP. This report presents the results of impact study comprising of power factor, short circuit analysis, and stability analyses for both cluster and stand-alone scenarios of the proposed interconnection projects under PISIS-2015-002 (Group 17) (“The Projects”) as described in Table 2.1.1 below:

Table 2.1.1: Interconnection requests

Request	Size (MW)	Wind Turbine Model	Point of Interconnection
GEN-2015-089	200.6	G.E. 1.7 MW wind	Fort Randall (652509) – Utica Jct (652526) 230kV line

Figure 2.1.1 show the single line diagram for the interconnection of the Projects to present and planned system of SPP. This arrangement was modeled and studied in power flow cases for this project.

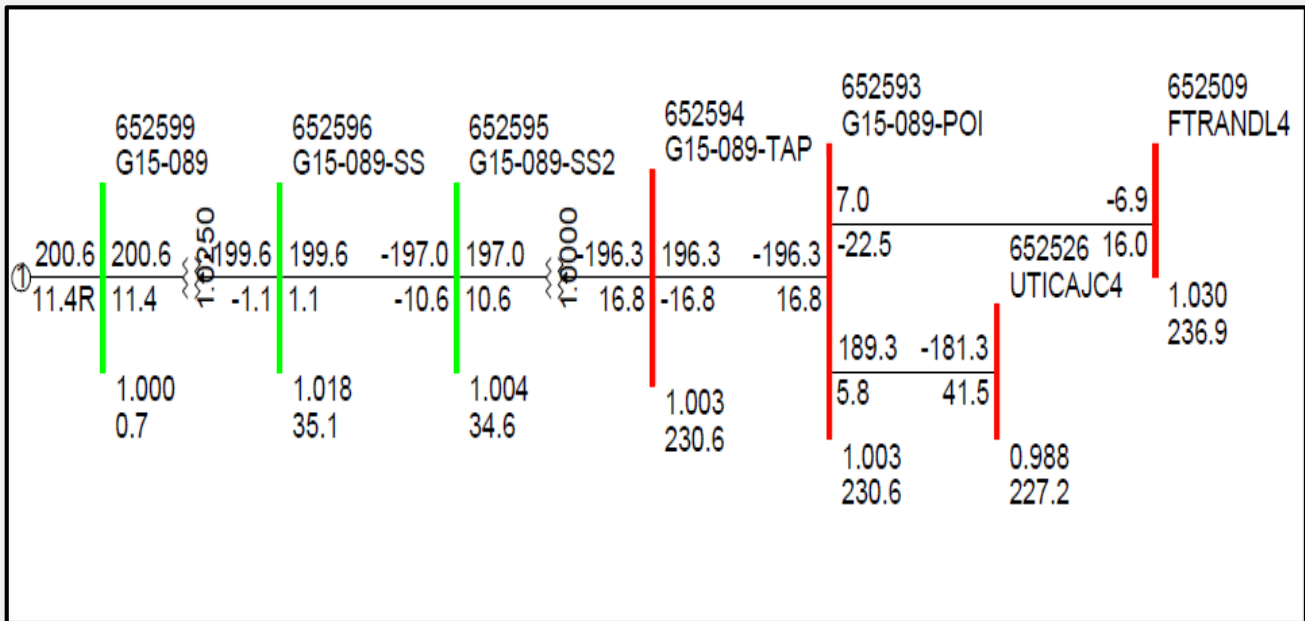


Figure 2.1.1: Power flow single line diagram for GEN-2015-089 and surrounding system components

Appendix-D contains the machines, interconnection, and machines user model parameters.

Table 2.1.2 below shows the list of prior queued projects modeled in the base case.

Table 2.1.2: List of previous queued request projects

Request	Size (MW)	Wind Turbine Model	Point of Interconnection
GI-0209	40	WT3 generic wind (659291)	Fort Thompson 69kV (652276)
GI-0713	55	WT3 generic wind (659296)	Wessington Springs 230kV (652607)
GI-0704	240	GENROU (659353/659354)	White 345kV (652537)
GI-0713/0714	150	WT3 generic wind (659296)	Wessington Springs 230kV (652607)
GI-0716	60	GENROU (659353/659354)	White 345kV (652537)
GI-1003	34	WT3 generic wind (659296)	Wessington Springs 230kV (652607)
G255	100	WT3 generic wind (600069/600078)	Yankee 115kV (603191)
GI-0602 (GEN-2012-002IS)	51	GE 1.5MW (662101)	Wessington Springs 230kV (652607)
GI-1209 (GEN-2012-009IS)	99	Siemens 3.0MW (952511)	Fort Randall 115kV (652510)
GI-0906 (GEN-2009-005IS)	90	GE 1.6MW (652906)	Mission 115kV (652482)
GI-0907 (GEN-2009-007IS)	100	GE 1.6MW (652907)	Mission 115kV (652482)
GI-0920a (GEN-2009-020aIS)	131.4	GE 1.85MW	Tripp Jct 115kV (660005)
GEN-2015-076	158.4	Vestas 3.3-117 3.3 MW (wind)	Belden 115kV (640080)
GEN-2006-020N	42	Vestas V90 VCUS 1.8 & 3.0 MW (640421,640441)	Bloomfield 115kV (640084)
GEN-2007-011No8	81	Vestas V90 VCRS 3.0MW (640418)	Bloomfield 115kV (640084)
GEN-2008-086No2/GEN-2014-032	211.22	GE 100m 1.79MW (645063 and 645064)	Meadow Grove 230kV (GEN-2008-086No2 POI) (640540)
GEN-2015-007	160.0	GE 2.0MW (584513)	Hoskins 345kV (640226)
GEN-2015-023	300.8	GE 1.79MW (584653/584656)	Holt County 345kV (640510)

Request	Size (MW)	Wind Turbine Model	Point of Interconnection
GEN-2014-013	73.5	GE XLE 97.4m (583833)	Meadow Grove 230kV (GEN-2008-086N02 POI) (640540)
GEN-2014-031	35.8	GE 1.79MW (583836)	Meadow Grove 230kV (GEN-2008-086N02 POI) (640540)
GEN-2013-032	204.0	GE 97.4m 1.7MW (583783)	Neligh 115kV (640293)
GEN-2015-053	50	GE 1.79 MW (wind) (584913)	Antelope 115kV (640521)
GEN-2015-054	74	GE 1.79 MW (wind) (584923)	Antelope 115kV (640521)
Grand Prairie Wind	400	Vestas V110 VCSS 2.0MW (579456/652353)	Grand Prairie (652532) (Tap on Ft Thompson to Holt County 345kV)

ATC (Available Transfer Capability) studies were not performed as part of this study. These studies will be required at the time transmission service is actually requested. Additional transmission upgrades may be required based on that analysis.

Study assumptions in general have been based on the specific information and data provided by SPP. The accuracy of the conclusions contained within this study is dependent on the assumptions made with respect to other generation additions and transmission improvements planned by other entities. Changes in the assumptions of the timing of other generation additions or transmission improvements may affect this study's conclusions.

2.2. Objectives

The objectives of the study are to conduct power factor analysis, short circuit analysis and to determine the impact on system stability of interconnecting the proposed wind farms to SPP's transmission system.

2.3. Models and Simulations Tools Used

Version 32.2.0 of the Siemens, PSS/E™ power system simulation program was used in this study.

SPP provided its latest stability database cases for Winter-2016, Summer-2017, and Summer-2025 peak seasons. The Project's PSS/E model had been developed prior to this study and was included in the power flow case and the dynamics database. Machines, interconnection and dynamic model data for the Project plants is provided in Appendix D.

Power flow single line diagram of the project in Summer 2017 peak condition is shown in Figure 2.1.1. This Figure shows that wind farms model includes representation of the radial transmission line, the substation transformer from transmission voltage (230kV) to 34.5V. The remainder of each wind farm is represented by lumped equivalents including a generator, a step-up transformer, and collector system impedance.

No special modeling is required of line relays in these cases, except for the special modeling related to the wind-turbine tripping.

All generators in Areas 640, 645, 650, 652, 600, 608, 613, 615, 620, and 661 were monitored.

3. Power Factor Analysis

3.1. Methodology

Power factor analysis was conducted for the Project using the following methodology:

1. Replace the wind farm by a generator at the high side bus 345 kV, 138 kV, 115kV, or 69 kV bus, as applicable, with the MW of the wind farms at that point of interconnection.
2. Turn off the wind farm as modeled (as well as previous queued projects at the same point of interconnection).
3. Model a var generator at the Project's high voltage side, 345 kV, 138 kV, 115kV, or 69kV bus, as applicable. The var generator is set to hold a voltage schedule at the POI consistent with the voltage schedule in the provided power flow cases for Summer and Winter or 1.0 pu voltage, whichever is higher.
4. Perform the steady state contingency analysis to determine the power factor necessary at the POI for each contingency.
5. If the required power factor at the POI is beyond the capability of the studied wind turbines to meet (at the POI) capacitor banks may be considered for the stability analysis. The preference is to locate the capacitance banks on the 34.5 kV customer side. Factors to sizing capacitor banks include:
 - 5.1. The ability of the wind farm to meet FERC Order 661A (low voltage ride through) with and without capacitor banks.
 - 5.2. The ability of the wind farm to meet FERC Order 661A (wind farm recovery to pre-fault voltage).
 - 5.3. If wind farms trips on high voltage, power factor lower than unity may be required.

3.2. Analysis

Analysis was performed for the proposed Projects with all prior queued projects in service. A var generator was modeled at the point of interconnection and was set to hold a voltage schedule at the POI consistent with the voltage schedule in the provided power flow cases OR 1 p.u. whichever is higher. The voltages for these Projects are summarized in Table 3.2.1. All upgrades and instructions were made in the base cases. No other changes were made in the base cases provided, other than the addition of the var generators. Contingency analysis was run for provided list of contingencies.

Table 3.2.1: POI voltages for the Summer and Winter peak cases

Request	Point of Interconnection	Size (MW)	Base Case Voltage (p.u.)		
			Winter 2016 Peak	Summer 2017 Peak	Summer 2025 Peak
GEN-2015-089	Fort Randall (652509) – Utica Jct (652526) 230kV line	200.6	1.008	1.006	1.006

The details of the var requirement during contingencies are highlighted in Table 3.2.2, 3.2.3 and 3.2.4. The highest and the lowest values obtained are highlighted in these Tables.

- For 2016 Winter case (GEN-2015-089 analysis): The maximum var generator supply is 32.6 MVARs at 0.99 (lagging power factor) for the outage of 640510 [HOLT.CO3 345.0] TO BUS 652571 [GR ISLD3] CKT outage and 640540 [MEADOWGROVE4230.0] TO BUS 640133 [COLMBUS4 230.0] CKT outage. The minimum var requirement is -17.6 MVARs at 1.0 (leading power factor) for the outage of 652526 [UTICAJ4 230.0] TO BUS 652398 [VFODNES4 230.0] CKT outage.

