

Definitive Interconnection
System Impact Study for
Generation Interconnection
Requests
(DISIS-2013-001-2)

January 2014

Generator Interconnection

Revision History

Date	Author	Change Description
07/31/2013	SPP	Report Issued (DISIS-2013-001) – Group 6 Interconnection Requests not included in this issue.
08/30/2013	SPP	Group 6 Interconnection Requests results appended and NRIS withdrawals accounted, Report Re-Posted (DISIS-2013-001-1)
01/31/2014	SPP	Account for Withdrawn Projects, Report Re-Posted (DISIS-2013-001-2)

Executive Summary

Generation Interconnection customers have requested a Definitive Interconnection System Impact Study (DISIS) under the Generation 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 March 31, 2013. The customers will be referred to in this study as the DISIS-2013-001 Interconnection Customers. This System Impact Study analyzes the interconnecting of multiple generation interconnection requests associated with new generation totaling approximately 1,438.5 MW of new generation which would be located within the transmission systems of American Electric Cooperative Corporation (AEPW), Lincoln Electric System (LES), Nebraska Public Power District (NPPD), Oklahoma Gas and Electric (OKGE), Southwestern Public Service (SPS), and Sunflower Electric Power Corporation/Mid-Kansas Electric Power LLC (SUNC)/(MKEC). The various generation interconnection requests have differing proposed in-service dates¹. The generation 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, 1,438.5 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.

In no way does this study guarantee operation for all periods of time. This interconnection study identifies and assigns transmission reinforcements for Energy Resource (ER) interconnection injection constraints (defined as a 20% distribution factor impact) and Network Resource (NR) constraints if requested by the Customer. 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 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 DISIS-2013-001 Interconnection Customers is estimated at \$197,413,175. These costs are shown in Appendix E and F. Interconnection Service to DISIS-2013-001 Interconnection Customers is also contingent upon higher queued customers paying for certain required network upgrades. **The in-service date for the DISIS 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.

Network constraints listed in Appendix H are in the local area of the new generation when this generation is injected throughout the SPP footprint for Energy Resource Interconnection Service (ERIS) requests. Certain Interconnection Requests were also studied for Network Resource Interconnection Service (NRIS). Those constraints are also listed in Appendix H. Additional network constraints will have to be verified with a Transmission Service Request (TSR) and associated studies. With a defined source and sink in a TSR, this 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 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.

Table of Contents

Introduction	1
Model Development.....	2
Identification of Network Constraints.....	6
Determination of Cost Allocated Network Upgrades	6
Required Interconnection Facilities	7
Power Flow Analysis.....	7
Stability Analysis	12
Conclusion.....	14
Appendices.....	15
A: Generation Interconnection Requests Considered for Impact Study	A0
B: Prior Queued Interconnection Requests	B0
C: Study Groupings	C0
D: Proposed Point of Interconnection One Line Diagrams	D0
E: Cost Allocation per Interconnection Request (Including Prior Queued Upgrades)	E0
F: Cost Allocation per Proposed Study Network Upgrade	F0
G: Power Flow Analysis (Constraints Used For Mitigation)	G0
H: Power Flow Analysis (Other Constraints Not Requiring Mitigation)	H0
I: Power Flow Analysis (Constraints from Category C Contingencies)	I0
J: Group 6 Dynamic Stability Analysis Report	J0

Introduction

Pursuant to the Southwest Power Pool (SPP) Open Access Transmission Tariff (OATT), SPP has conducted this Definitive Interconnection System Impact Study (DISIS) for certain generation interconnection requests in the SPP Generation Interconnection Queue. These interconnection requests have been clustered together for the following System Impact Study window which closed March 31, 2013. The customers will be referred to in this study as the DISIS-2013-001 Interconnection Customers. This DISIS analyzes the interconnecting of multiple generation interconnection requests associated with new generation totaling 1,438.5 MW which would be located within the transmission systems of American Electric Cooperative Corporation (AEPW), Lincoln Electric System (LES), Nebraska Public Power District (NPPD), Oklahoma Gas and Electric (OKGE), Southwestern Public Service (SPS), and Sunflower Electric Power Corporation/Mid-Kansas Electric Power LLC (SUNC)/(MKEC). The various generation interconnection requests have differing proposed in-service dates². The generation 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 DISIS 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.

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 completion of the Facility Study.

Model Development

Interconnection Requests Included in the Cluster

SPP has included all interconnection requests that submitted a Definitive Interconnection System Impact Study Agreement no later than March 31, 2013 and were subsequently accepted by Southwest Power Pool under the terms of the Generator Interconnection Procedures (GIP) that became effective March 30, 2010. The interconnection requests that are included in this study are listed in Appendix A.

Affected System Interconnection Request

Also included in this Definitive Interconnection System Impact Study are three Affected System Studies. The Affected System Study Requests have been given the designations: ASGI-2013-001 (11.5MW, Point of Interconnection is PanTex South 115kV), ASGI-2013-002 (18.4 MW, Point of Interconnection is Farmers Electric Tucumcari 115kV), and ASGI-2013-003 (18.4 MW, Point of Interconnection is Farmers Electric Clovis 115kV). ASGI-2013-001 is located on a Customer distribution voltage bus served by the Southwestern Public Service Transmission System. ASGI-2013-001 was studied in Group 5 (Amarillo Area), ASGI-2013-002 and ASGI-2013-003 was studied in Group 6 (southern Texas Panhandle).

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.

Development of Base Cases

Power Flow

The 2013 series Transmission Service Request (TSR) Models 2014 spring, 2014 summer and winter peak, and the 2019 summer and winter peak, and 2024 summer peak scenario 0 cases were used for this study. After the cases were developed, each of the control areas' resources were then re-dispatched to account for the new generation requests using current dispatch orders.

Dynamic Stability

The 2013 series SPP Model Development Working Group (MDWG) Models 2014 winter, 2015 summer, and 2024 summer peak cases were used as starting points for this study.

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 DISIS-2013-001 Interconnection Customers have not been assigned acceleration costs for the below listed projects. The DISIS-2013-001 Interconnection Customers Generation Facilities in service dates may need to be delayed until the completion of

the following upgrades. 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.

- **Balanced Portfolio Projects³:**
 - Woodward – Border – TUCO 345kV project, scheduled for 5/19/2014 in-service
 - Woodward 345/138kV circuit #2 autotransformer
 - TUCO 345/138kV circuit #2 autotransformer
 - Reactors at Woodward and Border
 - Iatan – Nashua 345kV, scheduled for 6/1/2015 in-service
 - Nashua 345/161kV autotransformer
 - Muskogee – Seminole 345kV, placed in-service in 2013
- **Priority Projects⁴:**
 - Hitchland – Woodward double circuit 345kV, scheduled for 6/30/2014 in-service
 - Hitchland 345/230kV circuit #2 autotransformer
 - Woodward – Thistle double circuit 345kV, scheduled for 12/31/2014 in-service
 - Spearville – Clark County double circuit 345kV, scheduled for 12/31/2014 in-service
 - Clark County – Thistle double circuit 345kV, scheduled for 12/31/2014 in-service
 - Thistle – Wichita double circuit 345kV, scheduled for 12/31/2014 in-service
 - Thistle 345/138kV autotransformer, scheduled for 12/31/2014 in-service
 - Thistle – Flat Ridge 138kV, scheduled for 12/31/2014 in-service
- Sheldon – SW 7th and Pleasant Hill 115kV circuit #2 rebuild, placed in-service in 2013⁵
- Hays – South Hays 115kV line rebuild, scheduled for 6/1/2015 in-service⁶
- Arcadia – Redbud 345kV circuit #1 and #2 terminal equipment replacement, placed in-service in 2013⁷

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 DISIS-2013-001 study and are assumed to be in service. This list may not be all inclusive. The DISIS-2013-001 Interconnection Customers, at this time, do not have responsibility for these facilities but may later be assigned the cost of these facilities if higher queued customers terminate their Generation Interconnection Agreement or withdraw from the interconnection queue. The DISIS-2013-001 Interconnection Customer Generation Facilities in-service dates may need to be delayed until the completion of the following upgrades.

- Upgrades assigned to ICS-2008-001 Interconnection Customers
 - Amarillo South – Swisher 230kV replace line traps

³ Notification to Construct (NTC) issued June 2009

⁴ Notification to Construct (NTC) issued June 2010

⁵ SPP Regional Reliability 2012 ITPNT Project Per SPP-NTC-200171

⁶ SPP Regional Reliability 2013 ITPNT Project Per SPP-NTC-200210

⁷ SPP Regional Reliability 2013 ITPNT Project Per SPP-NTC-200204

- Upgrades assigned to DISIS-2009-001 Interconnection Customers:
 - Lancer Project
 - Spearville – Lancer 345kV addition
 - Lancer 345/115kV transformer circuit #1 addition
 - Lancer – North Ft. Dodge 115kV addition
 - Ft Dodge – North Ft. Dodge circuit #2 addition
 - Move Fort Dodge terminal of Shooting Star 115kV at North Ft Dodge
 - Fort Randall – Meadow Grove – Kelly 230kV circuit #1 rerate (320MVA)
- Upgrades assigned to DISIS-2010-001 Interconnection Customers:
 - Switch 2749 – Wildorado 69kV circuit # 1 rebuild
- Upgrades assigned to DISIS-2010-002 Interconnection Customers:
 - Twin Church – Dixon County 230kV circuit #1 rerate (320MVA)
 - Buckner – Spearville 345kV terminal equipment
- Upgrades assigned to DISIS-2011-001 Interconnection Customers:
 - Beaver County – Buckner 345kV circuit #1 build
 - Tatonga – Matthewson – Cimarron 345kV circuit #2 build and Tatonga terminal equipment upgrade (1792 MVA)
 - Hoskins – Dixon County – Twin Church 230kV circuit #1 conductor clearance increase
 - (NRIS only) Hitchland 230/115/13.2kV transformer circuit #2
 - (NRIS only) New Deal – TUCO 345kV/115kV Project
 - (NRIS only) Spearville – Mullergren 230kV circuit #1 rebuild
 - (NRIS only) Woodward – FPL Switch – Mooreland 138kV circuit #1 rebuild
- Upgrades assigned to DISIS-2011-002 interconnection Customers:
 - Power System Stabilizers - Install Power System Stabilizers @ Tolk (Units: 1,2) and Jones (Units: 1,2,3,4)
 - Mullergren 345kV Expansion Project
 - Mullergren 345/230kV substation and transformer
 - GEN-2011-017 Tap – Mullergren 345kV circuit #1
 - Extend Mullergren 230kV circuit to new 345/230kV Mullergren substation
 - Jones – Lubbock South 230kV circuit #2 replace line traps
 - West Brock – SUB 967 – SUB 968 – SUB 969 – SUB 974 69kV circuit #1 replace terminal equipment
 - (NRIS only) Hydro Carbon Tap - Sub974 69kV circuit #1 rewire CT
 - (NRIS only) Lubbock South 230/115kV Autotransformer circuit #2 addition
 - (NRIS only) Mullergren – Reno 345kV circuit #1 build
 - (NRIS only) Nebraska City U Syracuse – SUB 970 circuit #1 replace terminal equipment
 - (NRIS only) Yoakum 230/115kV transformer circuit #1 and #2 replacements
- Upgrades assigned to DISIS-2012-001 interconnection Customers:
 - Dobson – Gano 115kV circuit #1 replace terminal equipment
 - Garden City – Kansas Ave Water Treatment Plant 115kV replace terminal equipment
 - Mustang – Yoakum 230kV circuit #1 replace line traps
- Upgrades assigned to DISIS-2012-002 interconnection Customers:
 - Amoco Wasson – Oxy Tap – Yoakum 230kV circuit #1 replace line traps
 - Fairfax 138/69kV circuit #1 replace transformer
 - Lake Creek – Lone Wolf 69kV circuit #1 reset CT

- Remington – Fairfax 138kV circuit #1 conductor clearance increase
- (NRIS only) Arkansas City – Paris – Creswell – Oak – Rainbow – City of Winfield 69kV rebuild
- (NRIS only) Creswell 138/69/13.2kV Transformers circuit #1 and #2 replace

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.

Regional Groupings

The interconnection requests listed in Appendix A were grouped together into twelve active regional groups based on geographical and electrical impacts. These groupings are shown in Appendix C.

To determine interconnection impacts, fifteen different generation dispatch scenarios of the spring base case models were developed to accommodate the regional groupings.

Power Flow

For each group, the various wind generating plants were modeled at 100% nameplate of maximum generation. The other wind generating plants in each area were modeled at 80% nameplate while the wind generating plants in the other areas were modeled at 20% nameplate of maximum generation. These projects were dispatched as Energy Resources with a load factor by area distribution across the SPP footprint. Certain projects that requested Network Resource Interconnection Service were dispatched in an additional analysis into the balancing authority of the interconnecting transmission owner. This method allowed for the identification of network constraints that were common to the regional groupings that could then in turn have the mitigating upgrade cost allocated throughout the entire cluster. Other sensitivity analyses are also performed with all interconnection requests in each group being dispatched at 100% nameplate.

Peaking units were not dispatched in the 2014 spring model. To study peaking units' impacts, the 2014 summer and winter and 2019 summer and winter, and 2024 summer seasonal models were chosen and peaking units were modeled at 100% of the nameplate rating and wind generating facilities were modeled at 10% of the nameplate rating. Each interconnection request was also modeled separately at 100% nameplate for certain analyses.

Dynamic Stability

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

Identification of Network Constraints

The initial set of network constraints were found by using PSS®MUST First Contingency Incremental Transfer Capability (FCITC) analysis on the entire cluster grouping dispatched at the various levels mentioned above. These constraints were then screened to determine if any of the generation interconnection requests had at least a 20% Distribution Factor (DF) upon the constraint. Constraints that measured at least a 20% DF from at least one interconnection request were considered for mitigation. Interconnection Requests that have requested Network Resource Interconnection Service (NRIS) were also studied in the NRIS analysis to determine if any constraint had at least a 3% DF. If so, these constraints were also considered for mitigation.

Determination of Cost Allocated Network Upgrades

Cost Allocated Network Upgrades of wind generation interconnection requests were determined using the 2014 spring model. Cost Allocated Network Upgrades of peaking units was determined using the 2019 summer peak model. A PSS®MUST sensitivity analysis was performed to determine the Distribution Factors (DF), a distribution factor with no contingency that each generation interconnection request had on each new upgrade. The impact each generation interconnection request had on each upgrade project was weighted by the size of each request. Finally the costs due by each request for a particular project were then determined by allocating the portion of each request's impact over the impact of all affecting requests.

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

- Determine an Impact Factor 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.

Credits for Amounts Advanced for Network Upgrades

Interconnection Customer shall be entitled to credits 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.

Required Interconnection Facilities

The requirement to interconnect the 1,438.5 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 \$197,413,175. Interconnection Facilities specific to each generation interconnection request are listed in Appendix E. A preliminary one-line drawing for each generation interconnection request are listed in Appendix D.

A list of constraints that were identified and used for mitigation are listed in Appendix G. Listed within Appendix G are the ERIS constraints with greater than or equal to a 20% DF, as well as, the NRIS constraints that have a DF of 3% or greater. Other Network Constraints which are not requiring mitigation are shown in Appendix H. With a defined source and sink in a TSR, this list of Network Constraints will be refined and expanded to account for all Network Upgrade requirements. Additional constraints identified by NERC category “C” contingencies are listed in Appendix I.

Power Flow Analysis

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. NERC Category “B” and “C” contingencies were evaluated.

Power Flow Analysis

A power flow analysis was conducted for each Interconnection Customer’s facility using modified versions of the 2014 spring peak, 2014 summer and winter peak, and the 2019 summer and winter peak, 2024 summer peak models. The output of the Interconnection Customer’s facility was 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 pursuing Network Resource Interconnection Service (NRIS) had an additional analysis conducted for displacing resources in the interconnecting Transmission Owner’s balancing authority.

This analysis was conducted assuming that previous queued requests in the immediate area of these interconnect requests were in-service. The analysis of each Customer’s project indicates that criteria violations will occur on the GRDA, MIDW, NPPD, OKGE, SPS, SUNC/MKEC, and WAPA transmission systems under system intact and contingency conditions in the peak seasons.