Table 3.2.2: Var Generator output in 2016 Winter peak case for PISIS-2015-002 (Group 17)

2016 Winter Peak Case Power Factor Study:

Generation Interconnection Request Analysis						GEN-2015-089	
Rated MW of Wind Farms OR at POI (MW)						MW at POI 200.6	
Rated MVAR of Wind Farms OR at POI (MVAR)						MVAR at POI 65.93	
Cont. Name	From Bus (# & Name)		To Bus (# & Name)		ID	MVAR at POI	P.F at POI
	Base Case MVAR Flow				N/A	-14.5	1.0
FLT01-3PH	652526	UTICAJ4 230.0	652593	G15-089-POI 230.0	CKT 1	-16.3	1.0
FLT02-3PH	652509	FTRANDL4 230.0	652593	G15-089-POI 230.0	CKT 1	6.6	1.0
FLT03-3PH	652526	UTICAJ4 230.0	652536	RASMUSN4 230.0	CKT 1	-12.9	1.0
FLT04-3PH	652509	FTRANDL4 230.0	640540	MEADOWGROVE4230.0	CKT 1	-11.4	1.0
FLT05-3PH	652509	FTRANDL4 230.0	652507	FTTHOMP4 230.0	CKT 1	-14.4	1.0
FLT06-3PH	640510	HOLT.CO3 345.0	652871	GR ISLD-LNX3345.0	CKT 1	-9.0	1.0
	652871	GR ISLD-LNX3345.0	652571	GR ISLD3	Z		
FLT07-3PH	652509	FTRANDL4 230.0	652516	LAKPLAT4 230.0	CKT 1	-14.2	1.0

Generation Interconnection Request Analysis						GEN-2015-089	
Rated MW of Wind Farms OR at POI (MW) Rated MVAR of Wind Farms OR at POI (MVAR)						MW at POI 200.6 MVAR at POI 65.93	
Cont. Name	From Bus (# & Name)		To Bus (# & Name)		ID	MVAR at POI	P.F at POI
FLT08-3PH	652506	FTTHOMP3	652807	FTTHOM2-LNX3	Z	-16.1	1.0
	652807	FTTHOM2-LNX3	652833	GRPRAR2-LNX3	CKT1		
	652833	GRPRAR2-LNX3	652532	GR PRAIRIE3	CKT1		
FLT09-3PH	652526	UTICAJC4 230.0	652398	VFODNES4 230.0	CKT 1	-17.6	1.0
FLT10-3PH	652509	FTRANDL4 230.0	652510	FTRANDL7 115.0	CKT 1	-14	1.0
	652509	FTRANDL4 230.0	652510	FTRANDL7 115.0	CKT 2		
FLT11-3PH	652526	UTICAJC4 230.0	652626	UTICAJC7 115.0	T/F	-12.1	1.0
FLT16-3PH	652509	FTRANDL4 230.0	652507	FTTHOMP4 230.0	CKT 1	25.2	1.0
	640540	MEADOWGROVE4230.0	640133	COLMBUS4 230.0	CKT 1		
FLT17-3PH	640510	HOLT.CO3 345.0	652871	GR ISLD-LNX3345.0	CKT 1	32.6	0.99
	652871	GR ISLD-LNX3345.0	652571	GR ISLD3	Z		
	640540	MEADOWGROVE4230.0	640133	COLMBUS4 230.0	CKT 1		
FLT18-3PH	640510	HOLT.CO3 345.0	652871	GR ISLD-LNX3345.0	CKT 1	-9.0	1.0
	652871	GR ISLD-LNX3345.0	652571	GR ISLD3	Z		
FLT19-3PH	652511	GAVINS 7 115.0	640212	HARTGTN7 115.0	CKT 1	-13.8	1.0
FLT20-3PH	652511	GAVINS 7 115.0	640084	BLMFLD 7 115.0	CKT 1	-13.8	1.0
FLT21-3PH	652511	GAVINS 7 115.0	660006	YKNTJCT7 115.0	CKT 1	-6.1	1.0
FLT22-3PH	652511	GAVINS 7 115.0	659121	SPIRITM7 115.0	CKT 1	-13.2	1.0
FLT23-3PH	652517	MANNING7 115.0	659121	SPIRITM7 115.0	CKT 1	-13.6	1.0
FLT24-3PH	660006	YKNTJCT7 115.0	660026	NAPA JCT7 115.0	CKT 1	-9.2	1.0
FLT25-3PH	660006	YKNTJCT7 115.0	652525	TYNDALL7 115.0	CKT 1	-13.7	1.0
FLT26-3PH	640271	MCCOOL 3 345.0	652571	GR ISLD3 345.0	CKT 1	-11.5	1.0

Generation Interconnection Request Analysis						GEN-2015-089	
Rated MW of Wind Farms OR at POI (MW) Rated MVAR of Wind Farms OR at POI (MVAR)						MW at POI 200.6 MVAR at POI 65.93	
Cont. Name	From Bus (# & Name)		To Bus (# & Name)		ID	MVAR at POI	P.F at POI
FLT27-PO	652511	GAVINS 7 115.0	660006	YKNTJCT7 115.0	CKT 1	-5.8	1.0
	652511	GAVINS 7 115.0	640212	HARTGTN7 115.0	CKT 1		
FLT28-PO	652511	GAVINS 7 115.0	660006	YKNTJCT7 115.0	CKT 1	-6.0	1.0
	652511	GAVINS 7 115.0	640084	BLMFLD 7 115.0	CKT 1		
FLT31-PO	640520	ANTELOPE 3345.0	640226	HOSKINS3 345.0	CKT 1	-11.2	1.0
	640521	ANTELOPE 7115.0	640293	NELIGH 7 115.0	CKT 1		
FLT32-PO	640520	ANTELOPE 3345.0	640226	HOSKINS3 345.0	CKT 1	-11.2	1.0
	640521	ANTELOPE 7115.0	640293	NELIGH 7 115.0	CKT 1		
FLT33-3PH	640520	ANTELOPE 3345.0	640226	HOSKINS3 345.0	CKT 1	-5.3	1.0
	640521	ANTELOPE 7115.0	640115	CO.LINE7 115.0	CKT 1		
FLT34-3PH	640521	ANTELOPE 7115.0	640293	NELIGH 7 115.0	CKT 1	-11.2	1.0
	640520	ANTELOPE 3345.0	640226	HOSKINS3 345.0	CKT 1		
FLT35-3PH	640521	ANTELOPE 7115.0	640293	NELIGH 7 115.0	CKT 1	-11.2	1.0
	640520	ANTELOPE 3345.0	640226	HOSKINS3 345.0	CKT 1		
FLT36-3PH	640521	ANTELOPE 7115.0	640115	CO.LINE7 115.0	CKT 1	-5.3	1.0
	640520	ANTELOPE 3345.0	640226	HOSKINS3 345.0	CKT 1		
FLT37-3PH	640521	ANTELOPE 7115.0	640149	CREITON7 115.0	CKT 1	-11.4	1.0
	640520	ANTELOPE 3345.0	640226	HOSKINS3 345.0	CKT 1		

2. For 2017 Summer case (GEN-2015-089 analysis): The maximum var generator supply is 55.7 MVARs at 0.96 (lagging power factor) for the outage of 640510 [HOLT.CO3 345.0] TO BUS 652571 [GR ISLD3] CKT outage and 640540 [MEADOWGROVE4230.0] TO BUS 640133 [COLMBUS4 230.0] CKT outage. The minimum var requirement is -12.4 MVARs at 1.0 (leading power factor) for the outage of 652509 [FTRANDL4 230.0] TO BUS 652507 [FTTHOMP4 230.0] CKT outage.

Table 3.2.3: Var generator output in 2017 Summer peak case for PISIS-2015-002 (Group 17)

2017 Summer Peak Case Power Factor Study:

Generation Interconnection Request Analysis						GEN-2015-089	
Rated MW of Wind Farms OR at POI (MW) Rated MVAR of Wind Farms OR at POI (MVAR)						MW at POI 200.6 MVAR at POI 65.93	
Cont. Name	From Bus (# & Name)		To Bus (# & Name)		ID	MVAR at POI	P.F at POI
	Base Case MVAR Flow				N/A	-12.6	1.0
FLT01-3PH	652526	UTICAJC4 230.0	652593	G15-089-POI 230.0	CKT 1	-9.1	1.0
FLT02-3PH	652509	FTRANDL4 230.0	652593	G15-089-POI 230.0	CKT 1	10.1	1.0
FLT03-3PH	652526	UTICAJC4 230.0	652536	RASMUSN4 230.0	CKT 1	-10.3	1.0
FLT04-3PH	652509	FTRANDL4 230.0	640540	MEADOWGROVE4230.0	CKT 1	-5.4	1.0
FLT05-3PH	652509	FTRANDL4 230.0	652507	FTTHOMP4 230.0	CKT 1	-12.4	1.0
FLT06-3PH	640510	HOLT.CO3 345.0	652871	GR ISLD-LNX3345.0	CKT 1	0.2	1.0
	652871	GR ISLD-LNX3345.0	652571	GR ISLD3	Z		
FLT07-3PH	652509	FTRANDL4 230.0	652516	LAKPLAT4 230.0	CKT 1	-12.2	1.0
FLT08-3PH	652506	FTTHOMP3	652807	FTTHOM2-LNX3	Z	-11.7	1.0
	652807	FTTHOM2-LNX3	652833	GRPRAR2-LNX3	CKT1		
	652833	GRPRAR2-LNX3	652532	GR PRAIRIE3	CKT1		
FLT09-3PH	652526	UTICAJC4 230.0	652398	VFODNES4 230.0	CKT 1	-11.8	1.0
FLT10-3PH	652509	FTRANDL4 230.0	652510	FTRANDL7 115.0	CKT 1	-10.1	1.0
	652509	FTRANDL4 230.0	652510	FTRANDL7 115.0	CKT 2		
FLT11-3PH	652526	UTICAJC4 230.0	652626	UTICAJC7 115.0	T/F	-9.4	1.0
FLT16-3PH	652509	FTRANDL4 230.0	652507	FTTHOMP4 230.0	CKT 1	46.4	0.97
	640540	MEADOWGROVE4230.0	640133	COLMBUS4 230.0	CKT 1		
FLT17-3PH	640510	HOLT.CO3 345.0	652871	GR ISLD-LNX3345.0	CKT 1	55.7	0.96
	652871	GR ISLD-LNX3345.0	652571	GR ISLD3	Z		