Cluster Group 1 (Woodward Area)

In addition to the 5,147.1 MW of previously queued generation in the area, 48.0 MW of new interconnection service was studied. No new ERIS constraints for mitigation were found in this area. Since the posting of the original study, Interconnection Customer GEN-2013-003 has dropped its request for NRIS. As a result, there are no NRIS constraints found in this area.

Cluster Group 2 (Hitchland Area)

In addition to the 2,961.2 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.

Cluster Group 3 (Spearville Area)

In addition to the 4,390.4 MW of previously queued generation in the area, 99.0 MW of new interconnection service was studied. No new ERIS constraints for mitigation were found in this area. For Interconnection Custer GEN-2013-010 that requested NRIS, there are constraints on the Knoll – North Hays, Vine Street - Hays - South Hays 115kV circuit #1. The South Hays – Hays 115kV constraint is to be mitigated by an approved ITP Near Term project. The North Hays – Vine – Knoll 115kV line sections will need to be rebuilt.

Group 3: ERIS Constraints			
MONITORED ELEMENT	RATE B (MVA)	TC%LOADING (% MVA)	CONTINGENCY
Currently, no new ERIS constraints for mitigation were found			

Group 3: NRIS Constraints			
MONITORED ELEMENT	RATE B (MVA)	TC%LOADING (% MVA)	CONTINGENCY
HAYS PLANT - VINE STREET 115KV CKT 1	88	115.4055	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1
HAYS PLANT - SOUTH HAYS 115KV CKT 1	99	123.0838	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1
KNOLL - N HAYS3 115.00 115KV CKT 1	88	102.1152	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1

Cluster Group 4/11 (NW Kansas Group)

In addition to the 1,988.1 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.

Cluster Group 5 (Amarillo Area)

In addition to the 932.6 MW of previously queued generation in the area, 11.5 MW of new interconnection service was studied. No new constraints were found in this area.

Cluster Group 6 (South Texas Panhandle/New Mexico)

In addition to the 3,191.65 MW of previously queued generation in the area, 488.2 MW of new interconnection service was studied. ERIS constraints were observed on the Tolk West – Plant X 230kV circuit #1 and Tolk East – Plant X 230kV circuit #1 and Deaf Smith – Plant X 230kV lines. The addition of a third 230kV circuit between Tolk – Plant X 230kV, and terminal equipment upgrades on Deaf Smith and Plant X substations will relieve these constraints. With the withdrawal of higher and equally queued projects, the prior need for a 345kV transmission line to the Sweetwater, Oklahoma area is no longer required. Instead, installation of reactive compensation equipment at Oklaunion 345kV is required for interconnection. For interconnection requests with NRIS, a number of additional upgrades were identified in Appendices E and F for mitigation of overloads.

Group 6: ERIS Constraints			
MONITORED ELEMENT	RATE B (MVA)	TC%LOADING (% MVA)	CONTINGENCY
PLANT X STATION - TOLK STATION WEST 230KV CKT 1	502	118.0572	PLANT X STATION - TOLK STATION EAST 230KV CKT 2
PLANT X STATION - TOLK STATION EAST 230KV CKT 2	502	117.2076	PLANT X STATION - TOLK STATION WEST 230KV CKT 1
DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1	351	112.3413	OKLAUNION – TUCO INTERCHANGE 345KV CKT 1

Group 6: NRIS Constraints			
MONITORED ELEMENT	RATE B (MVA)	TC%LOADING (% MVA)	CONTINGENCY
CURRY COUNTY INTERCHANGE - DEAF SMITH REC-#20 115KV CKT 1	96	100.6959	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	119.6532	LAMB COUNTY INTERCHANGE - TOLK STATION WEST 230KV CKT 1
TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	560	106.181	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2	560	104.8713	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1

Cluster Group 7 (Southwestern Oklahoma)

In addition to the 1,900.0 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.

Cluster Group 8 (South Central Kansas/North Oklahoma)

In addition to the 2,757.3 MW of previously queued generation in the area, 247.3 MW of new interconnection service was studied. An additional 1,200 MW of existing generation was studied for Interconnection Requests that share a Point of Interconnection (POI) with the studied generation. ERIS constraints observed included the Vinita Junction 138/69kV transformer and Vinita – Vinita Junction 69kV circuit #1. Replacement of the Vinita Junction transformer to a larger size along with reconductoring the Vinita – Vinita Junction and upgrading associated terminal equipment will relieve the ERIS overloads. For interconnection requests with NRIS, a number of additional upgrades were identified in Appendices E and F for mitigation of overloads. Constraints on the Redbud-Arcadia 345kV line were mitigated by an ITP Near Term project, which was placed in-service in 2013. Further coordination with AEPW, GRDA, and AECI will occur in the Facility Study. Additionally, Interconnection Customer GEN-2013-012 has dropped its request for NRIS. This change eliminates the need to upgrade the Arcadia – Kamo Memorial 138kV circuit at this time.

Group 8: ERS Constraints			
MONITORED ELEMENT	RATE B (MVA)	TC%LOADING (% MVA)	CONTINGENCY
VINITA JUNCTION (VINITAJC) 138/69/13.8KV TRANSFORMER CKT 1	62	119.0777	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
VINITA - VINITA JUNCTION 69KV CKT 1	69	106.3146	SUB 404 - HOCKERVILLE – VINITA JUNCTION 138KV CKT 1

Group 8: NRIS Constraints			
MONITORED ELEMENT	RATE B (MVA)	TC%LOADING (% MVA)	CONTINGENCY
AFTON - EXPLORER PIPELINE TAP 69KV CKT 1	48	109.6824	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
CATOOSA - TERRA NITROGEN TAP 138KV CKT 1	136	105.5437	NORTHEAST STATION - OWASSO SOUTH 138KV CKT 1
EASTERN STATE HOSPITAL TAP - VINITA NEO TAP 69KV CKT 1'	48	107.8671	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
EXPLORER PIPELINE TAP - J6 69KV CKT 1	48	103.6959	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
J6 - VINITA NEO TAP 69KV CKT 1	48	105.719	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	110.1458	NORTHEAST STATION - OWASSO SOUTH 138KV CKT 1
EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	135.5269	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1

Cluster Group 9/10 (Nebraska)

In addition to the 1,592.7 MW of previously queued generation in the area, 414.2 MW of new interconnection service was studied. An additional 211.0 MW of requested generation on the Fort Randall – Columbus 230kV line will cause the need for significant 230/115kV transmission reinforcements in this area. To mitigate the ERS base case and contingent constraints, a new 230kV transmission line and 345/230kV transformer at a new 345/230kV substation tapping the Hoskins – Shell Creek 345kV circuit #1 is proposed along with a 230/115kV Meadow Grove transformer with a new 115kV transmission line from Meadow Grove to North Petersburg.

Group 9/10: ERS Constraints			
MONITORED ELEMENT	RATE B (MVA)	TC%LOADING (% MVA)	CONTINGENCY
KELLY – MEADOWGROVE 230.00 230KV CKT 1	320	129.2226	FT RANDAL – G12_005T 230.00 230KV CKT 1
FT RANDAL – G12_005T 230.00 230KV CKT 1	320	127.0523	KELLY – MEADOWGROVE 230.00 230KV CKT 1
G12_005T 230.00 – MEADOWGROVE 230.00 230KV CKT 1	320	104.0605	KELLY – MEADOWGROVE 230.00 230KV CKT 1

Group 9/10: NRIS Constraints			
MONITORED ELEMENT	RATE B (MVA)	TC%LOADING (% MVA)	CONTINGENCY
Currently, no new NRIS constraints for mitigation were found			

Cluster Group 12 (Northwest Arkansas)

In addition to the 0.0 MW of previously queued generation in the area, 30.0 MW of new interconnection service was studied. An additional 620.0 MW of existing generation was studied for Interconnection Requests that share a Point of Interconnection (POI) with the studied generation. No new constraints were found in this area.

Cluster Group 13 (Northwest Missouri)

In addition to the 285.8 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.

Cluster Group 14 (South Central Oklahoma)

In addition to the 262.2 MW of previously queued generation in the area, 100.3 MW of new interconnection service was studied. No new constraints were found in this area.

Curtailment and System Reliability

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

Stability Analysis

A stability analysis was conducted for each Interconnection Customer using modified versions of the 2013 series SPP Model Development Working Group (MDWG) Models 2014 winter, 2015 summer, and 2024 summer peak dynamic cases. The stability analysis was conducted with all upgrades in service that were identified in the power flow analysis. For each group, the interconnection requests were studied at 100% nameplate output while the other groups were dispatched at 20% output for wind requests and 100% output for fossil requests. The output of the Interconnection Customer's facility was offset in each model by a reduction in output of existing online SPP generation. The following synopsis is included for each group. The entire stability study for each group can be found in the Appendices section.

Cluster Group 1 (Woodward Area)

The Group 1 stability analysis was not performed again for this restudy. The original analysis in DISIS-2013-001 is still valid.

Cluster Group 2 (Hitchland Area)

There was no stability analysis conducted in the Hitchland area due to no requests in the area.

Cluster Group 3 (Spearville Area)

The Group 3 stability analysis was not performed again for this restudy. The original analysis in DISIS-2013-001 is still valid.

Cluster Group 4/11 (Northwest Kansas Area)

There was no stability analysis conducted in the northwest Kansas area due to no requests in the area.

Cluster Group 5 (Amarillo Area)

The Group 5 stability analysis was not performed again for this restudy. The original analysis in DISIS-2013-001 is still valid.

Cluster Group 6 (South Texas Panhandle/New Mexico)

The Group 6 stability analysis for this study was performed by SPP Staff. The analysis identified voltage issues for loss of the Border – Tuco 345kV line. To alleviate this voltage issue, reactive compensation equipment at Oklaunion 345kV is required including a capacitor bank with possible dynamic response. Power Factor Analysis was not reperformed for this study. Please refer to DISIS-2013-001-1 for this analysis.

Cluster Group 7 (Southwest Oklahoma Area)

There was no stability analysis conducted in the southwest Oklahoma area due to no requests in the area.

Cluster Group 8 (South Central Kansas/North Oklahoma)

The Group 8 stability analysis was not performed again for this restudy. The original analysis in DISIS-2013-001 is still valid.

Cluster Group 9/10 (Nebraska)

The Group 9/10 stability analysis was not performed again for this restudy. The original analysis in DISIS-2013-001 is still valid.

Cluster Group 12 (Northwest Arkansas Area)

The Group 12 stability analysis was not performed again for this restudy. The original analysis in DISIS-2013-001 is still valid.

Cluster Group 13 (Northwest Missouri Area)

There was no stability analysis conducted in the Northwest Missouri area due to no requests in the area.

Cluster Group 14 (South Central Oklahoma)

The Group 14 stability analysis was not performed again for this restudy. The original analysis in DISIS-2013-001 is still valid.

Conclusion

The minimum cost of interconnecting 1,438.5MW of new interconnection requests included in this Definitive Interconnection System Impact Study is estimated at \$197,413,175 for the Allocated Network Upgrades and Transmission Owner Interconnection Facilities are listed in Appendix E and F. These costs do not include the cost of upgrades of other transmission facilities listed in Appendix H which are Network Constraints.

These interconnection costs do not include any cost of 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).

Appendices

A: Generation Interconnection Requests Considered for Impact Study

See next page.

A: Generation Interconnection Requests Considered for Impact Study

Request	Amount	Service	Area	Requested Point of Interconnection	Proposed Point of Interconnection	Requested In-Service Date	In Service Date Delayed Until no earlier than*
ASGI-2013-001	11.50	ER	SPS	PanTex South 115kV	PanTex South 115kV		
ASGI-2013-002	18.40	ER	SPS	FE Tucumcari 115kV	FE Tucumcari 115kV		
ASGI-2013-003	18.40	ER	SPS	FE Clovis 115kV	FE Clovis 115kV		
GEN-2012-005	81.00	ER/NR	NPPD	Tap Fort Randall - Columbus (North of Madison Co) 230kV	Tap Fort Randall - Columbus (North of Madison Co) 230kV	6/1/2015	TBD
GEN-2013-002	50.60	ER/NR	LES	Tap Sheldon - Folsom 115kV CKT 2	Tap Sheldon - Folsom & Pleasant Hill 115kV CKT 2	12/31/2013	TBD
GEN-2013-003	48.00	ER	OKGE	Tap Woodward - Thistle 345kV CKT (GEN-2012-016 Tap)	Tap Woodward - Thistle 345kV Dbl CKT (GEN-2012-016 Tap)	3/1/2017	12/31/2014
GEN-2013-004	6.00	ER/NR	NPPD	Tap Fort Randall - Columbus (Madison County)	Tap Fort Randall - Columbus (Madison County)	1/1/2014	TBD
GEN-2013-005	73.50	ER/NR	NPPD	Madison County (GEN-2008-086N2 Sub)	Madison County (GEN-2008-086N2 Sub)	12/31/2014	TBD
GEN-2013-006	50.60	ER	NPPD	Tap Fort Randall - Columbus (Madison County)	Tap Fort Randall - Columbus (Madison County)	10/1/2014	TBD
GEN-2013-007	100.30	ER/NR	OKGE	Tap Prices Falls - Carter 138kV	Tap Prices Falls - Carter 138kV	12/31/2014	TBD
GEN-2013-008	1.20	ER	NPPD	Steele City 115kV	Steele City 115kV	12/31/2013	TBD
GEN-2013-009	100.30	ER/NR	AEPW	Tap Northeastern - Vinita 138kV	Tap Alluwe Tap - Vinita Junction 138kV	12/31/2015	TBD
GEN-2013-010	99.00	ER/NR	SUNCMKEC	Tap Spearville - Post Rock 345kV	Tap Spearville - Post Rock 345kV (GEN-2012-011 Tap)	12/31/2015	TBD
GEN-2013-011	30.00	ER	AEPW	Turk 138kV	Turk 138kV		TBD
GEN-2013-012	147.00	ER/NR	OKGE	Redbud 345kV	Redbud 345kV	11/30/2014	TBD
GEN-2013-013	248.40	ER/NR	SPS	Tap Eddy County - Tolk 345kV	Tap Eddy County - Tolk 345kV	12/1/2014	TBD
GEN-2013-014	25.50	ER/NR	NPPD	Tap Guide Rock - Pauline (GEN-2008-123N Tap) 115kV	Tap Guide Rock - Pauline (GEN-2008-123N Tap) 115kV	12/31/2014	TBD
GEN-2013-015	125.80	ER/NR	NPPD	Tap Pauline - Hildreth 115kV	Tap Pauline - Hildreth 115kV	12/31/2015	TBD
GEN-2013-016	203.00	ER	SPS	TUCO 345kV	TUCO 345kV	12/1/2016	TBD
Total: 1,438.50							

*Requests that are dependent upon Priority Projects or Balanced Portfolio may be delayed until 12/31/2014. Other requests in-service date to be determined after Facility Study.