Generation Interconnection Request Analysis						GEN-2015-089	
Rated MW of Wind Farms OR at POI (MW) Rated MVAR of Wind Farms OR at POI (MVAR)						MW at POI 200.6 MVAR at POI 65.93	
Cont. Name	From Bus (# & Name)		To Bus (# & Name)		ID	MVAR at POI	P.F at POI
	640540	MEADOWGROVE4230.0	640133	COLMBUS4 230.0	CKT 1		
FLT18-3PH	640510	HOLT.CO3 345.0	652871	GR ISLD-LNX3345.0	CKT 1	0.2	1.0
	652871	GR ISLD-LNX3345.0	652571	GR ISLD3	Z		
FLT19-3PH	652511	GAVINS 7 115.0	640212	HARTGTN7 115.0	CKT 1	-9.8	1.0
FLT20-3PH	652511	GAVINS 7 115.0	640084	BLMFLD 7 115.0	CKT 1	-10.0	1.0
FLT21-3PH	652511	GAVINS 7 115.0	660006	YKNTJCT7 115.0	CKT 1	-3.0	1.0
FLT22-3PH	652511	GAVINS 7 115.0	659121	SPIRITM7 115.0	CKT 1	-9.2	1.0
FLT23-3PH	652517	MANNING7 115.0	659121	SPIRITM7 115.0	CKT 1	-9.7	1.0
FLT24-3PH	660006	YKNTJCT7 115.0	660026	NAPA JCT7 115.0	CKT 1	-4.9	1.0
FLT25-3PH	660006	YKNTJCT7 115.0	652525	TYNDALL7 115.0	CKT 1	-8.1	1.0
FLT26-3PH	640271	MCCOOL 3 345.0	652571	GR ISLD3 345.0	CKT 1	-6.0	1.0
FLT27-PO	652511	GAVINS 7 115.0	660006	YKNTJCT7 115.0	CKT 1	-2.6	1.0
	652511	GAVINS 7 115.0	640212	HARTGTN7 115.0	CKT 1		
FLT28-PO	652511	GAVINS 7 115.0	660006	YKNTJCT7 115.0	CKT 1	-2.9	1.0
	652511	GAVINS 7 115.0	640084	BLMFLD 7 115.0	CKT 1		
FLT31-PO	640520	ANTELOPE 3345.0	640226	HOSKINS3 345.0	CKT 1	-8.9	1.0
	640521	ANTELOPE 7115.0	640293	NELIGH 7 115.0	CKT 1		
FLT32-PO	640520	ANTELOPE 3345.0	640226	HOSKINS3 345.0	CKT 1	-8.9	1.0
	640521	ANTELOPE 7115.0	640293	NELIGH 7 115.0	CKT 1		
FLT33-3PH	640520	ANTELOPE 3345.0	640226	HOSKINS3 345.0	CKT 1	-5.3	1.0
	640521	ANTELOPE 7115.0	640115	CO.LINE7 115.0	CKT 1		
FLT34-3PH	640521	ANTELOPE 7115.0	640293	NELIGH 7 115.0	CKT 1	-8.9	1.0

Generation Interconnection Request Analysis						GEN-2015-089	
Rated MW of Wind Farms OR at POI (MW) Rated MVAR of Wind Farms OR at POI (MVAR)						MW at POI 200.6 MVAR at POI 65.93	
Cont. Name	From Bus (# & Name)		To Bus (# & Name)		ID	MVAR at POI	P.F at POI
	640520	ANTELOPE 3345.0	640226	HOSKINS3 345.0	CKT 1		
FLT35-3PH	640521	ANTELOPE 7115.0	640293	NELIGH 7 115.0	CKT 1	-8.9	1.0
	640520	ANTELOPE 3345.0	640226	HOSKINS3 345.0	CKT 1		
FLT36-3PH	640521	ANTELOPE 7115.0	640115	CO.LINE7 115.0	CKT 1	-5.3	1.0
	640520	ANTELOPE 3345.0	640226	HOSKINS3 345.0	CKT 1		
FLT37-3PH	640521	ANTELOPE 7115.0	640149	CREITON7 115.0	CKT 1	-7.8	1.0
	640520	ANTELOPE 3345.0	640226	HOSKINS3 345.0	CKT 1		

3. For 2025 Summer case (GEN-2015-089 analysis): The maximum var generator supply is 52.3 MVARs at 0.97 (lagging power factor) for the outage of 640510 [HOLT.CO3 345.0] TO BUS 652571 [GR ISLD3] CKT outage and 640540 [MEADOWGROVE4230.0] TO BUS 640133 [COLMBUS4 230.0] CKT outage. The minimum var requirement is -15.6 MVARs at 1.0 (leading power factor) for the outage of 652526 [UTICAJC4 230.0] TO BUS 652398 [VFODNES4 230.0] CKT outage.

Table 3.2.4: Var generator output in 2025 Summer peak case for PISIS-2015-002 (Group 17)

2025 Summer Peak Case Power Factor Study:

Generation Interconnection Request Analysis						GEN-2015-089	
Rated MW of Wind Farms OR at POI (MW) Rated MVAR of Wind Farms OR at POI (MVAR)						MW at POI 200.6 MVAR at POI 65.93	
Cont. Name	From Bus (# & Name)		To Bus (# & Name)		ID	MVAR at POI	P.F at POI
	Base Case MVAR Flow				N/A	-11.7	1.0
FLT01-3PH	652526	UTICAJC4 230.0	652593	G15-089-POI 230.0	CKT 1	-14.7	1.0
FLT02-3PH	652509	FTRANDL4 230.0	652593	G15-089-POI 230.0	CKT 1	11.1	1.0
FLT03-3PH	652526	UTICAJC4 230.0	652536	RASMUSN4 230.0	CKT 1	-11.9	1.0
FLT04-3PH	652509	FTRANDL4 230.0	640540	MEADOWGROVE4230.0	CKT 1	-7.5	1.0
FLT05-3PH	652509	FTRANDL4 230.0	652507	FTTHOMP4 230.0	CKT 1	-13.4	1.0

Generation Interconnection Request Analysis						GEN-2015-089	
Rated MW of Wind Farms OR at POI (MW) Rated MVAR of Wind Farms OR at POI (MVAR)						MW at POI 200.6 MVAR at POI 65.93	
Cont. Name	From Bus (# & Name)		To Bus (# & Name)		ID	MVAR at POI	P.F at POI
FLT06-3PH	640510	HOLT.CO3 345.0	652871	GR ISLD-LNX3345.0	CKT 1	-3.3	1.0
	652871	GR ISLD-LNX3345.0	652571	GR ISLD3	Z		
FLT07-3PH	652509	FTRANDL4 230.0	652516	LAKPLAT4 230.0	CKT 1	-13.1	1.0
FLT08-3PH	652506	FTTHOMP3	652807	FTTHOM2-LNX3	Z	-11.2	1.0
	652807	FTTHOM2-LNX3	652833	GRPRAR2-LNX3	CKT1		
	652833	GRPRAR2-LNX3	652532	GR PRAIRIE3	CKT1		
FLT09-3PH	652526	UTICAJC4 230.0	652398	VFODNES4 230.0	CKT 1	-15.6	1.0
FLT10-3PH	652509	FTRANDL4 230.0	652510	FTRANDL7 115.0	CKT 1	-11.8	1.0
	652509	FTRANDL4 230.0	652510	FTRANDL7 115.0	CKT 2		
FLT11-3PH	652526	UTICAJC4 230.0	652626	UTICAJC7 115.0	T/F	-9.9	1.0
FLT16-3PH	652509	FTRANDL4 230.0	652507	FTTHOMP4 230.0	CKT 1	39.9	0.98
	640540	MEADOWGROVE4230.0	640133	COLMBUS4 230.0	CKT 1		
FLT17-3PH	640510	HOLT.CO3 345.0	652871	GR ISLD-LNX3345.0	CKT 1	52.3	0.97
	652871	GR ISLD-LNX3345.0	652571	GR ISLD3	Z		
	640540	MEADOWGROVE4230.0	640133	COLMBUS4 230.0	CKT 1		
FLT18-3PH	640510	HOLT.CO3 345.0	652871	GR ISLD-LNX3345.0	CKT 1	-3.3	1.0
	652871	GR ISLD-LNX3345.0	652571	GR ISLD3	Z		
FLT19-3PH	652511	GAVINS 7 115.0	640212	HARTGTN7 115.0	CKT 1	-11.1	1.0
FLT20-3PH	652511	GAVINS 7 115.0	640084	BLMFLD 7 115.0	CKT 1	-11.8	1.0
FLT21-3PH	652511	GAVINS 7 115.0	660006	YKNTJCT7 115.0	CKT 1	-4.7	1.0
FLT22-3PH	652511	GAVINS 7 115.0	659121	SPIRITM7 115.0	CKT 1	-11.8	1.0
FLT23-3PH	652517	MANNING7 115.0	659121	SPIRITM7 115.0	CKT 1	-9.1	1.0

Generation Interconnection Request Analysis							GEN-2015-089	
Rated MW of Wind Farms OR at POI (MW) Rated MVAR of Wind Farms OR at POI (MVAR)							MW at POI 200.6 MVAR at POI 65.93	
Cont. Name	From Bus (# & Name)		To Bus (# & Name)		ID	MVAR at POI	P.F at POI	
FLT24-3PH	660006	YKNTJCT7 115.0	660026	NAPA JCT7 115.0	CKT 1	-5.7	1.0	
FLT25-3PH	660006	YKNTJCT7 115.0	652525	TYNDALL7 115.0	CKT 1	-10.4	1.0	
FLT26-3PH	640271	MCCOOL 3 345.0	652571	GR ISLD3 345.0	CKT 1	-9.7	1.0	
FLT27-PO	652511	GAVINS 7 115.0	660006	YKNTJCT7 115.0	CKT 1	-4.1	1.0	
	652511	GAVINS 7 115.0	640212	HARTGTN7 115.0	CKT 1			
FLT28-PO	652511	GAVINS 7 115.0	660006	YKNTJCT7 115.0	CKT 1	-4.6	1.0	
	652511	GAVINS 7 115.0	640084	BLMFLD 7 115.0	CKT 1			
FLT31-PO	640520	ANTELOPE 3345.0	640226	HOSKINS3 345.0	CKT 1	-10.9	1.0	
	640521	ANTELOPE 7115.0	640293	NELIGH 7 115.0	CKT 1			
FLT32-PO	640520	ANTELOPE 3345.0	640226	HOSKINS3 345.0	CKT 1	-10.9	1.0	
	640521	ANTELOPE 7115.0	640293	NELIGH 7 115.0	CKT 1			
FLT33-3PH	640520	ANTELOPE 3345.0	640226	HOSKINS3 345.0	CKT 1	-8.4	1.0	
	640521	ANTELOPE 7115.0	640115	CO.LINE7 115.0	CKT 1			
FLT34-3PH	640521	ANTELOPE 7115.0	640293	NELIGH 7 115.0	CKT 1	-10.9	1.0	
	640520	ANTELOPE 3345.0	640226	HOSKINS3 345.0	CKT 1			
FLT35-3PH	640521	ANTELOPE 7115.0	640293	NELIGH 7 115.0	CKT 1	-10.9	1.0	
	640520	ANTELOPE 3345.0	640226	HOSKINS3 345.0	CKT 1			
FLT36-3PH	640521	ANTELOPE 7115.0	640115	CO.LINE7 115.0	CKT 1	-8.4	1.0	
	640520	ANTELOPE 3345.0	640226	HOSKINS3 345.0	CKT 1			
FLT37-3PH	640521	ANTELOPE 7115.0	640149	CREITON7 115.0	CKT 1	-10.1	1.0	
	640520	ANTELOPE 3345.0	640226	HOSKINS3 345.0	CKT 1			

3.3. Conclusions

The power factor analysis indicates the PISIS-2015-002 (Group 17) interconnection requests i.e., GEN-2015-089 is required to maintain the SPP standard power factor at the point of interconnection i.e., Fort Randall (652509) – Utica Jct (652526) 230kV line based on the contingencies studied.

Per the SPP OATT, the Interconnection Customer will be required to provide 95% lagging (supplying vars) and 95% leading (absorbing vars) at the POI.

4. Inductive Reactive Support Analysis

Analysis for low wind/no wind conditions in cluster scenario is performed for the proposed wind generator request. To offset the capacitive effects of the collector system and transmission line of the wind farm under low wind or no wind conditions, analysis was performed for Summer 2017 scenario to calculate the Inductive Reactive Support at point of interconnection for each interconnection request under project PISIS-2015-002 (Group 17).

Following methodology was adopted as communicated by SPP:

1. Switch the generator and capacitor bank (if installed) out of service with the collector system as modeled remaining in service.
2. Calculate the amount of inductive reactive support required at the 34.5kV collector buses which would result in zero VAR flow at the POI.”

The inductive reactive support analysis for wind generator GEN-2015-089 performed for Summer-2017 scenario which indicates that at POI (Fort Randall (652509) – Utica Jct (652526) 230kV line) 16.4 MVAR reactor is required at Bus 652594 to maintain zero MVAR flow at POI.

Maintaining zero MVAR flow at the POI at all times is not possible with static reactor banks. It will be determined on a case by case basis for each generator as to whether additional reactor banks are required for low wind conditions.

The single line diagram for wind generators showing the inductive reactive requirement for GEN-2015-089 is shown in Figure 4.1 below:

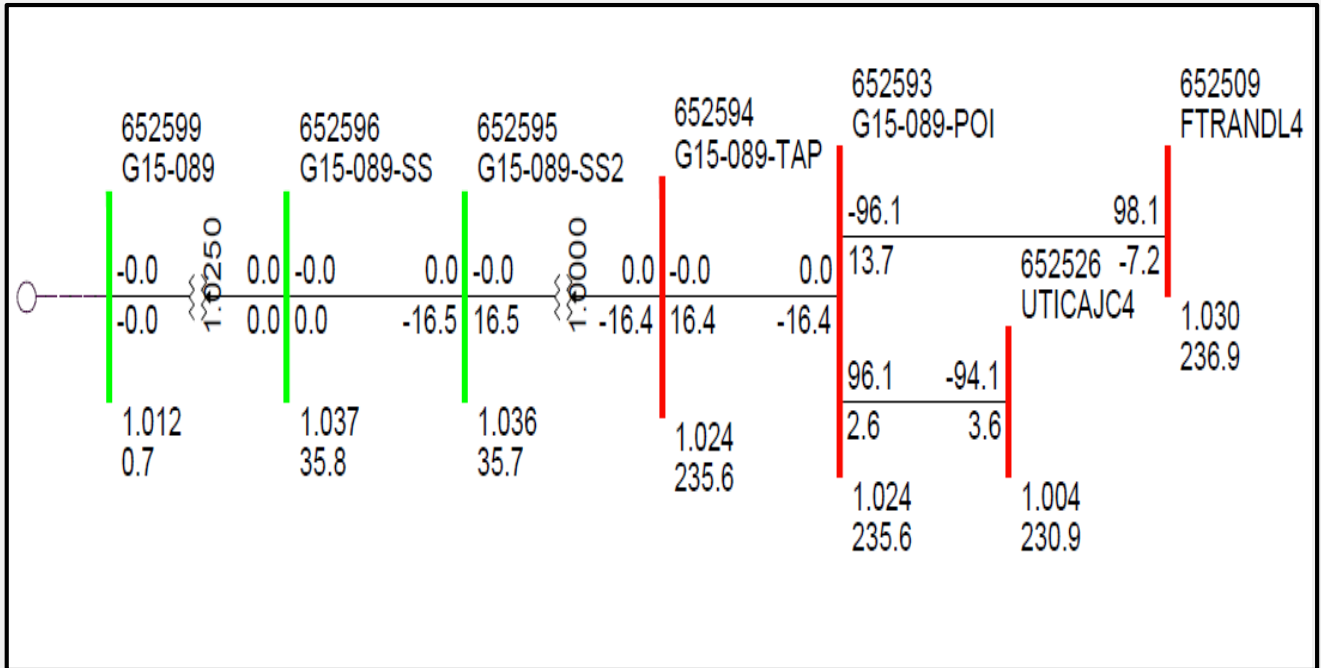


Figure 4.1.1: Inductive reactive requirement for GEN-2015-089

5. Short Circuit Analysis

The short circuit analysis out five buses away was performed for 2017 and 2025 Summer peak case for the interconnection request under project cluster scenario of PISIS-2015-002 (Group 17). No outage was assumed in the system model.

5.1. Short Circuit Result for 2017 Summer Peak Case

The short circuit results for Summer-2017 scenario (assumed not outage) at the POI are tabulated below

5.1.1. Short Circuit Result for Fort Randall (652509) – Utica Jct (652526) 230kV line (652593)

The results of the short circuit analysis for POI i.e., Fort Randall (652509) – Utica Jct (652526) 230kV line (652593) are tabulated below in Table 5.1.1.

Table 5.1.1: Short circuit results for Fort Randall (652509) – Utica Jct (652526) 230kV line (652593) (GEN-2015-089)

Bus #	Bus Name	Level Away	Fault Current (Amperes)	
			3 PH	SLG
652593	G15-089-POI 230.0	0 Level	3414.7	4066.9
652509	FTRANDL4 230.0	1 Level	10512.2	10809.9
652526	UTICAJC4 230.0	1 Level	6554.5	4846
652594	G15-089-TAP 230.0	1 Level	3414.7	4066.9
640540	MEADOWGROVE4230.0	2 Level	6003.8	4758.2
652398	VFODNES4 230.0	2 Level	7182.8	6929.8
652507	FTTHOMP4 230.0	2 Level	19893.1	18388.1
652510	FTRANDL7 115.0	2 Level	13576.2	14730.2
652516	LAKPLAT4 230.0	2 Level	5933.2	4688.5
652536	RASMUSN4 230.0	2 Level	6857.9	5405.4
652547	FTRDL34G 13.80	2 Level	45056.2	34207.3
652548	FTRDL56G 13.80	2 Level	45056.2	34207.3
652549	FTRDL78G 13.80	2 Level	37837.9	21581.6
652565	SIOUXCY4 230.0	2 Level	20682.4	18350.4
652595	G15-089-SS2 34.50	2 Level	17301.5	0
652626	UTICAJC7 115.0	2 Level	8975.8	5841.9

Bus #	Bus Name	Level Away	Fault Current (Amperes)	
			3 PH	SLG
652627	UTICAJC9 13.20	2 Level	21064.6	0
640133	COLMBUS4 230.0	3 Level	12134.4	12413.8
640349	SPENCER7 115.0	3 Level	4997.8	3884
640386	TWIN CH4 230.0	3 Level	10027.3	9362
648506	PR BRZ 4 230.0	3 Level	4533.2	4190.6
652273	FTTHMP19 13.80	3 Level	29454.3	4129.9
652274	FTTHMP29 13.80	3 Level	29456.9	4129.9
652276	FTTHOMP8 69.00	3 Level	5074.2	5689.3
652277	LAKPLAT8 69.00	3 Level	4566.6	5251.3
652287	RASMUSN8 69.00	3 Level	3677.5	4258.5
652304	SIOUXC19 13.80	3 Level	33730.3	3231.2
652305	SIOUXC29 13.80	3 Level	33818.9	2369.1
652308	SIOUXC39 13.80	3 Level	21779.6	3676
652310	SIOUXC49 13.80	3 Level	22009	3680.3
652396	VFODNS19 12.50	3 Level	23973.6	0
652397	VFODNES7 115.0	3 Level	6722.7	8482
652399	VFODNES8 69.00	3 Level	4746.7	0
652463	WH SWAN7 115.0	3 Level	13242.2	12294.5
652475	BONESTL7 115.0	3 Level	3932.2	3006.3
652501	ARMOUR 7 115.0	3 Level	4480.1	4426.2
652506	FTTHOMP3 345.0	3 Level	8951.8	5810.6
652514	HURON 4 230.0	3 Level	11465	9694.5
652519	OAHE 4 230.0	3 Level	14063.5	14723.5
652523	SIOUXFL4 230.0	3 Level	13364.8	15198.1
652540	BIGBND14 230.0	3 Level	12316.1	12105.4
652541	BIGBND24 230.0	3 Level	12147	11974.7
652546	FTRDL12G 13.80	3 Level	47438	35126.2
652564	SIOUXCY3 345.0	3 Level	15465.2	11490.9
652566	SIOUXCY5 161.0	3 Level	21661.7	16360.7

Bus #	Bus Name	Level Away	Fault Current (Amperes)	
			3 PH	SLG
652567	DENISON4 230.0	3 Level	4873.9	3552.5
652596	G15-089-SS 34.50	3 Level	16043.1	0
652606	LETCHER4 230.0	3 Level	5098	3771.6
652607	WESSINGTON 4230.0	3 Level	7132.8	6562.1
659292	KEYSTN PS237115.0	3 Level	2756.3	2421.9
659900	EAGLE 4 230.0	3 Level	7675.1	8505.6
660007	MENNOJT7 115.0	3 Level	6852.2	5023.6
660026	NAPA JCT7 115.0	3 Level	8723.2	0
952509	G12_009IS 115.0	3 Level	6921.1	0
560347	G10-051-TAP 230.0	4 Level	9662.7	6826.6
583830	G14013G01431230.0	4 Level	4533.2	4190.6
602004	SPLT RK4 230.0	4 Level	12949	15153.7
635200	RAUN 3 345.0	4 Level	24732.4	11576.3
635223	PLYMOTH5 161.0	4 Level	21212.9	2596.8
640126	E.COL. 4 230.0	4 Level	10402.6	10301.7
640131	COLMB.W4 230.0	4 Level	10472.9	9943.7
640134	KELLY 7 115.0	4 Level	18129.8	19219.6
640135	COLMBS19 13.20	4 Level	28365.4	0
640305	ONEILL 7 115.0	4 Level	4285.6	3913.1
640343	SHELCRK4 230.0	4 Level	11474.9	11768.7
640350	SPENCER9 34.50	4 Level	2304.4	2915.8
640387	TWIN CH7 115.0	4 Level	11486.2	13076.1
643140	SPENCER T1 913.80	4 Level	4565.5	0
643155	TWIN CH T4 913.80	4 Level	24195.2	0
643156	TWIN CH T6 913.80	4 Level	25160.2	0
648507	PR BR1X9 34.50	4 Level	15308.9	17759.6
648508	PR BR1Y9 13.80	4 Level	26008	0
648510	PR BR2X9 34.50	4 Level	15417.8	17857.2
648511	PR BR2Y9 13.80	4 Level	26055.5	0