B: Prior Queued 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	Tap Fairfax (AECI) - Shilder (AEPW) 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	28.80	SPS	Lovington 115kV	On-Line
ASGI-2011-002	20.00	SPS	Herring 115kV	On-Line
ASGI-2011-003	10.00	SPS	Hendricks 115kV	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)
GEN-2001-014	96.00	WFEC	Ft Supply 138kV	On-Line
GEN-2001-026	74.00	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	Tap Greensburg - Ft Dodge (Shooting Star Tap) 115kV	On-Line
GEN-2001-039M	100.00	SUNCMKEC	Central Plains Tap 115kV	On-Line
GEN-2002-004	200.00	WERE	Latham 345kV	On-Line at 150MW
GEN-2002-005	120.00	WFEC	Red Hills Tap 138kV	On-Line
GEN-2002-008	240.00	SPS	Hitchland 345kV	On-Line at 120MW
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	Washita 138kV	On-Line
GEN-2004-005N	30.00	NPPD	St Francis 115kV	On Suspension
GEN-2004-014	154.50	SUNCMKEC	Spearville 230kV	On-Line at 100MW
GEN-2004-020	27.00	AEPW	Washita 34.5kV	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-2005-008	120.00	OKGE	Woodward 138kV	On-Line
GEN-2005-012	250.00	SUNCMKEC	Ironwood 345kV	On-Line at 160MW
GEN-2005-013	201.00	WERE	Tap Latham - Neosho (Caney River) 345kV	On-Line
GEN-2006-002	101.00	AEPW	Sweetwater 230kV	On-Line
GEN-2006-006	205.50	SUNCMKEC	Spearville 345kV	On Schedule for 2015
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

Request	Amount	Area	Requested/Proposed Point of Interconnection	Status or In-Service Date
GEN-2006-026	604.00	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 Schedule for 2014
GEN-2006-038N005	80.00	NPPD	Broken Bow 115kV	On-Line
GEN-2006-038N019	80.00	NPPD	Petersburg North 115kV	On-Line
GEN-2006-040	108.00	SUNCMKEC	Mingo 115kV	On Suspension
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-2006-047	240.00	SPS	Tap Bushland - Deaf Smith (Buffalo) 230kV	On Suspension
GEN-2007-011	135.00	SUNCMKEC	Syracuse 115kV	On Suspension
GEN-2007-011N08	81.00	NPPD	Bloomfield 115kV	On-Line
GEN-2007-021	201.00	OKGE	Tatonga 345kV	On Schedule for 2014
GEN-2007-025	300.00	WERE	Viola 345kV	On-Line
GEN-2007-032	150.00	WFEC	Tap Clinton Junction - Clinton 138kV	On Suspension
GEN-2007-038	200.00	SUNCMKEC	Spearville 345kV	On Schedule for 2015
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 Schedule for 2014
GEN-2007-046	199.50	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 2014
GEN-2008-003	101.00	OKGE	Woodward EHV 138kV	On-Line
GEN-2008-008	60.00	SPS	Graham 69kV	On Suspension
GEN-2008-013	300.00	OKGE	Tap Wichita - Woodring (Hunter) 345kV	On-Line at 235MW
GEN-2008-017	300.00	SUNCMKEC	Setab 345kV	On Schedule for 2015
GEN-2008-018	250.00	SPS	Finney 345kV	On-Line
GEN-2008-019	300.00	OKGE	Tatonga 345kV	On Schedule for 2015
GEN-2008-021	42.00	WERE	Wolf Creek 345kV	On-Line
GEN-2008-022	300.00	SPS	Tap Eddy Co - Tolk (Chaves County) 345kV	On Schedule for 2015
GEN-2008-023	150.00	AEPW	Hobart Junction 138kV	On-Line
GEN-2008-029	250.50	OKGE	Woodward EHV 138kV	On Schedule for 2014
GEN-2008-037	101.00	WFEC	Tap Washita - Blue Canyon Wind 138kV	On-Line
GEN-2008-044	197.80	OKGE	Tatonga 345kV	On-Line
GEN-2008-047	300.00	OKGE	Tap Hitchland - Woodward Dbl Ckt (Beaver County) 345kV	On Schedule for 2014
GEN-2008-051	322.00	SPS	Potter County 345kV	On-Line at 161MW
GEN-2008-079	99.20	SUNCMKEC	Tap Cudahy - Ft Dodge 115kV	On-Line
GEN-2008-086N02	200.00	NPPD	Tap Ft Randle - Columbus (Madison County) 230kV	On Schedule for 2014
GEN-2008-088	50.60	SPS	Vega 69kV	On Suspension
GEN-2008-092	201.00	MIDW	Post Rock 230kV	On Schedule for 2014
GEN-2008-098	100.80	WERE	Tap Lacygne - Wolf Creek (Anderson County) 345kV	On Schedule for 2015
GEN-2008-119O	60.00	OPPD	S1399 161kV	On-Line
GEN-2008-123N	89.70	NPPD	Tap Guide Rock - Pauline (Rosemont) 115kV	On Schedule for 2014
GEN-2008-124	200.10	SUNCMKEC	Ironwood 345kV	On Schedule for 2016
GEN-2008-129	80.00	MIPU	Pleasant Hill 161kV	On-Line
GEN-2009-008	199.50	MIDW	South Hays 230kV	On Suspension

Request	Amount	Area	Requested/Proposed Point of Interconnection	Status or In-Service Date
GEN-2009-020	48.60	MIDW	Tap Nekoma - Bazine (Walnut Creek) 69kV	On Suspension
GEN-2009-025	60.00	OKGE	Nardins 69kV	On-Line
GEN-2009-040	108.00	WERE	Marshall 115kV	On Schedule for 2015
GEN-2010-001	300.00	OKGE	Tap Hitchland - Woodward Dbl Ckt (Beaver County) 345kV	On Schedule for 2014 (204 MW) and 2015 (96 MW)
GEN-2010-003	100.80	WERE	Tap Lacygne - Wolf Creek (Anderson County) 345kV	On Schedule for 2015
GEN-2010-005	300.00	WERE	Viola 345kV	On-Line at 170MW
GEN-2010-006	205.00	SPS	Jones 230kV	On-Line
GEN-2010-009	165.60	SUNCMKEC	Buckner 345kV	On-Line
GEN-2010-011	29.70	OKGE	Tatonga 345kV	On Line
GEN-2010-014	358.80	SPS	Hitchland 345kV	On Schedule for 2016
GEN-2010-015	200.10	SUNCMKEC	Spearville 345kV	On Schedule for 2015
GEN-2010-020	20.00	SPS	Roswell 69kV	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	S 1399 161kV	IA Pending
GEN-2010-045	197.80	SUNCMKEC	Buckner 345kV	IA Pending
GEN-2010-046	56.00	SPS	TUCO Interchange 230kV	On Schedule for 2016
GEN-2010-048	70.00	MIDW	Tap Beach Station - Redline 115kV	IA Pending
GEN-2010-051	200.00	NPPD	Tap Twin Church - Hoskins 230kV	On Schedule for 2014
GEN-2010-055	4.50	AEPW	Wekiwa 138kV	On-Line
GEN-2010-056	151.20	MIPU	Tap Saint Joseph - Cooper 345kV	On Schedule for 2015
GEN-2010-057	201.00	MIDW	Rice County 230kV	On-Line
GEN-2010-058	20.00	SPS	Chaves County 115kV	On Suspension
GEN-2010-061	180.00	SUNCMKEC	Tap Post Rock - Spearville (GEN-2011-017T) 345kV	Facility Study
GEN-2011-007	250.10	OKGE	Tap Cimarron - Woodring (Mathewson) 345kV	On Schedule for 2014
GEN-2011-008	600.00	SUNCMKEC	Clark County 345kV	IA Pending
GEN-2011-010	100.80	OKGE	Minco 345kV	On-Line
GEN-2011-011	50.00	KACP	Iatan 345kV	On-Line
GEN-2011-014	201.00	OKGE	Tap Hitchland - Woodward Dbl Ckt (Beaver County) 345kV	IA Pending
GEN-2011-016	200.10	SUNCMKEC	Spearville 345kV	IA Pending
GEN-2011-017	299.00	SUNCMKEC	Tap Spearville - PostRock (GEN-2011-017T) 345kV	On Schedule for 2018
GEN-2011-018	73.60	NPPD	Steele City 115kV	On-Line
GEN-2011-019	299.00	OKGE	Woodward 345kV	On Schedule for 2017
GEN-2011-020	299.00	OKGE	Woodward 345kV	On Schedule for 2017
GEN-2011-021	299.00	OKGE	Tap Hitchland - Woodward Dbl Ckt (Beaver County) 345kV	IA Pending
GEN-2011-022	299.00	SPS	Hitchland 345kV	On Schedule for 2017
GEN-2011-025	82.30	SPS	Tap Floyd County - Crosby County 115kV	On Suspension
GEN-2011-027	120.00	NPPD	Tap Twin Church - Hoskins 230kV (GEN-2010-51 Tap)	IA Pending
GEN-2011-037	7.00	WFEC	Blue Canyon 5 138kV	On-Line
GEN-2011-040	111.00	OKGE	Tap Ratliff - Pooleville 138kV	On Schedule for 2014
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	250.00	OKGE	Border 345kV	IA Pending
GEN-2011-050	109.80	AEPW	Rush Springs Natural Gas Tap 138kV	On Suspension
GEN-2011-051	104.40	OKGE	Tap Woodward - Tatonga 345kV	IA Pending
GEN-2011-054	300.00	OKGE	Cimarron 345kV	On Schedule for 2013 (200 MW) and 2014 (99 MW)

Request	Amount	Area	Requested/Proposed Point of Interconnection	Status or In-Service Date
GEN-2011-055	52.80	OPPD	South Sterling 69kV	Facility Study
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 Schedule for 2014
GEN-2012-001	61.20	SPS	Tap Grassland - Borden County 230kV	On-Line
GEN-2012-004	41.40	OKGE	Tap Ratliff - Pooleville (Carter County) 138kV	On Schedule for 2014
GEN-2012-007	120.00	SUNCMKEC	Rubart 115kV	On Schedule for 2014
GEN-2012-009	15.00	SPS	Mustang 230kV	Facility Study
GEN-2012-010	15.00	SPS	Mustang 230kV	Facility Study
GEN-2012-011	200.00	SUNCMKEC	Tap Spearville - Post Rock 345kV (North of GEN-2011-017 Tap)	Facility Study
GEN-2012-016	312.00	OKGE	Tap Woodward - Thistle 345kV Ckt 1	IA Pending
GEN-2012-020	478.00	SPS	TUCO 230kV	IA Pending
GEN-2012-021	4.80	LES	Terry Bundy Generating Station 115kV	On-Line
GEN-2012-023	115.00	WERE	Viola 345kV	IA Pending
GEN-2012-024	180.00	SUNCMKEC	Clark County 345kV	Facility Study
GEN-2012-026	100.00	MIDW	Colby 115kV	IA Pending
GEN-2012-027	136.00	AEPW	Shidler 138kV	On Schedule for 2015
GEN-2012-028	74.80	WFEC	Gotebo 69kV	On Schedule for 2015
GEN-2012-031	200.00	OKGE	Cimarron 345kV (GEN-2010-040 Sub)	IA Pending
GEN-2012-032	300.00	OKGE	Tap Rose Hill - Sooner (Ranch) 345kV	IA Pending
GEN-2012-033	98.80	OKGE	Tap and Tie South 4th - Bunch Creek & Enid Tap - Fairmont (GEN-2012-033T) 138kV	On Schedule for 2015
GEN-2012-034	7.00	SPS	Mustang 230kV	IA Pending
GEN-2012-035	7.00	SPS	Mustang 230kV	IA Pending
GEN-2012-036	7.00	SPS	Mustang 230kV	IA Pending
GEN-2012-037	203.00	SPS	TUCO 345kV	Facility Study
GEN-2012-040	76.50	WFEC	Chilocco 138kV	On Schedule for 2015
GEN-2012-041	121.50	OKGE	Tap Rose Hill - Sooner 345kV	On Schedule for 2015
Gray County Wind (Montezuma)	110.00	SUNCMKEC	Gray County Tap 115kV	On-Line
Llano Estacado (White Deer)	80.00	SPS	Llano Wind 115kV	On-Line
NPPD Distributed (Broken Bow)	8.30	NPPD	Broken Bow 115kV	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 (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

Total: 25,409.1

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-2008-019	300.00	OKGE	Tatonga 345kV
GEN-2008-029	250.50	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-2011-007	250.10	OKGE	Tap Cimarron - Woodring (Mathewson) 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-2011-054	300.00	OKGE	Cimarron 345kV
GEN-2012-016	312.00	OKGE	Tap Woodward - Thistle 345kV Ckt 1
GEN-2012-031	200.00	OKGE	Cimarron 345kV (GEN-2010-040 Sub)
PRIOR QUEUED SUBTOTAL	5,147.10		
GEN-2013-003	48.00	OKGE	Tap Woodwad - Thistle 345kV Dbl CKT (GEN-2012-016 Tap)
CURRENT CLUSTER SUBTOTAL	48.00		
AREA TOTAL	5,195.10		

GROUP 2: HITCHLAND AREA			
Request	Capacity	Area	Proposed Point of Interconnection
ASGI-2011-002	20.00	SPS	Herring 115kV
GEN-2002-008	240.00	SPS	Hitchland 345kV
GEN-2002-009	80.00	SPS	Hansford 115kV
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	199.50	SPS	Hitchland 115kV
GEN-2008-047	300.00	OKGE	Tap Hitchland - Woodward Dbl Ckt (Beaver County) 345kV
GEN-2010-001	300.00	OKGE	Tap Hitchland - Woodward Dbl Ckt (Beaver County) 345kV
GEN-2010-014	358.80	SPS	Hitchland 345kV
GEN-2011-014	201.00	OKGE	Tap Hitchland - Woodward Dbl Ckt (Beaver County) 345kV
GEN-2011-021	299.00	OKGE	Tap Hitchland - Woodward Dbl Ckt (Beaver County) 345kV
GEN-2011-022	299.00	SPS	Hitchland 345kV
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	2,961.20		
AREA TOTAL	2,961.20		

GROUP 3: SPEARVILLE AREA			
Request	Capacity	Area	Proposed Point of Interconnection
ASGI-2012-006	22.50	SUNCMKEC	Tap Hugoton - Rolla 69kV
GEN-2001-039A	105.00	SUNCMKEC	Tap Greensburg - Ft Dodge (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-2006-006	205.50	SUNCMKEC	Spearville 345kV
GEN-2006-021	101.00	SUNCMKEC	Flat Ridge Tap 138kV
GEN-2007-038	200.00	SUNCMKEC	Spearville 345kV
GEN-2007-040	200.00	SUNCMKEC	Buckner 345kV
GEN-2008-018	250.00	SPS	Finney 345kV
GEN-2008-079	99.20	SUNCMKEC	Tap Cudahy - Ft Dodge 115kV
GEN-2008-124	200.10	SUNCMKEC	Ironwood 345kV
GEN-2010-009	165.60	SUNCMKEC	Buckner 345kV
GEN-2010-015	200.10	SUNCMKEC	Spearville 345kV
GEN-2010-045	197.80	SUNCMKEC	Buckner 345kV
GEN-2010-061	180.00	SUNCMKEC	Tap Post Rock - Spearville (GEN-2011-017T) 345kV
GEN-2011-008	600.00	SUNCMKEC	Clark County 345kV
GEN-2011-016	200.10	SUNCMKEC	Spearville 345kV
GEN-2011-017	299.00	SUNCMKEC	Tap Spearville - PostRock (GEN-2011-017T) 345kV
GEN-2012-007	120.00	SUNCMKEC	Rubart 115kV
GEN-2012-011	200.00	SUNCMKEC	Tap Spearville - Post Rock 345kV (North of GEN-2011-017 Tap)
GEN-2012-024	180.00	SUNCMKEC	Clark County 345kV
Gray County Wind (Montezuma)	110.00	SUNCMKEC	Gray County Tap 115kV
PRIOR QUEUED SUBTOTAL	4,390.40		
GEN-2013-010	99.00	SUNCMKEC	Tap Spearville - Post Rock 345kV (GEN-2012-011 Tap)
CURRENT CLUSTER SUBTOTAL	99.00		
AREA TOTAL	4,489.40		

GROUP 4/11: NW KANSAS AREA

Request	Capacity	Area	Proposed Point of Interconnection
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-2006-040	108.00	SUNCMKEC	Mingo 115kV
GEN-2007-011	135.00	SUNCMKEC	Syracuse 115kV
GEN-2008-017	300.00	SUNCMKEC	Setab 345kV
GEN-2008-092	201.00	MIDW	Post Rock 230kV
GEN-2009-008	199.50	MIDW	South Hays 230kV
GEN-2009-020	48.60	MIDW	Tap Nekoma - Bazine (Walnut Creek) 69kV
GEN-2010-048	70.00	MIDW	Tap Beach Station - Redline 115kV
GEN-2010-057	201.00	MIDW	Rice County 230kV
GEN-2012-026	100.00	MIDW	Colby 115kV
PRIOR QUEUED SUBTOTAL	1,988.10		
AREA TOTAL	1,988.10		

GROUP 5: AMARILLO AREA

Request	Capacity	Area	Proposed Point of Interconnection
GEN-2002-022	240.00	SPS	Bushland 230kV
GEN-2006-047	240.00	SPS	Tap Bushland - Deaf Smith (Buffalo) 230kV
GEN-2008-051	322.00	SPS	Potter County 345kV
GEN-2008-088	50.60	SPS	Vega 69kV
Llano Estacado (White Deer)	80.00	SPS	Llano Wind 115kV
PRIOR QUEUED SUBTOTAL	932.60		
ASGI-2013-001	11.50	SPS	PanTex South 115kV
CURRENT CLUSTER SUBTOTAL	11.50		
AREA TOTAL	944.10		

GROUP 6: S-TX PANHANDLE/W-TX 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	28.80	SPS	Lovington 115kV
ASGI-2011-003	10.00	SPS	Hendricks 115kV
ASGI-2011-004	20.00	SPS	Pleasant Hill 69kV
ASGI-2012-002	18.15	SPS	FE-Clovis Interchange 115kV
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	604.00	SPS	Hobbs 230kV & Hobbs 115kV
GEN-2008-008	60.00	SPS	Graham 69kV
GEN-2008-022	300.00	SPS	Tap Eddy Co - Tolk (Chaves County) 345kV
GEN-2010-006	205.00	SPS	Jones 230kV
GEN-2010-020	20.00	SPS	Roswell 69kV
GEN-2010-046	56.00	SPS	TUCO Interchange 230kV
GEN-2010-058	20.00	SPS	Chaves County 115kV
GEN-2011-025	82.30	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	Tap Grassland - Borden County 230kV
GEN-2012-009	15.00	SPS	Mustang 230kV
GEN-2012-010	15.00	SPS	Mustang 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
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
PRIOR QUEUED SUBTOTAL	3,191.65		
ASGI-2013-002	18.40	SPS	FE Tucumcari 115kV
ASGI-2013-003	18.40	SPS	FE Clovis 115kV
GEN-2013-013	248.40	SPS	Tap Eddy County - Tolk 345kV
GEN-2013-016	203.00	SPS	TUCO 345kV
CURRENT CLUSTER SUBTOTAL	488.20		
AREA TOTAL	3,679.85		

GROUP 7: SW-OKLAHOMA AREA			
Request	Capacity	Area	Proposed Point of Interconnection
GEN-2001-026	74.00	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	Washita 138kV
GEN-2004-020	27.00	AEPW	Washita 34.5kV
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-2007-032	150.00	WFEC	Tap Clinton Junction - Clinton 138kV
GEN-2007-052	150.00	WFEC	Anadarko 138kV
GEN-2008-023	150.00	AEPW	Hobart Junction 138kV
GEN-2008-037	101.00	WFEC	Tap Washita - Blue Canyon Wind 138kV
GEN-2011-037	7.00	WFEC	Blue Canyon 5 138kV
GEN-2011-049	250.00	OKGE	Border 345kV
GEN-2012-028	74.80	WFEC	Gotebo 69kV
PRIOR QUEUED SUBTOTAL	1,900.00		
AREA TOTAL	1,900.00		

GROUP 8: N-OK/S-KS AREA			
Request	Capacity	Area	Proposed Point of Interconnection
ASGI-2010-006	150.00	AECI	Tap Fairfax (AECI) - Shilder (AEPW) 138kV
GEN-2002-004	200.00	WERE	Latham 345kV
GEN-2005-013	201.00	WERE	Tap Latham - Neosho (Caney River) 345kV
GEN-2007-025	300.00	WERE	Viola 345kV
GEN-2008-013	300.00	OKGE	Tap Wichita - Woodring (Hunter) 345kV
GEN-2008-021	42.00	WERE	Wolf Creek 345kV
GEN-2008-098	100.80	WERE	Tap Lacygne - Wolf Creek (Anderson County) 345kV
GEN-2009-025	60.00	OKGE	Nardins 69kV
GEN-2010-003	100.80	WERE	Tap Lacygne - Wolf Creek (Anderson County) 345kV
GEN-2010-005	300.00	WERE	Viola 345kV
GEN-2010-055	4.50	AEPW	Wekiwa 138kV
GEN-2011-057	150.40	WERE	Creswell 138kV
GEN-2012-023	115.00	WERE	Viola 345kV
GEN-2012-027	136.00	AEPW	Shidler 138kV
GEN-2012-032	300.00	OKGE	Tap Rose Hill - Sooner (Ranch) 345kV
GEN-2012-033	98.80	OKGE	Tap and Tie South 4th - Bunch Creek & Enid Tap - Fairmont (GEN-2012-033T) 138kV
GEN-2012-040	76.50	WFEC	Chilocco 138kV
GEN-2012-041	121.50	OKGE	Tap Rose Hill - Sooner 345kV
PRIOR QUEUED SUBTOTAL	2,757.30		
GEN-2013-009	100.30	AEPW	Tap Alluwe Tap - Vinita Junction 138kV
GEN-2013-012	147.00	OKGE	Redbud 345kV
CURRENT CLUSTER SUBTOTAL	247.30		
AREA TOTAL	3,004.60		

GROUP 9/10: 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-2004-005N	30.00	NPPD	St Francis 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-2008-086N02	200.00	NPPD	Tap Ft Randle - Columbus (Madison County) 230kV
GEN-2008-1190	60.00	OPPD	S1399 161kV
GEN-2008-123N	89.70	NPPD	Tap Guide Rock - Pauline (Rosemont) 115kV
GEN-2009-040	108.00	WERE	Marshall 115kV
GEN-2010-041	10.50	OPPD	S 1399 161kV
GEN-2010-051	200.00	NPPD	Tap Twin Church - Hoskins 230kV
GEN-2011-018	73.60	NPPD	Steele City 115kV
GEN-2011-027	120.00	NPPD	Tap Twin Church - Hoskins 230kV (GEN-2010-51 Tap)
GEN-2011-055	52.80	OPPD	South Sterling 69kV
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
NPPD Distributed (Broken Bow)	8.30	NPPD	Broken Bow 115kV
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 (Ord)	11.90	NPPD	Ord 115kV
NPPD Distributed (Stuart)	2.10	NPPD	Ainsworth 115kV
PRIOR QUEUED SUBTOTAL	1,592.70		
GEN-2012-005	81.00	NPPD	Tap Fort Randall - Columbus (North of Madison Co) 230kV
GEN-2013-002	50.60	LES	Tap Sheldon - Folsom & Pleasant Hill 115kV CKT 2
GEN-2013-004	6.00	NPPD	Tap Fort Randall - Columbus (Madison County)
GEN-2013-005	73.50	NPPD	Madison County (GEN-2008-086N2 Sub)
GEN-2013-006	50.60	NPPD	Tap Fort Randall - Columbus (Madison County)
GEN-2013-008	1.20	NPPD	Steele City 115kV
GEN-2013-014	25.50	NPPD	Tap Guide Rock - Pauline (GEN-2008-123N Tap) 115kV
GEN-2013-015	125.80	NPPD	Tap Pauline - Hildreth 115kV
CURRENT CLUSTER SUBTOTAL	414.20		
AREA TOTAL	2,006.90		

GROUP 12: NW-AR AREA

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

GROUP 13: NW MISSOURI AREA

Request	Capacity	Area	Proposed Point of Interconnection
GEN-2008-129	80.00	MIPU	Pleasant Hill 161kV
GEN-2010-036	4.60	WERE	6th Street 115kV
GEN-2010-056	151.20	MIPU	Tap Saint Joseph - Cooper 345kV
GEN-2011-011	50.00	KACP	Iatan 345kV
PRIOR QUEUED SUBTOTAL	285.80		
AREA TOTAL	285.80		

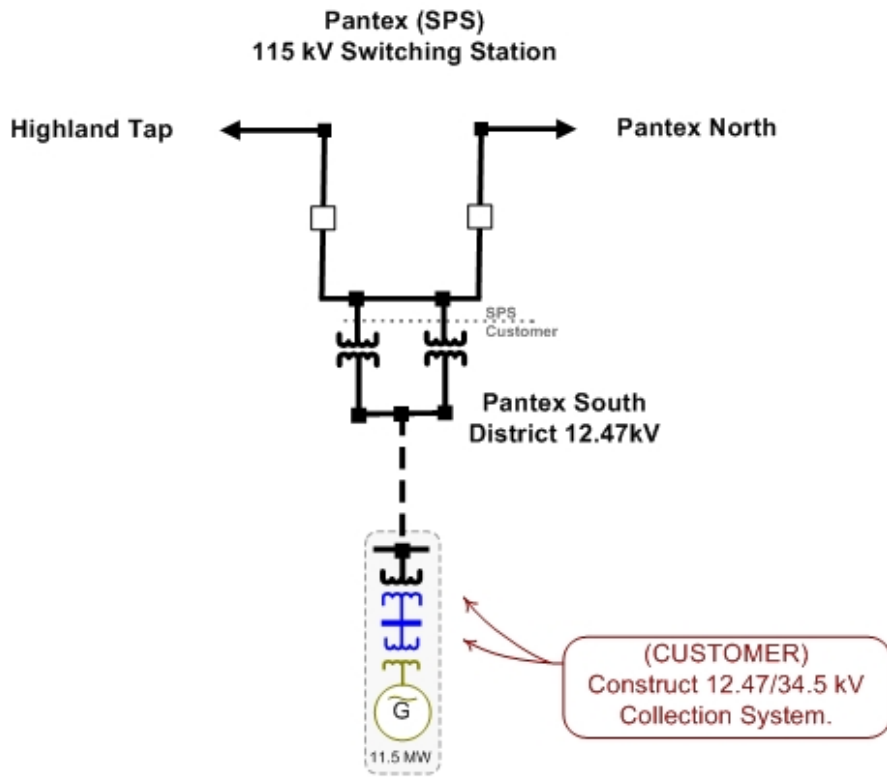
GROUP 14: S-OKLAHOMA AREA

Request	Capacity	Area	Proposed Point of Interconnection
GEN-2011-040	111.00	OKGE	Tap Ratliff - Pooleville 138kV
GEN-2011-050	109.80	AEPW	Rush Springs Natural Gas Tap 138kV
GEN-2012-004	41.40	OKGE	Tap Ratliff - Pooleville (Carter County) 138kV
PRIOR QUEUED SUBTOTAL	262.20		
GEN-2013-007	100.30	OKGE	Tap Prices Falls - Carter 138kV
CURRENT CLUSTER SUBTOTAL	100.30		
AREA TOTAL	362.50		

CLUSTER TOTAL (CURRENT STUDY)	1,438.5	MW
PQ TOTAL (PRIOR QUEUED)	25,409.1	MW
CLUSTER TOTAL (INCLUDING PRIOR QUEUED)	26,847.6	MW

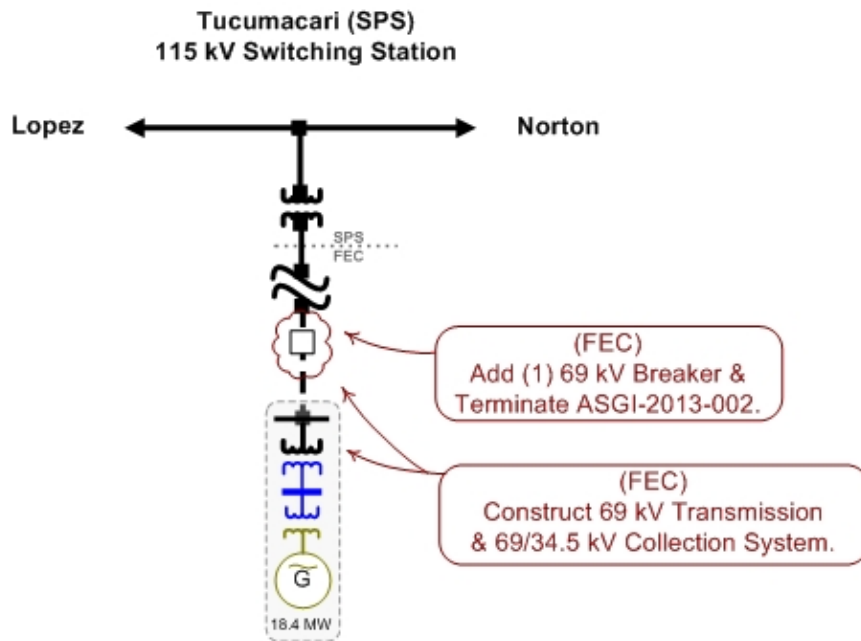
D: Proposed Point of Interconnection One Line Diagrams