Bus #	Bus Name	Level Away	Fault Current (Amperes)	
			3 PH	SLG
652232	SIOUXF19 13.20	4 Level	31404.6	3965.6
652233	SIOUXF29 13.20	4 Level	34797.4	2078.8
652246	ARMOUR 9 34.50	4 Level	3535.4	3949.6
652249	ARMOUR 8 69.00	4 Level	2804.7	2380.9
652281	HURON419 13.32	4 Level	37761.8	4354.7
652282	HURON429 13.32	4 Level	37760.2	4354.7
652478	GREGORY7 115.0	4 Level	2508.2	2037.9
652488	PHILTAP4 230.0	4 Level	4015.9	3504.9
652513	HANLON 4 230.0	4 Level	6423.4	5518.7
652515	HURON 7 115.0	4 Level	16102.3	16779.9
652518	MTVERN 7 115.0	4 Level	4470.5	4890.6
652520	OAHE 7 115.0	4 Level	8781	9544.3
652521	SULLYBT4 230.0	4 Level	6559.8	5647.6
652524	SIOUXFL7 115.0	4 Level	26349.1	24076
652525	TYNDALL7 115.0	4 Level	4172.7	4242
652530	WATERTN4 230.0	4 Level	14239.2	13266.7
652542	BGBND12G 13.80	4 Level	59814.2	40735.4
652543	BGBND34G 13.80	4 Level	58467.4	38914.1
652544	BGBND56G 13.80	4 Level	57005.1	37012.7
652545	BGBND78G 13.80	4 Level	57005.1	37012.7
652556	OAHE2-3G 13.80	4 Level	93138.3	87181.5
652557	OAHE4-5G 13.80	4 Level	93138.3	87181.5
652558	OAHE6-7G 13.80	4 Level	93138.3	87181.5
652561	DENISON5 161.0	4 Level	6078.2	6222.4
652563	SPENCER5 161.0	4 Level	9329.8	633.8
652574	SIOUXCY8 69.00	4 Level	19191.5	9894.5
652578	PAHOJA 4 230.0	4 Level	7764.4	7305.1
652583	DENISON8 69.00	4 Level	12291.4	8652.8
652589	OAHE 9 13.80	4 Level	8834.6	1472.8

Bus #	Bus Name	Level Away	Fault Current (Amperes)	
			3 PH	SLG
652591	HANLON 7 115.0	4 Level	5984	0
652599	G15-089 0.690	4 Level	731107.8	994062.7
652608	LETCHER9 13.20	4 Level	19126	0
652609	LETCHER7 115.0	4 Level	6505.3	5252.5
652614	CARPENTER 4 230.0	4 Level	7323.3	5111.9
652657	DENISON 9 13.80	4 Level	21597.6	0
652806	FTTHOM1-LNX3345.0	4 Level	8951.8	5810.6
652807	FTTHOM2-LNX3345.0	4 Level	8951.8	5810.6
652864	SIOUXCY-LNX3345.0	4 Level	15465.2	11490.9
659122	STORLA 4 230.0	4 Level	6415.4	5767.7
659205	BRDLAND4 230.0	4 Level	10434.7	8758.9
659258	SXF HARSBRG7115.0	4 Level	3990.7	2233.5
659259	SXF CHANCLR7115.0	4 Level	4857.5	3690.8
659281	HYDE 8 69.00	4 Level	3638.5	4877.4
659293	KEYSTN PS2394.200	4 Level	22273.7	0
659295	SDPRAIRWND 4230.0	4 Level	5839	5990.1
659901	EAGLE 8 69.00	4 Level	14824.2	0
660005	TRIPP 7 115.0	4 Level	4435.5	4804.9
660006	YKNTJCT7 115.0	4 Level	9320.3	9105.6
662100	WESSINGTON 934.50	4 Level	17951.6	17044.9
952510	G12_009IS_1 34.50	4 Level	9473.1	0
580011	G10-051&1127230.0	5 Level	8291.9	0
583831	G1413G1431X134.50	5 Level	12024	0
584830	GEN-2015-042230.0	5 Level	8639.7	0
601006	SPLT RK3 345.0	5 Level	14092.9	10171.5
603012	LAWRENC7 115.0	5 Level	29378.1	20091.1
603016	SPLT RK7 115.0	5 Level	36266.7	121987.3
605725	SPLT RK161 913.80	5 Level	37118.4	0
635201	RAUN 5 161.0	5 Level	28916.3	2609.2

Bus #	Bus Name	Level Away	Fault Current (Amperes)	
			3 PH	SLG
635213	NEAL 3G 22.00	5 Level	194041.5	121671.1
635214	NEAL 4G 24.00	5 Level	197706.4	137555.5
635224	PLYMOTH8 69.00	5 Level	22541.1	7519.8
635225	MORNSD 5 161.0	5 Level	11056.1	0
635226	LEEDS 5 161.0	5 Level	16876.9	0
635260	LEMARST5 161.0	5 Level	10499.6	0
635385	HUDSON 8 69.00	5 Level	6479.4	0
635391	IRETONT8 69.00	5 Level	6305.6	0
635400	HIGHLND 3 345.0	5 Level	11465.1	0
636010	LEHIGH 3 345.0	5 Level	11093.2	0
640080	BELDEN 7 115.0	5 Level	7280	5547
640113	CLRWATR7 115.0	5 Level	5622.3	4147.2
640127	COLMB.E7 115.0	5 Level	21322	23474.1
640132	COLMB.W9 34.50	5 Level	9691.2	12366.5
640136	COLMBUS7 115.0	5 Level	19462.6	21016.1
640163	EMERSON7 115.0	5 Level	5965.9	5084.7
640165	EMMET 7 115.0	5 Level	3282.5	2571.9
640200	GR ISLD4 230.0	5 Level	17701.5	18240.6
640226	HOSKINS3 345.0	5 Level	11704.4	11036.4
640227	HOSKINS4 230.0	5 Level	10582.6	11957
640306	ONEILL 8 69.00	5 Level	4161.2	4488.7
640342	SHELCKR3 345.0	5 Level	10654.6	9633.2
640388	TWIN CH8 69.00	5 Level	8358.8	10045.1
640389	TWIN CH9 34.50	5 Level	4386.6	5283.6
640424	S.SIOUXCITY7115.0	5 Level	7931.1	7151.7
643036	COLMB.ESTT3913.80	5 Level	11135.7	0
643039	COLMB.WSTT1913.80	5 Level	13115.9	0
643040	COLMB.WSTT2913.80	5 Level	15397.9	0
643117	ONEILL T1 913.80	5 Level	6276.7	0

Bus #	Bus Name	Level Away	Fault Current (Amperes)	
			3 PH	SLG
643118	ONEILL T2 913.80	5 Level	6276.3	0
643136	SHELLCRK T1913.80	5 Level	29917.7	0
643157	TWIN CH T1 913.80	5 Level	6877.5	0
643158	TWIN CH T2 913.80	5 Level	6879.3	0
643159	TWIN CH T3 913.80	5 Level	6058.3	0
645451	S3451 3 345.0	5 Level	22999.2	22145.3
648509	PR BRZ19 34.50	5 Level	15157.8	0
648512	PR BRZ29 34.50	5 Level	15287.7	0
652031	KPS21-GY7 115.0	5 Level	1603.8	0
652235	SIOUXFL8 69.00	5 Level	4510.9	4984.8
652237	WATERT19 13.80	5 Level	41632.1	3271
652239	WATERT29 13.20	5 Level	24745.4	1654.9
652240	WATERT39 13.20	5 Level	24735.5	0
652251	MTVERNS8 69.00	5 Level	3359	2492.7
652252	MTVERNN8 69.00	5 Level	2879.8	3527.3
652278	HANLON18 69.00	5 Level	6129.3	7330.6
652279	HANLON28 69.00	5 Level	6129.3	7330.6
652284	HURON 8 69.00	5 Level	4236.8	4611
652285	SULLYBT8 69.00	5 Level	2901.2	3617.7
652286	TYNDALL8 69.00	5 Level	2880.8	2221.6
652476	EAGLEBT7 115.0	5 Level	2090	2730.2
652484	NUNDRWD4 230.0	5 Level	3695.7	3740.3
652486	PHILIP 4 230.0	5 Level	3386.7	3073.9
652491	IRVSIMM7 115.0	5 Level	6923.6	7235.7
652494	WINNER 7 115.0	5 Level	2308.5	1822.1
652502	BERSFRD7 115.0	5 Level	3490.7	3062.5
652503	BLAIR 4 230.0	5 Level	9492	7644.6
652505	FLANDRU7 115.0	5 Level	4396.8	3543.8
652511	GAVINS 7 115.0	5 Level	10037.2	10703.3

Bus #	Bus Name	Level Away	Fault Current (Amperes)	
			3 PH	SLG
652528	WOONSKT7 115.0	5 Level	5690.9	4535.2
652529	WATERTN3 345.0	5 Level	9937.1	9564.8
652531	WATERTN7 115.0	5 Level	13095.5	13952.9
652535	REDFELD7 115.0	5 Level	4454	4414.3
652539	WATERSVC 20.00	5 Level	25419.4	0
652559	OAHE 1G 13.80	5 Level	45948.6	43363.3
652580	SPENCR 8 69.00	5 Level	12724.2	1419.7
652582	APPLEDORN 4 230.0	5 Level	7539.3	5973.8
652588	CLEVELD4 230.0	5 Level	5126.6	4890.8
652592	HANLON 9 13.80	5 Level	17395.4	0
652600	ASH TAP 115.0	5 Level	7183.1	7491.6
652603	EXIRA 5 161.0	5 Level	7175.6	6835.5
652630	WATERTNCAP 4230.0	5 Level	14239.2	13266.7
652821	SULLYBT-LNX3230.0	5 Level	6559.8	5647.6
652833	GRPRAR2-LNX3345.0	5 Level	6817.6	0
656267	MANNINGTAP 869.00	5 Level	4809.6	0
656570	WISDOM5 161.0	5 Level	9502.1	0
658030	DENISONWEST869.00	5 Level	7054.3	0
658031	DENSOUMAIN8 69.00	5 Level	7239.1	0
659119	STORLA 9 13.20	5 Level	19154	0
659120	BRDLAND3 345.0	5 Level	4289.4	3566.1
659123	STORLA 7 115.0	5 Level	7052.1	8154.9
659196	CARPENTER 8 69.00	5 Level	3731.2	3503.9
659198	LETCR PS227115.0	5 Level	2838.4	2551.7
659204	BROADLAND 913.80	5 Level	26252.9	27047.2
659250	SXF WBRANDN7115.0	5 Level	14042.5	10128.3
659257	SXF SHINDLR7115.0	5 Level	3240.4	1421.9
659324	HYDE 934.50	5 Level	7461	8931.1
659327	SDPRAIRWND 934.50	5 Level	32353.1	38097.1

Bus #	Bus Name	Level Away	Fault Current (Amperes)	
			3 PH	SLG
659424	LELAND2-LNX3345.0	5 Level	16624	17550.4
659907	J1CENTR8 69.00	5 Level	8869	0
659912	J6BOYER8 69.00	5 Level	10434.9	0
659921	J15SXCNTR8 69.00	5 Level	7176.3	0
659942	K217HAWARDE869.00	5 Level	8189	0
659946	K216LIBERTY869.00	5 Level	8016.6	0
659953	K412HINTONM869.00	5 Level	11967	0
659971	K301HINTON 869.00	5 Level	10926.6	0
659980	K135CONCORD869.00	5 Level	7251.6	0
660003	HURONWP7 115.0	5 Level	10680.5	12800.3
660004	MITCHEL7 115.0	5 Level	6248.1	6642.3
660009	BTAP WP7 115.0	5 Level	15651.9	16072.7
660018	B_H WIND 7115.0	5 Level	3717.6	0
662101	WESSINGTON190.575	5 Level	732491.6	941564.1
952511	G12_009IS_2 0.690	5 Level	408421.7	247159.3

5.2. Short Circuit Result for 2025 Summer Peak Case

The short circuit results for Summer-2025 scenario (assumed not outage) at each POI are tabulated below

5.2.1. Short Circuit Result for Fort Randall (652509) – Utica Jct (652526) 230kV line (652593)

The results of the short circuit analysis for POI i.e., Fort Randall (652509) – Utica Jct (652526) 230kV line (652593) are tabulated below in Table 5.2.1.

Table 5.2.1: Short circuit results for Fort Randall (652509) – Utica Jct (652526) 230kV line (652593) (GEN-2015-089)

Bus #	Bus Name	Level Away	Fault Current (Amperes)	
			3 PH	SLG
652593	G15-089-POI 230.0	0 Level	3399.6	4076.1
652509	FTRANDL4 230.0	1 Level	10809.9	11016.8
652526	UTICAJC4 230.0	1 Level	6630.1	4873.4

Bus #	Bus Name	Level Away	Fault Current (Amperes)	
			3 PH	SLG
652594	G15-089-TAP 230.0	1 Level	3399.6	4076.1
640540	MEADOWGROVE4230.0	2 Level	6016.6	4763.4
652398	VFODNES4 230.0	2 Level	7266.9	6982.2
652507	FTTHOMP4 230.0	2 Level	20396	17303.8
652510	FTRANDL7 115.0	2 Level	13886.4	14974.4
652516	LAKPLAT4 230.0	2 Level	5974	4691.3
652536	RASMUSN4 230.0	2 Level	6905.3	5426
652547	FTRDL34G 13.80	2 Level	45219.6	34270.6
652548	FTRDL56G 13.80	2 Level	45219.6	34270.6
652549	FTRDL78G 13.80	2 Level	45219.6	34270.6
652565	SIOUXCY4 230.0	2 Level	21037.8	18569.1
652595	G15-089-SS2 34.50	2 Level	15233.4	0
652626	UTICAJC7 115.0	2 Level	9168.6	5896.3
652627	UTICAJC9 13.20	2 Level	21187	0
640133	COLMBUS4 230.0	3 Level	12144.8	12416
640349	SPENCER7 115.0	3 Level	5031.9	3927.1
640386	TWIN CH4 230.0	3 Level	10082.9	9395.7
648506	PR BRZ 4 230.0	3 Level	4538.1	4193.3
652273	FTTHMP19 13.80	3 Level	29520.3	4130.8
652274	FTTHMP29 13.80	3 Level	29522.8	4130.8
652276	FTTHOMP8 69.00	3 Level	5079.7	5694.2
652277	LAKPLAT8 69.00	3 Level	4573.7	5257.7
652287	RASMUSN8 69.00	3 Level	3681.8	4262.3
652304	SIOUXC19 13.80	3 Level	33781.3	3231.6
652305	SIOUXC29 13.80	3 Level	33869.9	2369.3
652308	SIOUXC39 13.80	3 Level	21812.9	3676.6
652310	SIOUXC49 13.80	3 Level	22042.9	3680.9
652396	VFODNS19 12.50	3 Level	24021.7	0
652397	VFODNES7 115.0	3 Level	6757.7	8519.4

Bus #	Bus Name	Level Away	Fault Current (Amperes)	
			3 PH	SLG
652399	VFODNES8 69.00	3 Level	4757.6	0
652463	WH SWAN7 115.0	3 Level	13536.6	12463.3
652475	BONESTL7 115.0	3 Level	4255.7	3125.9
652501	ARMOUR 7 115.0	3 Level	4498.4	4438.1
652506	FTTHOMP3 345.0	3 Level	9055.7	5792.5
652514	HURON 4 230.0	3 Level	11647	9768.3
652519	OAHE 4 230.0	3 Level	14292.3	15342.6
652523	SIOUXFL4 230.0	3 Level	13670.4	15462.9
652540	BIGBND14 230.0	3 Level	12483	11688.2
652546	FTRDL12G 13.80	3 Level	47700.4	35222.9
652564	SIOUXCY3 345.0	3 Level	15717.4	11597.4
652566	SIOUXCY5 161.0	3 Level	22022.3	17568.7
652567	DENISON4 230.0	3 Level	4924.8	3570.6
652596	G15-089-SS 34.50	3 Level	14373.1	0
652606	LETCHER4 230.0	3 Level	5125.4	3773.3
652607	WESSINGTON 4230.0	3 Level	7236.2	6607.2
659292	KEYSTN PS237115.0	3 Level	2774.1	2431.1
659312	LOWERBRULE 4230.0	3 Level	11603.4	0
659900	EAGLE 4 230.0	3 Level	7790.2	8639.3
660007	MENNOJT7 115.0	3 Level	6951.7	5059.3
660026	NAPA JCT7 115.0	3 Level	9182.6	0
952509	G12_009IS 115.0	3 Level	6993.1	0
560347	G10-051-TAP 230.0	4 Level	9693.7	6838.3
583830	G14013G01431230.0	4 Level	4538.1	4193.3
602004	SPLT RK4 230.0	4 Level	13234.8	15415.6
635200	RAUN 3 345.0	4 Level	25305.2	11667.6
635223	PLYMOTH5 161.0	4 Level	21552.2	2626.2
640126	E.COL. 4 230.0	4 Level	10409.7	10301.1
640131	COLMB.W4 230.0	4 Level	10480.6	9946.3

Bus #	Bus Name	Level Away	Fault Current (Amperes)	
			3 PH	SLG
640134	KELLY 7 115.0	4 Level	18373.2	19474.5
640135	COLMBS19 13.20	4 Level	28319.4	0
640305	ONEILL 7 115.0	4 Level	4307.8	4132.6
640343	SHELCKR4 230.0	4 Level	11489.4	11776.6
640350	SPENCER9 34.50	4 Level	2306.6	2919.2
640387	TWIN CH7 115.0	4 Level	11532	13116.4
643140	SPENCER T1 913.80	4 Level	4569	0
643155	TWIN CH T4 913.80	4 Level	24218.7	0
643156	TWIN CH T6 913.80	4 Level	25186	0
648507	PR BR1X9 34.50	4 Level	15312.3	17762.7
648508	PR BR1Y9 13.80	4 Level	26014.5	0
648510	PR BR2X9 34.50	4 Level	15421.3	17860.3
648511	PR BR2Y9 13.80	4 Level	26062.1	0
652232	SIOUXF19 13.20	4 Level	31509.9	3966.7
652233	SIOUXF29 13.20	4 Level	34914	2079.1
652246	ARMOUR 9 34.50	4 Level	3494.8	3903.2
652249	ARMOUR 8 69.00	4 Level	2809.1	2383
652281	HURON419 13.32	4 Level	37897.2	4355.9
652282	HURON429 13.32	4 Level	37895.5	4355.9
652478	GREGORY7 115.0	4 Level	3128.3	2273
652488	PHILTAP4 230.0	4 Level	4028.8	3514
652513	HANLON 4 230.0	4 Level	6481.2	5547
652515	HURON 7 115.0	4 Level	16313.2	16932.4
652518	MTVERN 7 115.0	4 Level	4481	4899
652520	OAHE 7 115.0	4 Level	12510.8	14038.9
652521	SULLYBT4 230.0	4 Level	6601.6	5702.7
652524	SIOUXFL7 115.0	4 Level	27175.1	24541
652525	TYNDALL7 115.0	4 Level	4228.9	4281.2
652530	WATERTN4 230.0	4 Level	15037.1	13719.9

Bus #	Bus Name	Level Away	Fault Current (Amperes)	
			3 PH	SLG
652541	BIGBND24 230.0	4 Level	10601.4	8261.8
652542	BGBND12G 13.80	4 Level	59928.1	40775.7
652543	BGBND34G 13.80	4 Level	58580.6	38952.2
652556	OAHE2-3G 13.80	4 Level	93364.4	87322.1
652557	OAHE4-5G 13.80	4 Level	93364.4	87322.1
652558	OAHE6-7G 13.80	4 Level	93364.4	87322.1
652561	DENISON5 161.0	4 Level	6133.2	6260.6
652563	SPENCER5 161.0	4 Level	10979.3	5717.2
652574	SIOUXCY8 69.00	4 Level	19318.2	9917
652578	PAHOJA 4 230.0	4 Level	7892.8	7385.4
652583	DENISON8 69.00	4 Level	12472.5	8712.1
652589	OAHE 9 13.80	4 Level	9066.5	1468.6
652591	HANLON 7 115.0	4 Level	6009.7	0
652598	OAHE 29 13.80	4 Level	9066.5	0
652599	G15-089 0.690	4 Level	669397.5	917433.6
652608	LETCHER9 13.20	4 Level	19148.7	0
652609	LETCHER7 115.0	4 Level	6528.1	5261.8
652614	CARPENTER 4 230.0	4 Level	7417.2	5140.5
652657	DENISON 9 13.80	4 Level	21655.9	0
652806	FTTHOM1-LNX3345.0	4 Level	9055.7	5792.5
652807	FTTHOM2-LNX3345.0	4 Level	9055.7	5792.5
652864	SIOUXCY-LNX3345.0	4 Level	15717.4	11597.4
659122	STORLA 4 230.0	4 Level	6483.3	5799.4
659205	BRDLAND4 230.0	4 Level	10580.8	8818.9
659258	SXF HARSBRG7115.0	4 Level	4003	2236.1
659259	SXF CHANCLR7115.0	4 Level	4875.7	3697.8
659281	HYDE 8 69.00	4 Level	3639.6	4878.7
659293	KEYSTN PS2394.200	4 Level	22316.3	0
659295	SDPRAIRWND 4230.0	4 Level	5945.1	6061.3

Bus #	Bus Name	Level Away	Fault Current (Amperes)	
			3 PH	SLG
659313	RELIANCE 4 230.0	4 Level	5809.5	0
659901	EAGLE 8 69.00	4 Level	14825	0
660005	TRIPP 7 115.0	4 Level	4458	4822.7
660006	YKNTJCT7 115.0	4 Level	9934	9513.5
662100	WESSINGTON 934.50	4 Level	18040.5	17085.3
952510	G12_009IS_1 34.50	4 Level	9498.3	0
580011	G10-051&1127230.0	5 Level	8313.8	0
583831	G1413G1431X134.50	5 Level	12027.9	0
584830	GEN-2015-042230.0	5 Level	8662.1	0
601006	SPLT RK3 345.0	5 Level	14652.1	10361.9
603012	LAWRENC7 115.0	5 Level	30242.4	20363.1
603016	SPLT RK7 115.0	5 Level	37376.6	130343.4
605725	SPLT RK161 913.80	5 Level	37248.4	0
635201	RAUN 5 161.0	5 Level	29303.1	2613.9
635213	NEAL 3G 22.00	5 Level	195169.5	121965.4
635214	NEAL 4G 24.00	5 Level	198775.2	137899
635224	PLYMOTH8 69.00	5 Level	22705.9	7532
635225	MORNSD 5 161.0	5 Level	11132.6	0
635226	LEEDS 5 161.0	5 Level	17051.1	0
635260	LEMARST5 161.0	5 Level	10606.5	0
635385	HUDSON 8 69.00	5 Level	6488.6	0
635391	IRETONT8 69.00	5 Level	6314.7	0
635400	HIGHLND 3 345.0	5 Level	12098.6	0
636010	LEHIGH 3 345.0	5 Level	12297.2	0
640080	BELDEN 7 115.0	5 Level	7363	5580.4
640113	CLRWATR7 115.0	5 Level	5664.2	4205.5
640127	COLMB.E7 115.0	5 Level	21600	23753
640132	COLMB.W9 34.50	5 Level	9806.8	12513.7
640136	COLMBUS7 115.0	5 Level	19727.7	21288.3