ASGI-2013-001



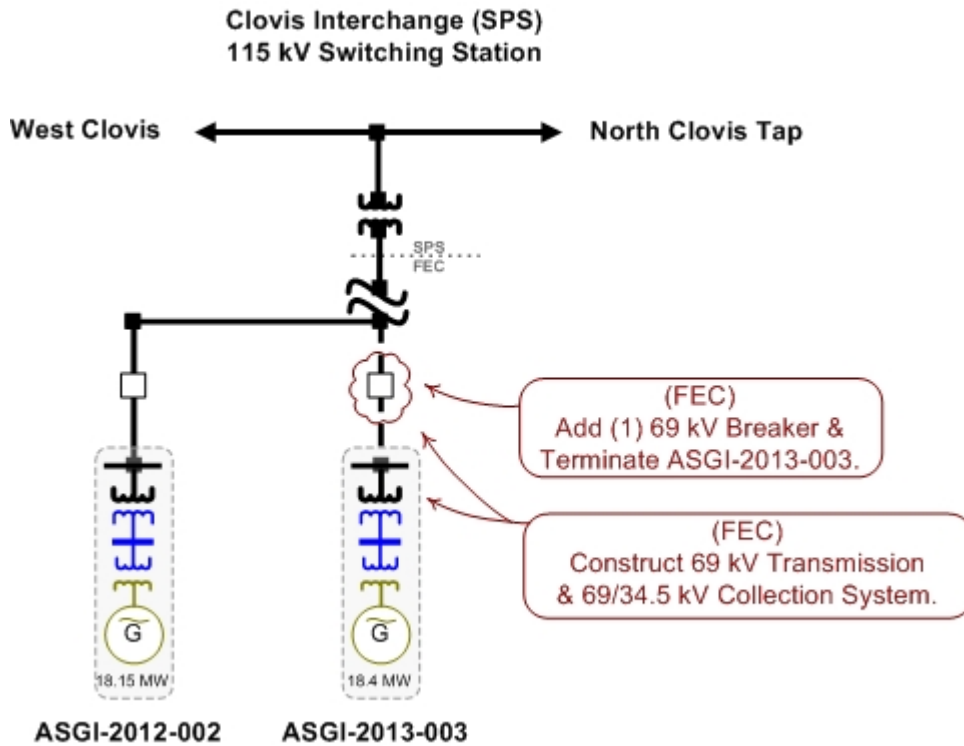
ASGI-2013-001

ASGI-2013-002



ASGI-2013-002

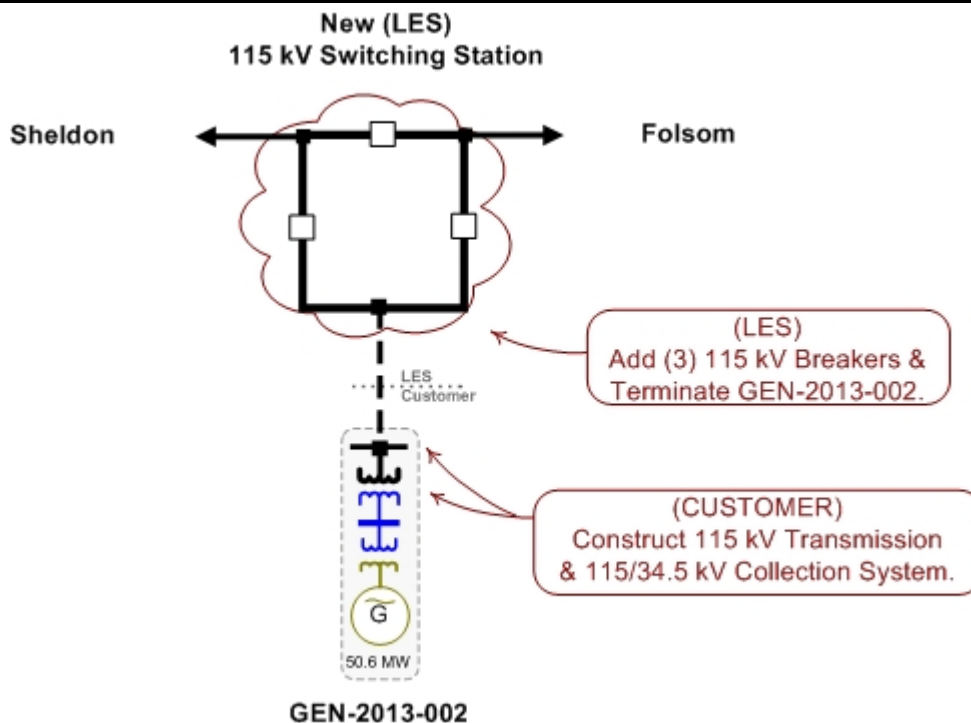
ASGI-2013-003



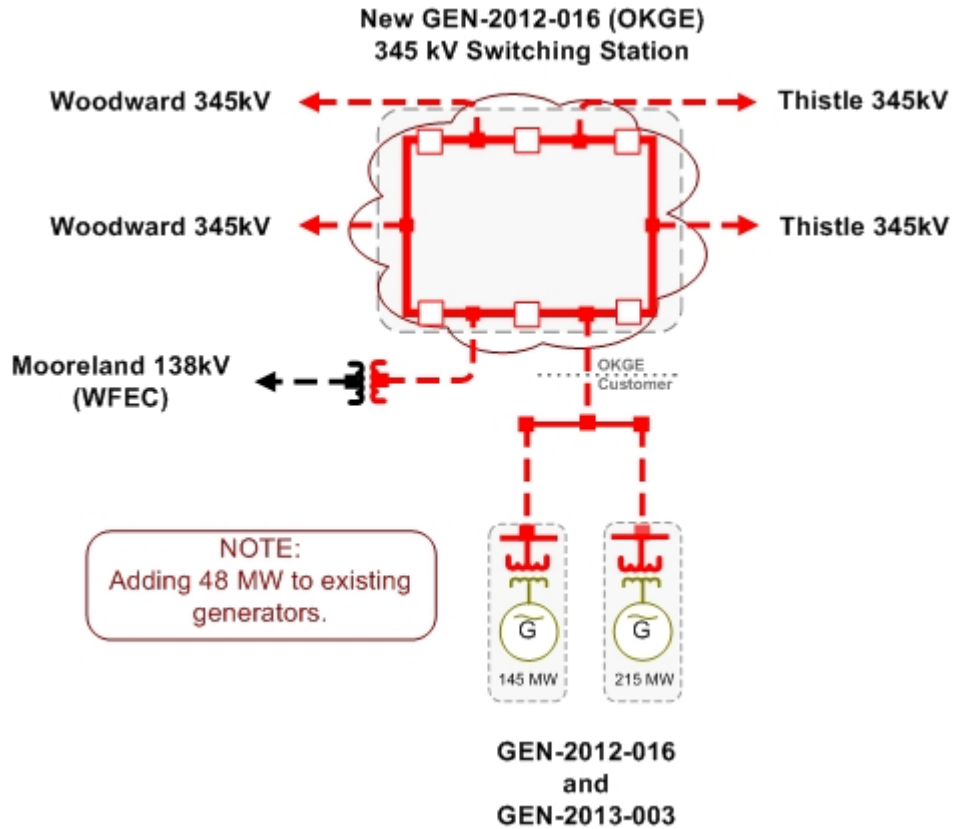
GEN-2012-005

Refer to Facility Study for an updated one-line

GEN-2013-002



GEN-2013-003



GEN-2013-004

****Refer to Facility Study for an updated one-line****

GEN-2013-005

****Refer to Facility Study for an updated one-line****

GEN-2013-006

****Refer to Facility Study for an updated one-line****

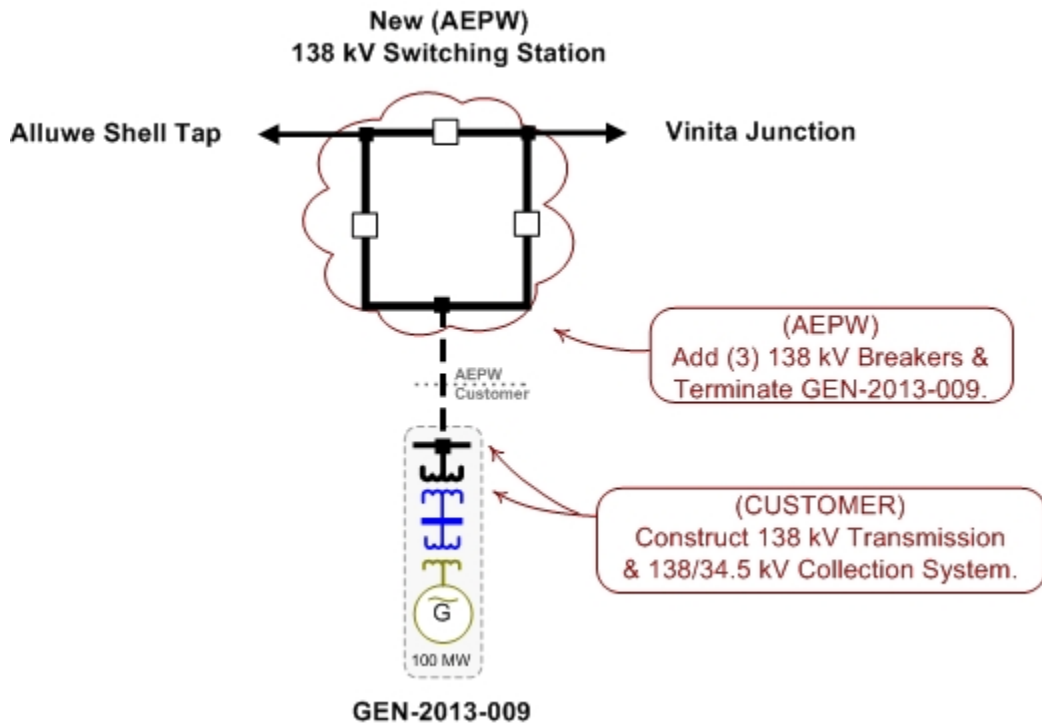
GEN-2013-007

****Refer to Facility Study for an updated one-line****

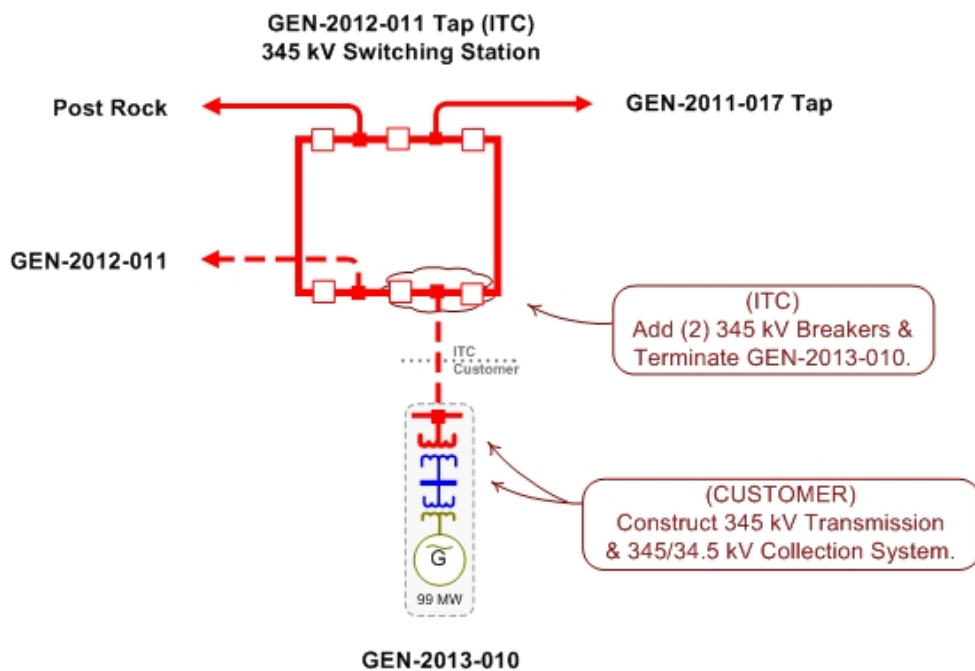
GEN-2013-008

****Refer to Facility Study for an updated one-line****

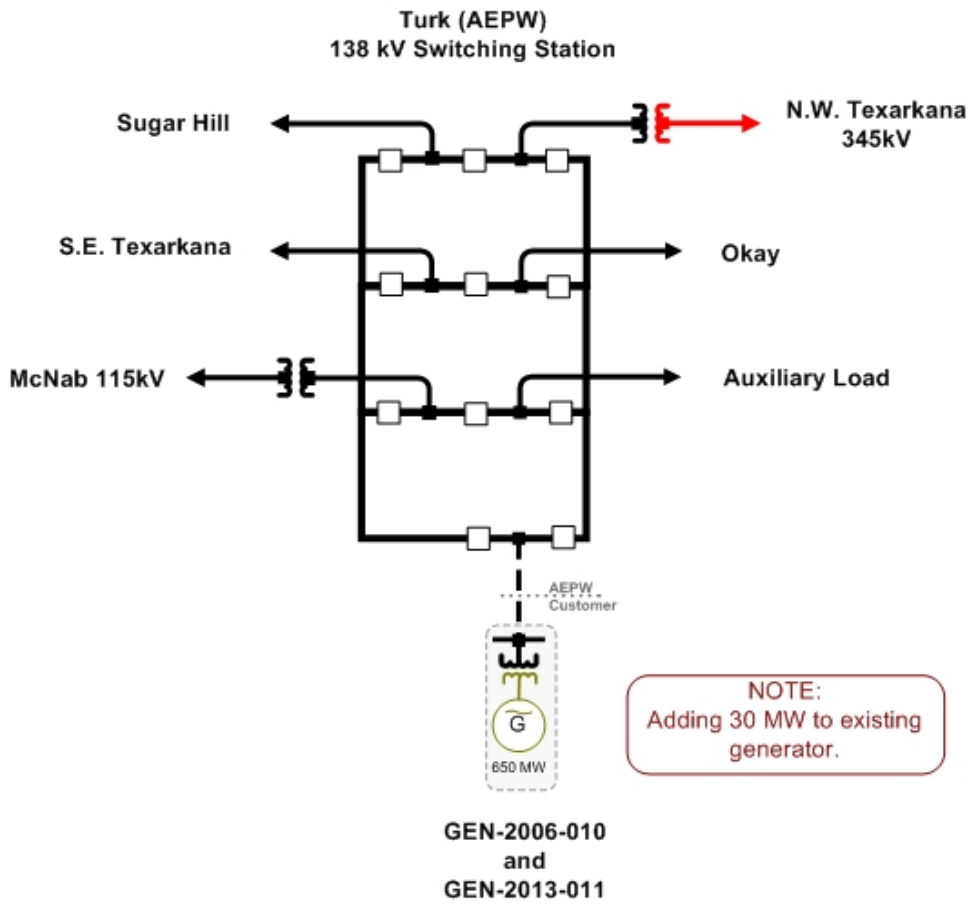
GEN-2013-009



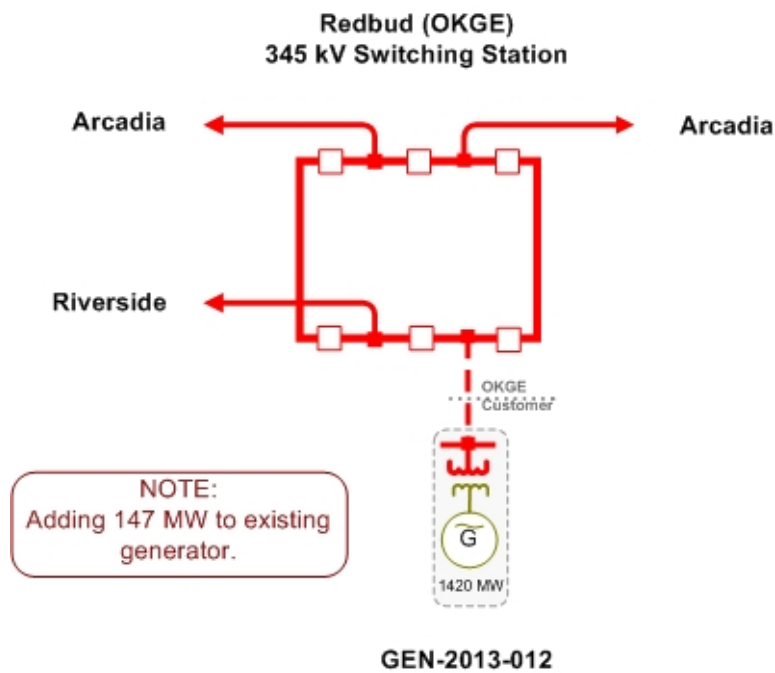
GEN-2013-010



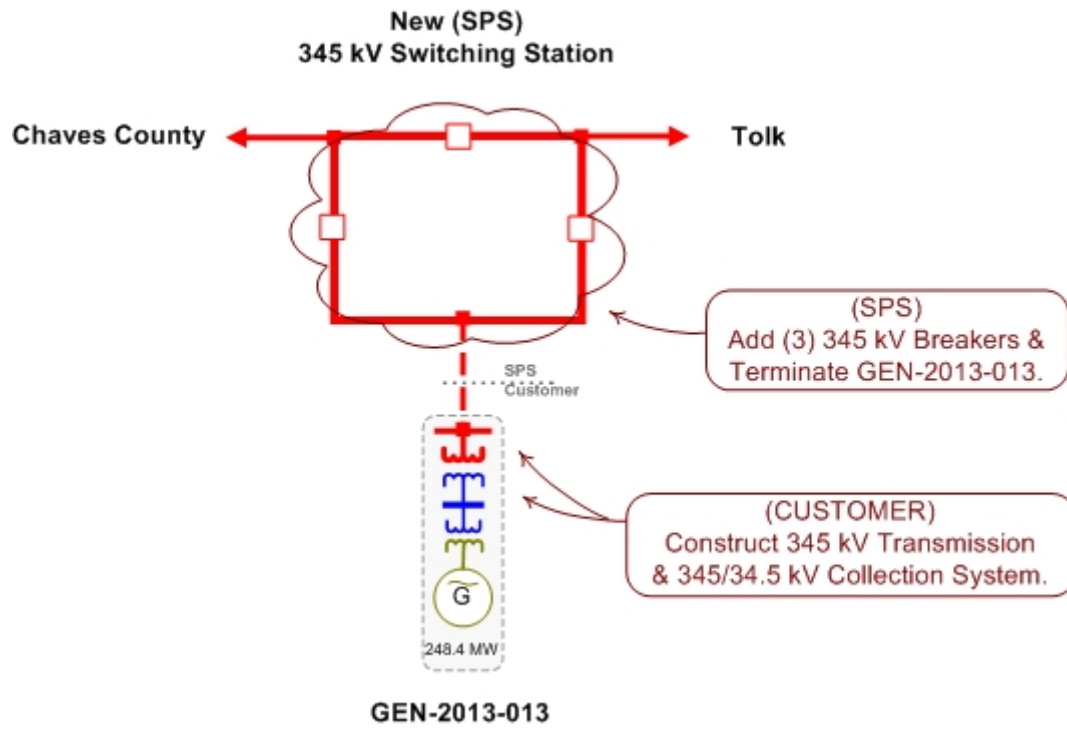
GEN-2013-011



GEN-2013-012



GEN-2013-013



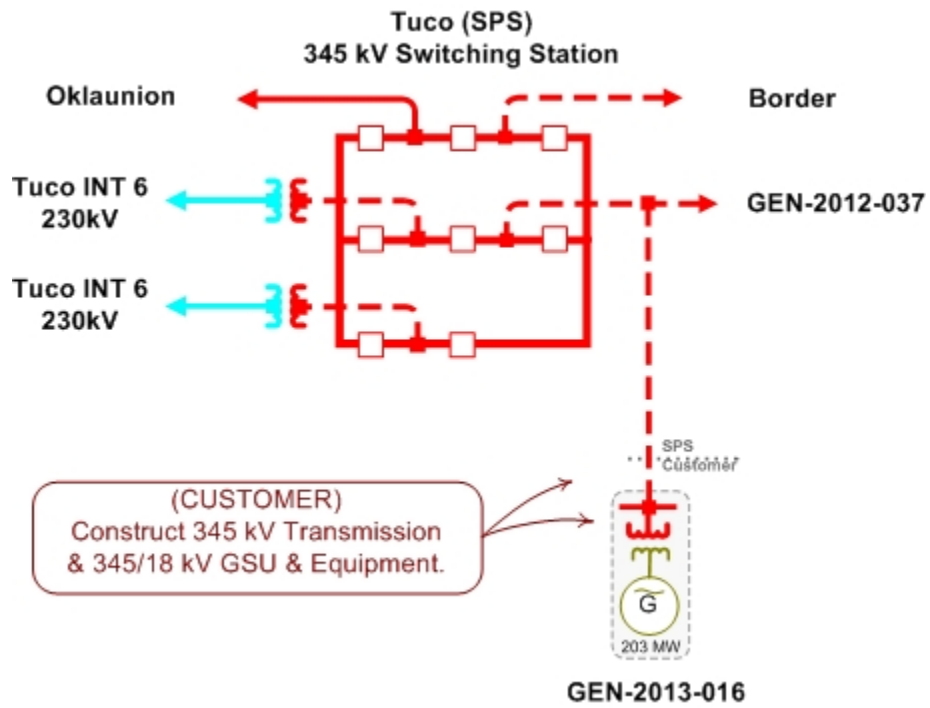
GEN-2013-014

****Refer to Facility Study for an updated one-line****

GEN-2013-015

****Refer to Facility Study for an updated one-line****

GEN-2013-016



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 Generation 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 Generation 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
ASGI-2013-001			
ASGI-2013-001 Interconnection Costs See One-Line Diagram.	Current Study	\$0.00	\$0.00
Amarillo - GEN-2007-048 Tap - Swisher 230kV CKT 1 Replace Wave Traps at both terminals: Per GEN-2007-048 Interconnection	Previously Allocated		\$0.00
Beaver County - Buckner 345kV Build approximately 90 miles of 345kV from Beaver County - Gray County @ 3000 amps	Previously Allocated		\$170,209,050.00
Beaver County - Woodward 345kV Dbl CKT Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$226,040,727.00
Beaver County 345kV Expansion Beaver County Expansion: Tap & Tie in Hitchland - Woodward 345kV CKT 2	Previously Allocated		\$3,500,000.00
Border - Tuco Interchange 345KV CKT 1 Balanced Portfolio: Tuco - Woodward 345kV CKT 1 (Total Project E&C Cost Shown)	Previously Allocated		\$249,247,072.00
Border - Woodward 345KV CKT 1 Balanced Portfolio: Tuco - Woodward 345kV CKT 1 (Total Project E&C Cost Shown)	Previously Allocated		\$249,247,072.00
Bucker - Spearville 345V CKT 1 Replace Terminal equipment	Previously Allocated		\$771,000.00
Clark - Thistle 345KV Dbl CKT Priority Project: Spearville - Clark - Thistle Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$426,504,292.00
Hitchland - Beaver County 345kV Dbl CKT Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$226,040,727.00
Hitchland - Woodward 345kV CKT 2 Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$215,877,433.00
Hitchland 345/230kV Autotransformer CKT 2 Priority Project: Hitchland 345/230kV Autotransformer CKT 2 (Total Project E&C Cost Shown).	Previously Allocated		\$8,883,760.00
Spearville - Clark 345KV Dbl CKT Priority Project: Spearville - Clark - Thistle Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$426,504,292.00
Thistle - Flat Ridge 138kV CKT 1 Priority Project: Thistle - Flat Ridge 138kV CKT 1 (Total Project E&C Cost Shown.)	Previously Allocated		\$5,776,280.00

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

Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
Thistle - Wichita 345KV Dbl CKT Priority Project: Thistle - Wichita Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$426,504,292.00
Thistle 345/138KV Transformer CKT 1 Priority Project: Thistle 345/138kV Transformer CKT 1 (Total Project E&C Cost Shown.)	Previously Allocated		\$6,585,986.00
TUCO Interchange 345/230/13.2KV Autotransformer CKT 2 Balanced Portfolio: TUCO 345/230 kV Transformer CKT 2 (Total Project E&C Cost Shown)	Previously Allocated		\$14,900,907.00
Woodward XFMR 345/138/13.8kV CKT 2 Balanced Portfolio: Woodward 345/138kV Transformer CKT 2 & 50 MVAR Reactor (Total Project E&C Cost Shown).	Previously Allocated		\$249,247,072.00
	Current Study Total	\$0.00	

ASGI-2013-002

ASGI-2013-002 Interconnection Costs See One-Line Diagram.	Current Study	\$0.00	\$0.00
Deaf Smith - Plant X 230kV CKT 1 Replace line traps at both ends	Current Study	\$43,730.83	\$1,000,000.00
Oklaunion 345kV 60 Mvar Cap Bank Install 60MVar Cap Bank at Oklaunion.	Current Study	\$634,992.55	\$20,000,000.00
Tolk - Plant X 230kV CKT 3 Build a 3rd circuit between Tolk - Plant X 230kV	Current Study	\$1,014,210.70	\$20,000,000.00
Beaver County - Buckner 345kV Build approximately 90 miles of 345kV from Beaver County - Gray County @ 3000 amps	Previously Allocated		\$170,209,050.00
Beaver County - Woodward 345kV Dbl CKT Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$226,040,727.00
Beaver County 345kV Expansion Beaver County Expansion: Tap & Tie in Hitchland - Woodward 345kV CKT 2	Previously Allocated		\$3,500,000.00
Border - Tuco Interchange 345KV CKT 1 Balanced Portfolio: Tuco - Woodward 345kV CKT 1 (Total Project E&C Cost Shown)	Previously Allocated		\$249,247,072.00
Border - Woodward 345KV CKT 1 Balanced Portfolio: Tuco - Woodward 345kV CKT 1 (Total Project E&C Cost Shown)	Previously Allocated		\$249,247,072.00
Bucker - Spearville 345V CKT 1 Replace Terminal equipment	Previously Allocated		\$771,000.00
Hitchland - Beaver County 345kV Dbl CKT Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$226,040,727.00

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

Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
Hitchland - Woodward 345kV CKT 2 Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$215,877,433.00
Hitchland 345/230kV Autotransformer CKT 2 Priority Project: Hitchland 345/230kV Autotransformer CKT 2 (Total Project E&C Cost Shown).	Previously Allocated		\$8,883,760.00
Thistle - Flat Ridge 138kV CKT 1 Priority Project: Thistle - Flat Ridge 138kV CKT 1 (Total Project E&C Cost Shown.)	Previously Allocated		\$5,776,280.00
Thistle - Wichita 345KV Dbl CKT Priority Project: Thistle - Wichita Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$426,504,292.00
Thistle 345/138KV Transformer CKT 1 Priority Project: Thistle 345/138kV Transformer CKT 1 (Total Project E&C Cost Shown.)	Previously Allocated		\$6,585,986.00
TUCO Interchange 345/230/13.2KV Autotransformer CKT 2 Balanced Portfolio: TUCO 345/230 kV Transformer CKT 2 (Total Project E&C Cost Shown)	Previously Allocated		\$14,900,907.00
Woodward XFMR 345/138/13.8kV CKT 2 Balanced Portfolio: Woodward 345/138kV Transformer CKT 2 & 50 MVAR Reactor (Total Project E&C Cost Shown).	Previously Allocated		\$249,247,072.00
	Current Study Total	\$1,692,934.08	

ASGI-2013-003

ASGI-2013-003 Interconnection Costs See One-Line Diagram.	Current Study	\$0.00	\$0.00
Deaf Smith - Plant X 230kV CKT 1 Replace line traps at both ends	Current Study	\$44,737.75	\$1,000,000.00
Oklaunion 345kV 60 Mvar Cap Bank Install 60MVar Cap Bank at Oklaunion.	Current Study	\$637,584.19	\$20,000,000.00
Tolk - Plant X 230kV CKT 3 Build a 3rd circuit between Tolk - Plant X 230kV	Current Study	\$1,031,434.18	\$20,000,000.00
Beaver County - Buckner 345kV Build approximately 90 miles of 345kV from Beaver County - Gray County @ 3000 amps	Previously Allocated		\$170,209,050.00
Beaver County - Woodward 345kV Dbl CKT Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$226,040,727.00
Beaver County 345kV Expansion Beaver County Expansion: Tap & Tie in Hitchland - Woodward 345kV CKT 2	Previously Allocated		\$3,500,000.00
Border - Tuco Interchange 345KV CKT 1 Balanced Portfolio: Tuco - Woodward 345kV CKT 1 (Total Project E&C Cost Shown)	Previously Allocated		\$249,247,072.00

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

Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
Border - Woodward 345KV CKT 1 Balanced Portfolio: Tuco - Woodward 345kV CKT 1 (Total Project E&C Cost Shown)	Previously Allocated		\$249,247,072.00
Bucker - Spearville 345V CKT 1 Replace Terminal equipment	Previously Allocated		\$771,000.00
Hitchland - Beaver County 345kV Dbl CKT Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$226,040,727.00
Hitchland - Woodward 345kV CKT 2 Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$215,877,433.00
Hitchland 345/230kV Autotransformer CKT 2 Priority Project: Hitchland 345/230kV Autotransformer CKT 2 (Total Project E&C Cost Shown).	Previously Allocated		\$8,883,760.00
Thistle - Flat Ridge 138kV CKT 1 Priority Project: Thistle - Flat Ridge 138kV CKT 1 (Total Project E&C Cost Shown.)	Previously Allocated		\$5,776,280.00
Thistle - Wichita 345KV Dbl CKT Priority Project: Thistle - Wichita Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$426,504,292.00
Thistle 345/138KV Transformer CKT 1 Priority Project: Thistle 345/138kV Transformer CKT 1 (Total Project E&C Cost Shown.)	Previously Allocated		\$6,585,986.00
TUCO Interchange 345/230/13.2KV Autotransformer CKT 2 Balanced Portfolio: TUCO 345/230 kV Transformer CKT 2 (Total Project E&C Cost Shown)	Previously Allocated		\$14,900,907.00
Woodward XFMR 345/138/13.8kV CKT 2 Balanced Portfolio: Woodward 345/138kV Transformer CKT 2 & 50 MVAR Reactor (Total Project E&C Cost Shown).	Previously Allocated		\$249,247,072.00
	Current Study Total		\$1,713,756.12

GEN-2012-005

GEN-2012-005 Interconnection Costs See One-Line Diagram.	Current Study	\$9,100,000.00	\$9,100,000.00
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	\$2,433,127.78	\$16,300,000.00
Meadow Grove - South Norfolk 230kV CKT 1 Build approximately 25 miles of new 230kV circuit from Meadow Grove - South Norfolk	Current Study	\$4,732,598.07	\$25,000,000.00
Meadow Grove 230/115/13.8kV Transformer CKT 1 Build Meadow Grove 230/115/13.8kV Transformer and Substation Expansion	Current Study	\$1,641,988.07	\$11,000,000.00
South Norfolk 345/230/13.8kV Transformer CKT 1 Build new 345/230/13.8kV transformer	Current Study	\$1,249,405.89	\$6,600,000.00

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

Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
South Norfolk 345/230kV Substation Build new 345/230kV substation on Hoskins - Shell Creek 345kV	Current Study	\$2,006,621.58	\$10,600,000.00
Hoskins - Dixon County - Twin Church 230kV Rerate per NPPD Facility Study	Previously Allocated		\$500,000.00
Twin Church - Dixon County 230kV Increase conductor clearances to accommodate 320MVA facility rating	Previously Allocated		\$100,000.00
	Current Study Total	\$21,163,741.39	

GEN-2013-002

GEN-2013-002 Interconnection Costs See One-Line Diagram.	Current Study	\$3,399,285.00	\$3,399,285.00
Dixon County - Rasmussen 230kV CKT 1 Build approximately 40 miles of new 230kV	Previously Allocated		\$40,000,000.00
GEN-2013-002 TAP - Folsom & Pleasant Hill 115kV CKT 2 Per ITP NT 2011 (Total Project E&C Cost Shown)	Previously Allocated		\$6,534,843.00
Hydro Carbon Tap - Sub974 69kV CKT 1 NRIS only required upgrade: Rewire CT on Sub 974	Previously Allocated		\$10,000.00
Nebraska City U Syracuse - SUB 970 CKT 1 NRIS only required upgrade: Replace Terminal Equipment	Previously Allocated		\$16,000.00
Sheldon - GEN-2013-002 Tap 115kV CKT 2 Per ITP NT 2011 (Total Project E&C Cost Shown)	Previously Allocated		\$6,534,843.00
SUB 967 - SUB 968 69kV CKT 1 Replace terminal equipment	Previously Allocated		\$16,000.00
SUB 968 - SUB 969 69kV CKT 1 Mitigated by replacing terminal equipment at Sub 969	Previously Allocated		\$0.00
SUB 969 - SUB 974 69kV CKT 1 Mitigated by replacing terminal equipment at Sub 969	Previously Allocated		\$0.00
Twin Church - Dixon County 230kV Increase conductor clearances to accommodate 320MVA facility rating	Previously Allocated		\$100,000.00
	Current Study Total	\$3,399,285.00	

GEN-2013-003

GEN-2013-003 Interconnection Costs See One-Line Diagram.	Current Study	\$0.00	\$0.00
---	---------------	--------	--------

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

Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
Border - Tuco Interchange 345KV CKT 1 Balanced Portfolio: Tuco - Woodward 345kV CKT 1 (Total Project E&C Cost Shown)	Previously Allocated		\$249,247,072.00
Border - Woodward 345KV CKT 1 Balanced Portfolio: Tuco - Woodward 345kV CKT 1 (Total Project E&C Cost Shown)	Previously Allocated		\$249,247,072.00
Clark - Thistle 345KV Dbl CKT Priority Project: Spearville - Clark - Thistle Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$426,504,292.00
GEN-2011-017 Tap - Mullergren 345kV CKT 1 Build approximately 55 miles of new 345kV and add new terminal at GEN-2011-017 Tap 345kV	Previously Allocated		\$67,000,000.00
Hitchland - Beaver County 345kV Dbl CKT Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$226,040,727.00
Matthewson - Cimarron 345kV CKT 2 Build second 345kV circuit from Matthewson - Cimarron @ 3000 amps	Previously Allocated		\$42,903,753.00
Mullergren 345/230/13kV Transformer CKT 1 Build new 345/230/13kV transformer at Mullergren	Previously Allocated		\$8,000,000.00
Mullergren 345/230kV Substation Build new 345/230kV substation for terminating GEN-2011-017 Tap - Mullergren 345kV line, Mullergren 345/230/13kV transformer, and Mullergren - Great Bend 230kV	Previously Allocated		\$25,000,000.00
Spearville - Clark 345KV Dbl CKT Priority Project: Spearville - Clark - Thistle Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$426,504,292.00
Tatonga - Matthewson 345kV CKT 2 Build second 345kV circuit from Tatonga - Matthewson @ 3000 amps	Previously Allocated		\$104,260,473.00
Thistle - Flat Ridge 138kV CKT 1 Priority Project: Thistle - Flat Ridge 138kV CKT 1 (Total Project E&C Cost Shown.)	Previously Allocated		\$5,776,280.00
Thistle - Wichita 345KV Dbl CKT Priority Project: Thistle - Wichita Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$426,504,292.00
Thistle - Woodward 345KV Dbl CKT Priority Project: Thistle - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$207,782,000.00
Thistle 345/138KV Transformer CKT 1 Priority Project: Thistle 345/138kV Transformer CKT 1 (Total Project E&C Cost Shown.)	Previously Allocated		\$6,585,986.00
TUCO Interchange 345/230/13.2KV Autotransformer CKT 2 Balanced Portfolio: TUCO 345/230 kV Transformer CKT 2 (Total Project E&C Cost Shown)	Previously Allocated		\$14,900,907.00
	Current Study Total		\$0.00

GEN-2013-004

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

Thursday, January 30, 2014



Page 6 of 14

Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
GEN-2013-004 Interconnection Costs See One-Line Diagram.	Current Study	\$0.00	\$0.00
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	\$635,123.92	\$16,300,000.00
Meadow Grove - South Norfolk 230kV CKT 1 Build approximately 25 miles of new 230kV circuit from Meadow Grove - South Norfolk	Current Study	\$928,277.95	\$25,000,000.00
Meadow Grove 230/115/13.8kV Transformer CKT 1 Build Meadow Grove 230/115/13.8kV Transformer and Substation Expansion	Current Study	\$428,611.23	\$11,000,000.00
South Norfolk 345/230/13.8kV Transformer CKT 1 Build new 345/230/13.8kV transformer	Current Study	\$245,065.38	\$6,600,000.00
South Norfolk 345/230kV Substation Build new 345/230kV substation on Hoskins - Shell Creek 345kV	Current Study	\$393,589.85	\$10,600,000.00
Dixon County - Rasmussen 230kV CKT 1 Build approximately 40 miles of new 230kV	Previously Allocated		\$40,000,000.00
Hoskins - Dixon County - Twin Church 230kV Rerate per NPPD Facility Study	Previously Allocated		\$500,000.00
Twin Church - Dixon County 230kV Increase conductor clearances to accommodate 320MVA facility rating	Previously Allocated		\$100,000.00
	Current Study Total	\$2,630,668.33	