Bus #	Bus Name	Level Away	Fault Current (Amperes)	
			3 PH	SLG
640163	EMERSON7 115.0	5 Level	5979.1	5091.1
640200	GR ISLD4 230.0	5 Level	17687.6	18309.9
640226	HOSKINS3 345.0	5 Level	11771.1	11104.4
640227	HOSKINS4 230.0	5 Level	10632.9	12012.7
640306	ONEILL 8 69.00	5 Level	4432.5	4911.7
640342	SHELLCRK3 345.0	5 Level	10696.1	9655.7
640388	TWIN CH8 69.00	5 Level	8478	10185
640389	TWIN CH9 34.50	5 Level	4443	5351.1
640424	S.SIOUXCITY7115.0	5 Level	7952.8	7163.7
640465	EMMETE.TAP 7115.0	5 Level	3329	3059.5
643036	COLMB.ESTT3913.80	5 Level	11135.4	0
643039	COLMB.WSTT1913.80	5 Level	13116.7	0
643040	COLMB.WSTT2913.80	5 Level	15399	0
643117	ONEILL T1 913.80	5 Level	6282.5	0
643118	ONEILL T2 913.80	5 Level	6282.1	0
643136	SHELLCRK T1913.80	5 Level	29922	0
643157	TWIN CH T1 913.80	5 Level	6879.4	0
643158	TWIN CH T2 913.80	5 Level	6881.2	0
643159	TWIN CH T3 913.80	5 Level	6059.8	0
645451	S3451 3 345.0	5 Level	23636.1	22544.6
648509	PR BRZ19 34.50	5 Level	15160.6	0
648512	PR BRZ29 34.50	5 Level	15290.6	0
652031	KPS21-GY7 115.0	5 Level	1835.4	0
652235	SIOUXFL8 69.00	5 Level	4524.9	4996.2
652237	WATERT19 13.80	5 Level	42067.5	3272.8
652239	WATERT29 13.20	5 Level	25316.2	1656.5
652240	WATERT39 13.20	5 Level	25306.9	0
652251	MTVERNS8 69.00	5 Level	3362.6	2494
652252	MTVERNN8 69.00	5 Level	2882.5	3530

Bus #	Bus Name	Level Away	Fault Current (Amperes)	
			3 PH	SLG
652278	HANLON18 69.00	5 Level	6144.8	7345.4
652279	HANLON28 69.00	5 Level	6144.8	7345.4
652284	HURON 8 69.00	5 Level	4245.4	4617.9
652285	SULLYBT8 69.00	5 Level	2903.6	3621
652286	TYNDALL8 69.00	5 Level	2896.7	2227.9
652476	EAGLEBT7 115.0	5 Level	2135.9	2783.1
652484	NUNDRWD4 230.0	5 Level	3715.9	3752
652486	PHILIP 4 230.0	5 Level	3402	3083.4
652491	IRVSIMM7 115.0	5 Level	8898.5	9026
652494	WINNER 7 115.0	5 Level	3810.7	2276.1
652502	BERSFRD7 115.0	5 Level	4270	3428.4
652503	BLAIR 4 230.0	5 Level	10180.6	7934
652505	FLANDRU7 115.0	5 Level	4724.7	3781.3
652511	GAVINS 7 115.0	5 Level	11055.5	11545
652528	WOONSKT7 115.0	5 Level	5708.6	4542.4
652529	WATERTN3 345.0	5 Level	10558.7	9941.4
652531	WATERTN7 115.0	5 Level	14560.4	15026.9
652535	REDFELD7 115.0	5 Level	4538.2	4469.6
652539	WATERSVC 20.00	5 Level	25629	0
652544	BGBND56G 13.80	5 Level	55801.9	36642.7
652545	BGBND78G 13.80	5 Level	55801.9	36642.7
652559	OAHE 1G 13.80	5 Level	50456.4	46056.9
652562	SPENCER 9 13.80	5 Level	6731.4	0
652581	SPENCER8 69.00	5 Level	19988.5	15501.6
652582	APPLEDORN 4 230.0	5 Level	7633.7	6013.1
652588	CLEVELD4 230.0	5 Level	5204.6	4939.2
652592	HANLON 9 13.80	5 Level	17421.3	0
652600	ASH TAP 115.0	5 Level	9415.5	9522.6
652603	EXIRA 5 161.0	5 Level	7325.1	6925

Bus #	Bus Name	Level Away	Fault Current (Amperes)	
			3 PH	SLG
652630	WATERTNCAP 4230.0	5 Level	15037.1	13719.9
652821	SULLYBT-LNX3230.0	5 Level	6601.6	5702.7
652833	GRPRAR2-LNX3345.0	5 Level	6826.2	0
656267	MANNINGTAP 869.00	5 Level	4850.5	0
656570	WISDOM5 161.0	5 Level	11116	0
658030	DENISONWEST869.00	5 Level	7196.8	3932.8
658031	DENSOUMAIN8 69.00	5 Level	7363.9	0
659119	STORLA 9 13.20	5 Level	19178	0
659120	BRDLAND3 345.0	5 Level	4317.4	3576.9
659123	STORLA 7 115.0	5 Level	7080.2	8179.2
659196	CARPENTER 8 69.00	5 Level	3738.5	3507.9
659198	LETCHR PS227115.0	5 Level	2842.7	2554
659204	BROADLAND 913.80	5 Level	26308.5	27087.1
659250	SXF WBRANDN7115.0	5 Level	14272.2	10209.2
659257	SXF SHINDLR7115.0	5 Level	3248.5	1422.9
659310	WITTEN 4 230.0	5 Level	3159.5	0
659324	HYDE 934.50	5 Level	7462.7	8932.9
659327	SDPRAIRWND 934.50	5 Level	33988	39593.2
659424	LELAND2-LNX3345.0	5 Level	16771.1	17657.8
659907	J1CENTR8 69.00	5 Level	8884.6	0
659912	J6BOYER8 69.00	5 Level	10538.4	0
659921	J15SXCNTR8 69.00	5 Level	7209	0
659942	K217HAWARDE869.00	5 Level	8206.6	0
659946	K216LIBERTY869.00	5 Level	8039.9	0
659953	K412HINTONM869.00	5 Level	12019.5	0
659971	K301HINTON 869.00	5 Level	10967.6	0
659980	K135CONCORD869.00	5 Level	7266.6	0
660003	HURONWP7 115.0	5 Level	10756.6	12874.1
660004	MITCHEL7 115.0	5 Level	6270.4	6659.4

Bus #	Bus Name	Level Away	Fault Current (Amperes)	
			3 PH	SLG
660009	BTAP WP7 115.0	5 Level	15852.2	16213.4
660018	B_H WIND 7115.0	5 Level	3732.2	0
662101	WESSINGTON190.575	5 Level	734909.4	944262.3
952511	G12_009IS_2 0.690	5 Level	409253	247361.9

6. Stability Analysis for Cluster Scenario

6.1. Faults Simulated

Thirty Seven (37) faults were considered for the transient stability simulations which included three phase faults, as well as single phase line faults, at the locations defined by SPP in the RFP. Single-phase line faults were simulated by applying fault impedance to the positive sequence network at the fault location. As per the SPP current practice to compute the fault levels, the fault impedance was computed to give a positive sequence voltage at the specified fault location of approximately 60% of pre-fault voltage.

Concurrently and previously queued projects as respectively shown in Table-1 and Table-2 of the study request i.e., GI-0209, GI-0713, GI-0704, GI-0713/0714, GI-0716, GI-1003, G255, GI-0602 (GEN-2012-002IS), GI-1209 (GEN-2012-009IS), GI-0906 (GEN-2009-005IS), GI-0907 (GEN-2009-007IS), GI-0920a (GEN-2009-020aIS), GEN-2015-076, GEN-2006-020N, GEN-2007-011No8, GEN-2008-086No2/GEN-2014-032, GEN-2015-007, GEN-2015-023, GEN-2014-013, GEN-2014-031 GEN-2013-032 GEN-2015-053, GEN-2015-054, Grand Prairie Wind as well as areas number 640, 645, 650, 652, 600, 608, 613, 615, 620, and 661 were monitored during all the simulations. Table 6.1.1 shows the list of simulated contingencies. This Table also shows the fault clearing time and the time delay before re-closing for all the study contingencies.

Simulations were performed with a 0.1-second steady-state run followed by the appropriate disturbance as described in Table 6.1.1. Simulations were run for minimum 15-second duration to confirm proper machine damping.

Table 6.1.1 summarizes the overall results for all faults simulations of cluster scenario. Complete sets of plots for Winter-2016, Summer-2017, and Summer-2025 peak seasons for each fault are included in Appendices A, B and C respectively.

Table 6.1.1: List of simulated faults for cluster scenario stability analysis

Cont. #	Contingency Name	Description	2016 Winter Results	2017 Summer Results	2025 Summer Results
1	FLT01-3PH	3 phase fault on the Utica Jct (652526) to G15-089-POI (652593) 230kV line near G15-089-POI. a. Apply fault at the G15-089-POI 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.	Stable	Stable	Stable
2	FLT02-3PH	3 phase fault on the Fort Randall (652509) to G15-089-POI (652593) 230kV line near the G15-089-POI. a. Apply fault at the G15-089-POI 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.	Stable	Stable	Stable
3	FLT03-3PH	3 phase fault on the Utica Jct (652526) to Rasmussen (652536) 230kV line near Utica Jct. a. Apply fault at the Utica Jct 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.	Stable	Stable	Stable
4	FLT04-3PH	3 phase fault on the Fort Randall (652509) to Meadow Grove (640540) 230kV line near Fort Randall. a. Apply fault at the Fort Randall 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.	Stable	Stable	Stable
5	FLT05-3PH	3 phase fault on the Fort Randall (652509) to FortThompson (652507) 230kV line near Fort Randall. a. Apply fault at the Fort Randall 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.	Stable	Stable	Stable
6	FLT06-3PH	3 phase fault on the Holt County (#640510) to Grand Island (652571) 345kV line near Grand Island. a. Apply fault at the Grand Island 345kV bus. b. Clear fault after 6 cycles by tripping the faulted line (640510-652871-652571).	Stable	Stable	Stable
7	FLT07-3PH	3 phase fault on the Fort Randall (652509) to Lake Platte (652516) 230kV line near Fort Randall. a. Apply fault at the Fort Randall 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.	Stable	Stable	Stable
8	FLT08-3PH	3 phase fault on the Fort Thompson (652506) to Grand Prairie (652532) 345kV line near Grand Prairie a. Apply fault at the Grand Prairie 345kV bus. b. Clear fault after 6 cycles by tripping the faulted line (652506-652807-652833-652532).	Stable	Stable	Stable
9	FLT09-3PH	3 phase fault on the Utica Jct (652526) to VFODNES (652398) 230kV line near Utica Jct. a. Apply fault at the Utica Jct 230kV bus. b. Clear fault after 6 cycles by tripping the faulted line.	Stable	Stable	Stable