GEN-2013-005

GEN-2013-005 Interconnection Costs See One-Line Diagram.	Current Study	\$0.00	\$0.00
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	\$7,833,195.00	\$16,300,000.00
Meadow Grove - South Norfolk 230kV CKT 1 Build approximately 25 miles of new 230kV circuit from Meadow Grove - South Norfolk	Current Study	\$11,448,761.40	\$25,000,000.00
Meadow Grove 230/115/13.8kV Transformer CKT 1 Build Meadow Grove 230/115/13.8kV Transformer and Substation Expansion	Current Study	\$5,286,205.21	\$11,000,000.00
South Norfolk 345/230/13.8kV Transformer CKT 1 Build new 345/230/13.8kV transformer	Current Study	\$3,022,473.01	\$6,600,000.00
South Norfolk 345/230kV Substation Build new 345/230kV substation on Hoskins - Shell Creek 345kV	Current Study	\$4,854,274.83	\$10,600,000.00

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

Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
Dixon County - Rasmussen 230kV CKT 1 Build approximately 40 miles of new 230kV	Previously Allocated		\$40,000,000.00
Hoskins - Dixon County - Twin Church 230kV Rerate per NPPD Facility Study	Previously Allocated		\$500,000.00
Twin Church - Dixon County 230kV Increase conductor clearances to accommodate 320MVA facility rating	Previously Allocated		\$100,000.00
	Current Study Total	\$32,444,909.45	

GEN-2013-006

GEN-2013-006 Interconnection Costs See One-Line Diagram.	Current Study	\$1,400,000.00	\$1,400,000.00
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	\$5,398,553.31	\$16,300,000.00
Meadow Grove - South Norfolk 230kV CKT 1 Build approximately 25 miles of new 230kV circuit from Meadow Grove - South Norfolk	Current Study	\$7,890,362.58	\$25,000,000.00
Meadow Grove 230/115/13.8kV Transformer CKT 1 Build Meadow Grove 230/115/13.8kV Transformer and Substation Expansion	Current Study	\$3,643,195.48	\$11,000,000.00
South Norfolk 345/230/13.8kV Transformer CKT 1 Build new 345/230/13.8kV transformer	Current Study	\$2,083,055.72	\$6,600,000.00
South Norfolk 345/230kV Substation Build new 345/230kV substation on Hoskins - Shell Creek 345kV	Current Study	\$3,345,513.74	\$10,600,000.00
Dixon County - Rasmussen 230kV CKT 1 Build approximately 40 miles of new 230kV	Previously Allocated		\$40,000,000.00
Hoskins - Dixon County - Twin Church 230kV Rerate per NPPD Facility Study	Previously Allocated		\$500,000.00
Twin Church - Dixon County 230kV Increase conductor clearances to accommodate 320MVA facility rating	Previously Allocated		\$100,000.00
	Current Study Total	\$23,760,680.83	

GEN-2013-007

GEN-2013-007 Interconnection Costs See One-Line Diagram.	Current Study	\$3,033,890.00	\$3,033,890.00
	Current Study Total	\$3,033,890.00	

GEN-2013-008

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

Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
GEN-2013-008 Interconnection Costs See One-Line Diagram.	Current Study	\$0.00	\$0.00
Dixon County - Rasmussen 230kV CKT 1 Build approximately 40 miles of new 230kV	Previously Allocated		\$40,000,000.00
GEN-2013-002 TAP - Folsom & Pleasant Hill 115kV CKT 2 Per ITP NT 2011 (Total Project E&C Cost Shown)	Previously Allocated		\$6,534,843.00
Sheldon - GEN-2013-002 Tap 115kV CKT 2 Per ITP NT 2011 (Total Project E&C Cost Shown)	Previously Allocated		\$6,534,843.00
	Current Study Total	\$0.00	
GEN-2013-009			
Catoosa - Terra Nitrogen Tap 138kV CKT 1 NRIS only required upgrade: Rebuild approximately 6 miles of 138kV	Current Study	\$6,000,000.00	\$6,000,000.00
Eastern State Hospital Tap - Vinita Neo Tap 69kV CKT 1 NRIS only required upgrade: Rebuild approximately 2 miles of 69kV	Current Study	\$1,600,000.00	\$1,600,000.00
Explorer Tap - Afton 69kV CKT 1 NRIS only required upgrade: Rebuild approximately 2.1 miles of 69kV	Current Study	\$1,680,000.00	\$1,680,000.00
GEN-2013-009 Interconnection Costs See One-Line Diagram.	Current Study	\$7,500,000.00	\$7,500,000.00
J6 - Explorer Tap 69kV CKT 1 NRIS only required upgrade: Rebuild approximately 5 miles of 69kV	Current Study	\$4,000,000.00	\$4,000,000.00
Terra Nitrogen Tap - Verdigras 138kV CKT 1 NRIS only required upgrade: Rebuild approximately 4 miles of 138kV	Current Study	\$4,000,000.00	\$4,000,000.00
Vinita - Eastern State Hospital Tap 69kV CKT 1 NRIS only required upgrade: Rebuild approximately 2 miles of 69kV	Current Study	\$1,600,000.00	\$1,600,000.00
Vinita - Vinita Junction 69kV CKT 1 Rebuild approximately 3 miles of 69kV	Current Study	\$2,100,000.00	\$2,100,000.00
Vinita Junction 138/69/13.2kV Transformer CKT 1 Replace existing Vinita Junction transformer	Current Study	\$2,000,000.00	\$2,000,000.00
Vinita Neo Tap - J6 69kV CKT 1 NRIS only required upgrade: Rebuild approximately 2 miles of 69kV	Current Study	\$1,600,000.00	\$1,600,000.00
Arcadia - Redbud 345kV Dbl CKT 1 Per 2014 ITP NT: Upgrade terminal equipment for both circuits	Previously Allocated		\$1,010,523.00

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

Interconnection Request and Upgrades

	Upgrade Type	Allocated Cost	Upgrade Cost
	Current Study Total	\$32,080,000.00	
GEN-2013-010			
GEN-2013-010 Interconnection Costs See One-Line Diagram.	Current Study	\$3,300,000.00	\$3,300,000.00
Hays Plant - Vine 115kV CKT 1 NRIS only required upgrade: Rebuild approximately 1/4 mile of 115kV	Current Study	\$1,000,000.00	\$1,000,000.00
Knoll - North Hays - Vine Street 115kV CKT 1 NRIS only required upgrade: Rebuild approximately 6 miles of 115kV	Current Study	\$4,500,000.00	\$4,500,000.00
Beaver County - Buckner 345kV Build approximately 90 miles of 345kV from Beaver County - Gray County @ 3000 amps	Previously Allocated		\$170,209,050.00
Beaver County - Woodward 345kV Dbl CKT Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$226,040,727.00
Beaver County 345kV Expansion Beaver County Expansion: Tap & Tie in Hitchland - Woodward 345kV CKT 2	Previously Allocated		\$3,500,000.00
Border - Tuco Interchange 345KV CKT 1 Balanced Portfolio: Tuco - Woodward 345kV CKT 1 (Total Project E&C Cost Shown)	Previously Allocated		\$249,247,072.00
Border - Woodward 345KV CKT 1 Balanced Portfolio: Tuco - Woodward 345kV CKT 1 (Total Project E&C Cost Shown)	Previously Allocated		\$249,247,072.00
Bucker - Spearville 345V CKT 1 Replace Terminal equipment	Previously Allocated		\$771,000.00
Clark - Thistle 345KV Dbl CKT Priority Project: Spearville - Clark - Thistle Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$426,504,292.00
GEN-2011-017 Tap - Mullergren 345kV CKT 1 Build approximately 55 miles of new 345kV and add new terminal at GEN-2011-017 Tap 345kV	Previously Allocated		\$67,000,000.00
Hitchland - Beaver County 345kV Dbl CKT Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$226,040,727.00
Hitchland - Woodward 345kV CKT 2 Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$215,877,433.00
Hitchland 345/230kV Autotransformer CKT 2 Priority Project: Hitchland 345/230kV Autotransformer CKT 2 (Total Project E&C Cost Shown).	Previously Allocated		\$8,883,760.00
Matthewson - Cimarron 345kV CKT 2 Build second 345kV circuit from Matthewson - Cimarron @ 3000 amps	Previously Allocated		\$42,903,753.00

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

Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
Mullergren - Reno 345kV CKT 1 Build approximately 92 miles of new 345kV Transmission line from Mullergren - Reno @ 3000 amps	Previously Allocated		\$107,408,253.00
Mullergren - Spearville 230kV CKT 1 NRIS only required upgrade: Rebuild approximately 62 miles of 230kV line	Previously Allocated		\$36,107,610.00
Mullergren 345/230/13kV Transformer CKT 1 Build new 345/230/13kV transformer at Mullergren	Previously Allocated		\$8,000,000.00
Mullergren 345/230kV Substation Build new 345/230kV substation for terminating GEN-2011-017 Tap - Mullergren 345kV line, Mullergren 345/230/13kV transformer, and Mullergren - Great Bend 230kV	Previously Allocated		\$25,000,000.00
Spearville - Clark 345KV Dbl CKT Priority Project: Spearville - Clark - Thistle Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$426,504,292.00
Tatonga - Matthewson 345kV CKT 2 Build second 345kV circuit from Tatonga - Matthewson @ 3000 amps	Previously Allocated		\$104,260,473.00
Thistle - Flat Ridge 138kV CKT 1 Priority Project: Thistle - Flat Ridge 138kV CKT 1 (Total Project E&C Cost Shown.)	Previously Allocated		\$5,776,280.00
Thistle - Wichita 345KV Dbl CKT Priority Project: Thistle - Wichita Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$426,504,292.00
Thistle 345/138KV Transformer CKT 1 Priority Project: Thistle 345/138kV Transformer CKT 1 (Total Project E&C Cost Shown.)	Previously Allocated		\$6,585,986.00
	Current Study Total	\$8,800,000.00	

GEN-2013-011

GEN-2013-011 Interconnection Costs See One-Line Diagram.	Current Study	\$0.00	\$0.00
	Current Study Total	\$0.00	

GEN-2013-012

GEN-2013-012 Interconnection Costs See One-Line Diagram.	Current Study	\$0.00	\$0.00
Arcadia - Redbud 345kV Dbl CKT 1 Per 2014 ITP NT: Upgrade terminal equipment for both circuits	Previously Allocated		\$1,010,523.00
	Current Study Total	\$0.00	

GEN-2013-013

Deaf Smith - Plant X 230kV CKT 1 Replace line traps at both ends	Current Study	\$911,531.42	\$1,000,000.00
---	---------------	--------------	----------------

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

Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
GEN-2013-013 Interconnection Costs See One-Line Diagram.	Current Study	\$13,000,000.00	\$13,000,000.00
Oklaunion 345kV 60 Mvar Cap Bank Install 60MVar Cap Bank at Oklaunion.	Current Study	\$9,086,887.47	\$20,000,000.00
Plant X Station 230/115/13kV Transformer CKT 2 NRIS only required upgrade: Build second 230/115/13kV transformer at Plant X	Current Study	\$8,000,000.00	\$8,000,000.00
Tolk - Plant X 230kV CKT 3 Build a 3rd circuit between Tolk - Plant X 230kV	Current Study	\$17,954,355.12	\$20,000,000.00
Beaver County 345kV Expansion Beaver County Expansion: Tap & Tie in Hitchland - Woodward 345kV CKT 2	Previously Allocated		\$3,500,000.00
Border - Tuco Interchange 345KV CKT 1 Balanced Portfolio: Tuco - Woodward 345kV CKT 1 (Total Project E&C Cost Shown)	Previously Allocated		\$249,247,072.00
Border - Woodward 345KV CKT 1 Balanced Portfolio: Tuco - Woodward 345kV CKT 1 (Total Project E&C Cost Shown)	Previously Allocated		\$249,247,072.00
Hitchland - Beaver County 345kV Dbl CKT Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$226,040,727.00
Hitchland 345/230kV Autotransformer CKT 2 Priority Project: Hitchland 345/230kV Autotransformer CKT 2 (Total Project E&C Cost Shown).	Previously Allocated		\$8,883,760.00
Multi - TUCO - New Deal 345kV NRIS only required upgrade: SPP-NTC-200184 Build TUCO - New Deal 345kV, New Deal - Stanton 115kV and New Deal 345/115kV transformer CKT 1	Previously Allocated		\$37,490,796.00
Thistle - Flat Ridge 138kV CKT 1 Priority Project: Thistle - Flat Ridge 138kV CKT 1 (Total Project E&C Cost Shown.)	Previously Allocated		\$5,776,280.00
Thistle - Wichita 345KV Dbl CKT Priority Project: Thistle - Wichita Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$426,504,292.00
Thistle - Woodward 345KV Dbl CKT Priority Project: Thistle - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$207,782,000.00
Thistle 345/138KV Transformer CKT 1 Priority Project: Thistle 345/138kV Transformer CKT 1 (Total Project E&C Cost Shown.)	Previously Allocated		\$6,585,986.00
TUCO Interchange 345/230/13.2KV Autotransformer CKT 2 Balanced Portfolio: TUCO 345/230 kV Transformer CKT 2 (Total Project E&C Cost Shown)	Previously Allocated		\$14,900,907.00
Woodward XFMR 345/138/13.8kV CKT 2 Balanced Portfolio: Woodward 345/138kV Transformer CKT 2 & 50 MVAR Reactor (Total Project E&C Cost Shown).	Previously Allocated		\$249,247,072.00
	Current Study Total	\$48,952,774.01	

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

Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
GEN-2013-014			
GEN-2013-014 Interconnection Costs See One-Line Diagram.	Current Study	\$1,800,000.00	\$1,800,000.00
	Current Study Total	\$1,800,000.00	
GEN-2013-015			
GEN-2013-015 Interconnection Costs See One-Line Diagram.	Current Study	\$6,300,000.00	\$6,300,000.00
	Current Study Total	\$6,300,000.00	
GEN-2013-016			
GEN-2013-016 Interconnection Costs See One-Line Diagram.	Current Study	\$0.00	\$0.00
Oklaunion 345kV 60 Mvar Cap Bank Install 60MVar Cap Bank at Oklaunion.	Current Study	\$9,640,535.79	\$20,000,000.00
Beaver County - Woodward 345kV Dbl CKT Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$226,040,727.00
Beaver County 345kV Expansion Beaver County Expansion: Tap & Tie in Hitchland - Woodward 345kV CKT 2	Previously Allocated		\$3,500,000.00
Border - Tuco Interchange 345KV CKT 1 Balanced Portfolio: Tuco - Woodward 345kV CKT 1 (Total Project E&C Cost Shown)	Previously Allocated		\$249,247,072.00
Border - Woodward 345KV CKT 1 Balanced Portfolio: Tuco - Woodward 345kV CKT 1 (Total Project E&C Cost Shown)	Previously Allocated		\$249,247,072.00
Hitchland - Beaver County 345kV Dbl CKT Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$226,040,727.00
Thistle - Flat Ridge 138kV CKT 1 Priority Project: Thistle - Flat Ridge 138kV CKT 1 (Total Project E&C Cost Shown.)	Previously Allocated		\$5,776,280.00
Thistle - Wichita 345KV Dbl CKT Priority Project: Thistle - Wichita Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$426,504,292.00
Thistle 345/138KV Transformer CKT 1 Priority Project: Thistle 345/138kV Transformer CKT 1 (Total Project E&C Cost Shown.)	Previously Allocated		\$6,585,986.00
TUCO Interchange 345/230/13.2KV Autotransformer CKT 2 Balanced Portfolio: TUCO 345/230 kV Transformer CKT 2 (Total Project E&C Cost Shown)	Previously Allocated		\$14,900,907.00
	Current Study Total	\$9,640,535.79	

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

Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
TOTAL CURRENT STUDY COSTS:		\$197,413,175.00	

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

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 Generation 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

ASGI-2013-001 Interconnection Costs		\$0.00
See One-Line Diagram.		
	ASGI-2013-001	\$0.00
	Total Allocated Costs	\$0.00
ASGI-2013-002 Interconnection Costs		\$0.00
See One-Line Diagram.		
	ASGI-2013-002	\$0.00
	Total Allocated Costs	\$0.00
ASGI-2013-003 Interconnection Costs		\$0.00
See One-Line Diagram.		
	ASGI-2013-003	\$0.00
	Total Allocated Costs	\$0.00
Catoosa - Terra Nitrogen Tap 138kV CKT 1		\$6,000,000.00
NRIS only required upgrade: Rebuild approximately 6 miles of 138kV		
	GEN-2013-009	\$6,000,000.00
	Total Allocated Costs	\$6,000,000.00
Deaf Smith - Plant X 230kV CKT 1		\$1,000,000.00
Replace line traps at both ends		
	ASGI-2013-002	\$43,730.83
	ASGI-2013-003	\$44,737.75
	GEN-2013-013	\$911,531.42
	Total Allocated Costs	\$1,000,000.00
Eastern State Hospital Tap - Vinita Neo Tap 69kV CKT 1		\$1,600,000.00
NRIS only required upgrade: Rebuild approximately 2 miles of 69kV		
	GEN-2013-009	\$1,600,000.00
	Total Allocated Costs	\$1,600,000.00
Explorer Tap - Afton 69kV CKT 1		\$1,680,000.00
NRIS only required upgrade: Rebuild approximately 2.1 miles of 69kV		
	GEN-2013-009	\$1,680,000.00
	Total Allocated Costs	\$1,680,000.00

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

GEN-2012-005 Interconnection Costs **\$9,100,000.00**

See One-Line Diagram.