Cont. #	Contingency Name	Description	2016 Winter Results	2017 Summer Results	2025 Summer Results
10	FLT10-PO	<p>Prior Outage of Fort Randall 230/115kV auto ckt #1 (652509/652510) 3 phase fault on the Fort Randall 230/115kV auto ckt #2 (652509/652510) a. Apply fault at the Fort Randall 230kV bus. b. Clear fault after 6 cycles by tripping the autotransformer.</p>	Stable	Stable	Stable
11	FLT11-3PH	<p>3 phase fault on the Utica Jct 230/115kV auto (652526/652626) a. Apply fault at the Utica Jct 230kV bus. b. Clear fault after 6 cycles by tripping the autotransformer.</p>	Stable	Stable	Stable
12	FLT12-SB	<p>Stuck Breaker – Utica Jct 230kV #1 a) Apply SLG fault at Utica Jct 230kV(652526) for 16 cycles a) Clear fault b) Trip Fort Randall (652509) to Utica Jct (652526) 230kV line c) Trip Utica Jct 230/115kV auto</p>	Stable	Stable	Stable
13	FLT13-SB	<p>Stuck Breaker – Utica Jct 115kV #2 a) Apply SLG fault at Utica Jct 115kV(652626) for 16 cycles b) Clear fault c) Trip Utica Jct (652626) to NAPA Jct (660026) 115kV line d) Trip Utica Jct 230/115kV auto</p>	Stable	Stable	Stable
14	FLT14-SB	<p>Stuck Breaker – Fort Randall 230kV #1 a) Apply SLG fault at Fort Randall 230kV(652509) for 16 cycles a) Clear fault b) Trip Fort Randall (652509) to Fort Thompson 230kV line c) Trip Fort Randall 230/115kV auto</p>	Stable	Stable	Stable
15	FLT15-SB	<p>Stuck Breaker – Fort Randall 230kV #2 a) Apply SLG fault at Fort Randall 230kV(652509) for 16 cycles a) Clear fault b) Trip Fort Randall (652509) to Fort Thompson 230kV line c) Trip Fort Randall (652509) - Meadow Grove 230kV line</p>	Stable	Stable	Stable

Cont. #	Contingency Name	Description	2016 Winter Results	2017 Summer Results	2025 Summer Results
16	FLT16-PO	<p>Prior Fort Randall (652509) to Fort Thompson (652507) 230kV outage</p> <p>a) 3 phase fault on the Meadow Grove (640540) to Columbus (640133) 230kV line near Meadow Grove for 6 cycles</p> <p>b) clear fault</p> <p>c) Trip faulted line</p>	Stable	Stable	Stable
17	FLT17-PO	<p>Prior Holt County (640510) – Grand Island (652571) 345kV outage</p> <p>a) 3 phase fault on the Meadow Grove (640540) to Columbus (640133) 230kV line near Meadow Grove for 6 cycles</p> <p>b) clear fault</p> <p>c) Trip faulted line</p>	Stable	Stable	Stable
18	FLT18-PO	<p>3 phase fault on the Holt County (640510) – Grand Island (652571) 345kV line</p> <p>a. Apply fault at the Holt County 345kV bus.</p> <p>b. Clear fault after 6 cycles by tripping the faulted line (640510-652871-652571)..</p>	Stable	Stable	Stable
19	FLT19-3PH	<p>3 phase fault on the Gavins (652511) to HartGtn (640212) 115kV line near Gavins.</p> <p>a. Apply fault at the Gavins 115kV bus.</p> <p>b. Clear fault after 7 cycles by tripping the faulted line.</p>	Stable	Stable	Stable
20	FLT20-3PH	<p>3 phase fault on the Gavins (652511) to Bloomfield (640084) 115kV line near Gavins.</p> <p>a. Apply fault at the Gavins 115kV bus.</p> <p>b. Clear fault after 7 cycles by tripping the faulted line.</p>	Stable	Stable	Stable
21	FLT21-3PH	<p>3 phase fault on the Gavins (652511) to Yankton Jct (660006) 115kV line near Gavins.</p> <p>a. Apply fault at the Gavins 115kV bus.</p> <p>b. Clear fault after 7 cycles by tripping the faulted line.</p>	Stable	Stable	Stable
22	FLT22-3PH	<p>3 phase fault on the Gavins (652511) to Spirit Mound (659121) 115kV line near Gavins.</p> <p>a. Apply fault at the Gavins 115kV bus.</p> <p>b. Clear fault after 7 cycles by tripping the faulted line.</p>	Stable	Stable	Stable
23	FLT23-3PH	<p>3 phase fault on the Manning (652517) to Spirit Mound (659121) 115kV line near Spirit Mound.</p> <p>a. Apply fault at the Spirit Mound 115kV bus.</p> <p>b. Clear fault after 7 cycles by tripping the faulted line.</p>	Stable	Stable	Stable

Cont. #	Contingency Name	Description	2016 Winter Results	2017 Summer Results	2025 Summer Results
24	FLT24-3PH	3 phase fault on the Yankton Jct (660006) to Napa Jct (660026) 115kV line near Yankton. a. Apply fault at the Yankton 115kV bus. b. Clear fault after 7 cycles by tripping the faulted line.	Stable	Stable	Stable
25	FLT25-3PH	3 phase fault on the Yankton Jct (660006) to Tyndall (652525) 115kV line near Yankton. a. Apply fault at the Yankton 115kV bus. b. Clear fault after 7 cycles by tripping the faulted line.	Stable	Stable	Stable
26	FLT26-3PH	3 phase fault on the McCool (640271) to Grand Island (652871) 345kV line near Grand Island. a. Apply fault at the Grand Island 345kV bus. b. Clear fault after 6 cycles by tripping the faulted line.	Stable	Stable	Stable
27	FLT27-PO	Prior Outage – Gavins #1 a) Prior outage of Gavins (652511) to Yankton Jct (660006) 115kV line b) 3 phase fault on the Gavins (652511) to HartGtn (640212) 115kV line near Gavins. c) Apply fault at the Gavins 115kV bus. d) b. Clear fault after 7 cycles by tripping the faulted line.	Stable	Stable	Stable
28	FLT28-PO	Prior Outage – Gavins #1 a) Prior outage of Gins (652511) to Hartgtn (660006) 115kV line b) 3 phase fault on the Gavins (652511) to Bloomfield (640084) 115kV line near Gavins c) Apply fault at the Gavins 115kV bus. d) Clear fault after 7 cycles by tripping the faulted line.	Stable	Stable	Stable
29	FLT29-SB	Stuck Breaker – Gavins #1 a) Apply SLG fault at Gavins (652511) for 16 cycles b) Clear fault c) Trip Gavins (652511) to Hartgtn (660006) 115kV line d) Trip Gavins (652511) to Bloomfield (640084) 115kV line	Stable	Stable	Stable

Cont. #	Contingency Name	Description	2016 Winter Results	2017 Summer Results	2025 Summer Results
30	FLT30-SB	Stuck Breaker – Gavins #2 a) Apply SLG fault at Gavins (652511) for 16 cycles b) Clear fault c) Trip Gavins (652511) to Hartgtn (660006) 115kV line d) Trip Gavins (652511) to Spirit Mount (659121) 115kV line	Stable	Stable	Stable
31	FLT31-PO	Prior Antelope (640520) to Hoskins (640226) 345kV outage a) 3 phase fault on the Antelope (640521) to Neligh (640293) 115 ckt 1 near Antelope for 7 cycles b) clear fault c) Trip faulted line	Stable	Stable	Stable
32	FLT32-PO	Prior Antelope (640520) to Hoskins (640226) 345kV outage a) 3 phase fault on the Antelope (640521) to Neligh (640293) 115 ckt 1 near Antelope for 7 cycles b) clear fault c) Trip faulted line	Stable	Stable	Stable
33	FLT33-PO	Prior Antelope (640520) to Hoskins (640226) 345kV outage a) 3 phase fault on the Antelope (640521) to County Line (640115) 115 ckt 1 near Antelope for 7 cycles b) clear fault c) Trip faulted line	Stable	Stable	Stable
34	FLT34-PO	Prior Antelope (640520) to Neligh (640293) 115kV ckt 1 outage a) 3 phase fault on the Antelope (640520) to Hoskins 345kV line near Antelope for 6 cycles b) clear fault c) Trip faulted line	Stable	Stable	Stable
35	FLT35-PO	Prior Antelope (640520) to Neligh (640293) 115kV ckt 2 outage a) 3 phase fault on the Antelope (640520) to Hoskins 345kV line near Antelope for 6 cycles b) clear fault c) Trip faulted line	Stable	Stable	Stable

Cont. #	Contingency Name	Description	2016 Winter Results	2017 Summer Results	2025 Summer Results
36	FLT36-PO	Prior Antelope (640521) to County Line (640115) 115kV outage a) 3 phase fault on the Antelope (640520) to Hoskins 345kV line near Antelope for 6 cycles b) clear fault c) Trip faulted line	Stable	Stable	Stable
37	FLT37-PO	Prior Antelope (640521) to Creighton (640149) 115kV outage a) 3 phase fault on the Antelope (640520) to Hoskins 345kV line near Antelope for 6 cycles b) clear fault c) Trip faulted line	Stable	Stable	Stable

6.2. Simulation Results for Cluster Scenario

For cluster scenario, there are no impacts on the stability performance of the SPP system for the contingencies tested on the SPP provided base cases.

7. Conclusions

The findings of the impact study for the proposed interconnection projects under PSIS-2015-002 (Group 17) considered 100% of their proposed installed capacity is as follows:

1. The power factor analysis indicates the PISIS-2015-002 (Group 17) interconnection requests i.e., GEN-2015-089 is required to maintain the SPP standard power factor at the point of interconnection i.e., Fort Randall (652509) – Utica Jct (652526) 230kV line based on the contingencies studied. Per the SPP OATT, the Interconnection Customer will be required to provide 95% lagging (supplying vars) and 95% leading (absorbing vars) at the POI
2. To offset the capacitive effects of the collector system and transmission line of the wind farm under low wind or no wind conditions, the inductive reactive support analysis for wind generator GEN-2015-089 performed for Summer-2017 scenario. This analysis indicates that at POI (Fort Randall (652509) – Utica Jct (652526) 230kV line) 16.4 MVAR reactor is required at Bus 652594 to maintain zero MVAR flow at POI. Maintaining zero MVARs flow at the POI at all times is not possible with static reactor banks. It will be determined on a case by case basis for each generator as to whether additional reactor banks are required for low wind conditions.
3. There are no impacts on the stability performance of the SPP system during cluster scenario for the contingencies tested on the provided base cases. The study machines stayed on-line and stable for all simulated faults. The Project stability simulations with thirty seven (37) specified test disturbances did not show instability problems in the SPP system. Any oscillations were damped out.

8. **Appendix A: 2016 Winter Peak Case Stability Run Plots – Cluster**
9. **Appendix B: 2017 Summer Peak Case Stability Run Plots – Cluster**
10. **Appendix C: 2025 Summer Peak Case Stability Run Plots – Cluster**
11. **Appendix D: Project Model Data**