GEN-2012-005 \$9,100,000.00

Total Allocated Costs **\$9,100,000.00**

GEN-2013-002 Interconnection Costs **\$3,399,285.00**

See One-Line Diagram.

GEN-2013-002 \$3,399,285.00

Total Allocated Costs **\$3,399,285.00**

GEN-2013-003 Interconnection Costs **\$0.00**

See One-Line Diagram.

GEN-2013-003 \$0.00

Total Allocated Costs **\$0.00**

GEN-2013-004 Interconnection Costs **\$0.00**

See One-Line Diagram.

GEN-2013-004 \$0.00

Total Allocated Costs **\$0.00**

GEN-2013-005 Interconnection Costs **\$0.00**

See One-Line Diagram.

GEN-2013-005 \$0.00

Total Allocated Costs **\$0.00**

GEN-2013-006 Interconnection Costs **\$1,400,000.00**

See One-Line Diagram.

GEN-2013-006 \$1,400,000.00

Total Allocated Costs **\$1,400,000.00**

GEN-2013-007 Interconnection Costs **\$3,033,890.00**

See One-Line Diagram.

GEN-2013-007 \$3,033,890.00

Total Allocated Costs **\$3,033,890.00**

GEN-2013-008 Interconnection Costs **\$0.00**

See One-Line Diagram.

GEN-2013-008 \$0.00

Total Allocated Costs **\$0.00**

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

GEN-2013-009 Interconnection Costs		\$7,500,000.00
See One-Line Diagram.		
	GEN-2013-009	\$7,500,000.00
	Total Allocated Costs	\$7,500,000.00
GEN-2013-010 Interconnection Costs		\$3,300,000.00
See One-Line Diagram.		
	GEN-2013-010	\$3,300,000.00
	Total Allocated Costs	\$3,300,000.00
GEN-2013-011 Interconnection Costs		\$0.00
See One-Line Diagram.		
	GEN-2013-011	\$0.00
	Total Allocated Costs	\$0.00
GEN-2013-012 Interconnection Costs		\$0.00
See One-Line Diagram.		
	GEN-2013-012	\$0.00
	Total Allocated Costs	\$0.00
GEN-2013-013 Interconnection Costs		\$13,000,000.00
See One-Line Diagram.		
	GEN-2013-013	\$13,000,000.00
	Total Allocated Costs	\$13,000,000.00
GEN-2013-014 Interconnection Costs		\$1,800,000.00
See One-Line Diagram.		
	GEN-2013-014	\$1,800,000.00
	Total Allocated Costs	\$1,800,000.00
GEN-2013-015 Interconnection Costs		\$6,300,000.00
See One-Line Diagram.		
	GEN-2013-015	\$6,300,000.00
	Total Allocated Costs	\$6,300,000.00
GEN-2013-016 Interconnection Costs		\$0.00
See One-Line Diagram.		
	GEN-2013-016	\$0.00
	Total Allocated Costs	\$0.00

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

Hays Plant - Vine 115kV CKT 1 **\$1,000,000.00**

NRIS only required upgrade: Rebuild approximately 1/4 mile of 115kV

GEN-2013-010 \$1,000,000.00

Total Allocated Costs **\$1,000,000.00**

J6 - Explorer Tap 69kV CKT 1 **\$4,000,000.00**

NRIS only required upgrade: Rebuild approximately 5 miles of 69kV

GEN-2013-009 \$4,000,000.00

Total Allocated Costs **\$4,000,000.00**

Knoll - North Hays - Vine Street 115kV CKT 1 **\$4,500,000.00**

NRIS only required upgrade: Rebuild approximately 6 miles of 115kV

GEN-2013-010 \$4,500,000.00

Total Allocated Costs **\$4,500,000.00**

Meadow Grove - North Petersburg 115kV CKT 1 **\$16,300,000.00**

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-2012-005 \$2,433,127.78

GEN-2013-004 \$635,123.92

GEN-2013-005 \$7,833,195.00

GEN-2013-006 \$5,398,553.31

Total Allocated Costs **\$16,300,000.00**

Meadow Grove - South Norfolk 230kV CKT 1 **\$25,000,000.00**

Build approximately 25 miles of new 230kV circuit from Meadow Grove - South Norfolk

GEN-2012-005 \$4,732,598.07

GEN-2013-004 \$928,277.95

GEN-2013-005 \$11,448,761.40

GEN-2013-006 \$7,890,362.58

Total Allocated Costs **\$25,000,000.00**

Meadow Grove 230/115/13.8kV Transformer CKT 1 **\$11,000,000.00**

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

GEN-2012-005 \$1,641,988.07

GEN-2013-004 \$428,611.23

GEN-2013-005 \$5,286,205.21

GEN-2013-006 \$3,643,195.48

Total Allocated Costs **\$11,000,000.00**

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

Vinita Neo Tap - J6 69kV CKT 1 **\$1,600,000.00**

NRIS only required upgrade: Rebuild approximately 2 miles of 69kV

GEN-2013-009 \$1,600,000.00

Total Allocated Costs **\$1,600,000.00**

Oklaunion 345kV 60 Mvar Cap Bank **\$20,000,000.00**

Install 60MVar Cap Bank at Oklaunion.

ASGI-2013-002 \$634,992.55

ASGI-2013-003 \$637,584.19

GEN-2013-013 \$9,086,887.47

GEN-2013-016 \$9,640,535.79

Total Allocated Costs **\$20,000,000.00**

Plant X Station 230/115/13kV Transformer CKT 2 **\$8,000,000.00**

NRIS only required upgrade: Build second 230/115/13kV transformer at Plant X

GEN-2013-013 \$8,000,000.00

Total Allocated Costs **\$8,000,000.00**

South Norfolk 345/230/13.8kV Transformer CKT 1 **\$6,600,000.00**

Build new 345/230/13.8kV transformer

GEN-2012-005 \$1,249,405.89

GEN-2013-004 \$245,065.38

GEN-2013-005 \$3,022,473.01

GEN-2013-006 \$2,083,055.72

Total Allocated Costs **\$6,600,000.00**

South Norfolk 345/230kV Substation **\$10,600,000.00**

Build new 345/230kV substation on Hoskins - Shell Creek 345kV

GEN-2012-005 \$2,006,621.58

GEN-2013-004 \$393,589.85

GEN-2013-005 \$4,854,274.83

GEN-2013-006 \$3,345,513.74

Total Allocated Costs **\$10,600,000.00**

Terra Nitrogen Tap - Verdigras 138kV CKT 1 **\$4,000,000.00**

NRIS only required upgrade: Rebuild approximately 4 miles of 138kV

GEN-2013-009 \$4,000,000.00

Total Allocated Costs **\$4,000,000.00**

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

Tolk - Plant X 230kV CKT 3**\$20,000,000.00**

Build a 3rd circuit between Tolk - Plant X 230kV

ASGI-2013-002	\$1,014,210.70
ASGI-2013-003	\$1,031,434.18
GEN-2013-013	\$17,954,355.12

Total Allocated Costs **\$20,000,000.00**

Vinita - Eastern State Hospital Tap 69kV CKT 1**\$1,600,000.00**

NRIS only required upgrade: Rebuild approximately 2 miles of 69kV

GEN-2013-009	\$1,600,000.00
--------------	----------------

Total Allocated Costs **\$1,600,000.00**

Vinita - Vinita Junction 69kV CKT 1**\$2,100,000.00**

Rebuild approximately 3 miles of 69kV

GEN-2013-009	\$2,100,000.00
--------------	----------------

Total Allocated Costs **\$2,100,000.00**

Vinita Junction 138/69/13.2kV Transformer CKT 1**\$2,000,000.00**

Replace existing Vinita Junction transformer

GEN-2013-009	\$2,000,000.00
--------------	----------------

Total Allocated Costs **\$2,000,000.00**

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

G: Power Flow Analysis (Constraints Used For Mitigation)

See next page.

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00G12_005		0 14SP	G12_005	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	127.0523	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G12_005		0 24SP	G12_005	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	126.9896	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G12_005		0 19SP	G12_005	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	126.9721	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G12_005		0 14WP	G12_005	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	126.8702	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G12_005		0 19WP	G12_005	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	126.8637	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09G12_005		0 14G	G12_005	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	126.8101	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09NR		0 14G	G12_005	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	110.5274	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09G12_005		0 14G	G12_005	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	105.608	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	9		0 14G	G12_005	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	100.6181	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09NR_BPSON		0 14G	G12_005	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	110.5277	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09G12_005_BPSON		0 14G	G12_005	2013DIS130	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	105.6082	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09_BPSON		0 14G	G12_005	2013DIS130	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	100.6186	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G12_005		0 24SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	129.2226	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	00G12_005		0 19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	128.9757	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	09G12_005		0 14G	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	128.9191	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	00G12_005		0 19WP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	128.6069	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	00G12_005		0 14SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	128.5298	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	00G12_005		0 14WP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	127.9622	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	09NR		0 14G	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	112.3586	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	09G12_005		0 14G	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	107.3122	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	00G12_005		0 19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25456	102.6728	HOSKINS - RAUN 345KV CKT 1
FDNS	00G12_005		0 24SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.26109	102.669	GRAND ISLAND - HOLT.CO3 345.00 345KV CKT 1
FDNS	00G12_005		0 24SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25453	102.5803	HOSKINS - RAUN 345KV CKT 1
FDNS	00G12_005		0 19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25727	102.2576	GEN640009 1-COOPER NUCLEAR STATION
FDNS	9		0 14G	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	102.143	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	00G12_005		0 19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25727	102.0076	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	00G12_005		0 14SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25851	101.9363	HOSKINS - RAUN 345KV CKT 1
FDNS	00G12_005		0 19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.24856	101.7451	COLUMEAST - NW68TH & HOLDREGE 345KV CKT 1
FDNS	00G12_005		0 19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25727	101.6459	GEN645012 2-NEBRASKA CITY 2
FDNS	00G12_005		0 24SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.24855	101.5973	COLUMEAST - NW68TH & HOLDREGE 345KV CKT 1
FDNS	00G12_005		0 24SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25726	101.5397	GEN640009 1-COOPER NUCLEAR STATION
FDNS	00G12_005		0 19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25727	101.4916	GEN645011 1-NEBRASKA CITY 1
FDNS	00G12_005		0 14SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.26084	101.4082	GEN640009 1-COOPER NUCLEAR STATION
FDNS	00G12_005		0 24SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25726	101.302	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	00G12_005		0 19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25727	101.2643	GEN542962 2-IATAN UNIT #2
FDNS	00G12_005		0 14SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.26084	101.1762	GEN645012 2-NEBRASKA CITY 2
FDNS	00G12_005		0 14SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.26084	101.1344	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	00G12_005		0 14SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.26084	101.0262	GEN645011 1-NEBRASKA CITY 1
FDNS	00G12_005		0 24SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25726	100.9614	GEN645012 2-NEBRASKA CITY 2
FDNS	00G12_005		0 19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25727	100.8849	GEN640011 2-GERALD GENTLEMAN STATION UNIT 2
FDNS	00G12_005		0 19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25727	100.8737	GEN542957 1-IATAN UNIT #1
FDNS	00G12_005		0 19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25727	100.8296	GEN532652 1-JEFFREY ENERGY CENTER UNIT 2
FDNS	00G12_005		0 19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25727	100.8293	GEN532653 1-JEFFREY ENERGY CENTER UNIT 3
FDNS	00G12_005		0 19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25727	100.827	GEN532651 1-JEFFREY ENERGY CENTER UNIT 1
FDNS	00G12_005		0 19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25727	100.8219	GEN640010 1-GERALD GENTLEMAN STATION UNIT 1
FDNS	00G12_005		0 24SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25726	100.8109	GEN645011 1-NEBRASKA CITY 1
FDNS	00G12_005		0 19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25727	100.658	GEN542955 1-LACYGNE UNIT #1
FDNS	00G12_005		0 24SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25726	100.5887	GEN542962 2-IATAN UNIT #2
FDNS	00G12_005		0 14SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.26084	100.583	GEN542962 2-IATAN UNIT #2
FDNS	00G12_005		0 14SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.26084	100.5679	GEN640011 2-GERALD GENTLEMAN STATION UNIT 2
FDNS	00G12_005		0 19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25727	100.5157	GEN645001 1-FORT CALHOUN 1
FDNS	00G12_005		0 19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25727	100.4944	GEN640028 1-COLUMCOGENERATION
FDNS	00G12_005		0 19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.24743	100.4778	COLUMWEST - GRAND ISLAND 230KV CKT 1
FDNS	00G12_005		0 19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25727	100.4561	GEN542956 2-LACYGNE UNIT #2
FDNS	00G12_005		0 14SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.26084	100.4242	GEN640010 1-GERALD GENTLEMAN STATION UNIT 1
FDNS	00G12_005		0 19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25727	100.3324	GEN542951 5-HAWTHORN UNIT #5
FDNS	00G12_005		0 19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25727	100.2868	GEN641089 2-ENERGY CENTER 2
FDNS	00G12_005		0 19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25866	100.2713	GAVINS POINT - HARTINGTON 115KV CKT 1
FDNS	00G12_005		0 14SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.26084	100.2477	GEN542957 1-IATAN UNIT #1
FDNS	00G12_005		0 19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.26048	100.241	FT RANDAL - WHITE SWAN 115KV CKT 1
FDNS	00G12_005		0 14SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.26084	100.2221	GEN532651 1-JEFFREY ENERGY CENTER UNIT 1
FDNS	00G12_005		0 14SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.26084	100.2157	GEN532652 1-JEFFREY ENERGY CENTER UNIT 2
FDNS	00G12_005		0 14SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.26084	100.2154	GEN532653 1-JEFFREY ENERGY CENTER UNIT 3
FDNS	00G12_005		0 24SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25726	100.2143	GEN542957 1-IATAN UNIT #1
FDNS	00G12_005		0 24SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25726	100.2123	GEN640011 2-GERALD GENTLEMAN STATION UNIT 2
FDNS	00G12_005		0 19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25643	100.208	GRAND ISLAND - SWEETWATER 345KV CKT 1
FDNS	00G12_005		0 19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25807	100.1958	HANLON - STORLA 230KV CKT 1
FDNS	00G12_005		0 24SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25726	100.1623	GEN532652 1-JEFFREY ENERGY CENTER UNIT 2
FDNS	00G12_005		0 24SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25726	100.162	GEN532653 1-JEFFREY ENERGY CENTER UNIT 3
FDNS	00G12_005		0 24SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25726	100.16	GEN532651 1-JEFFREY ENERGY CENTER UNIT 1
FDNS	00G12_005		0 24SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25726	100.1518	GEN640010 1-GERALD GENTLEMAN STATION UNIT 1
FDNS	00G12_005		0 19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.26048	100.1487	TYNDALL - WHITE SWAN 115KV CKT 1
FDNS	00G12_005		0 19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25775	100.1116	FT THOMPSON - LETCHER 230KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00G12_005	0	14SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.26084	100.0873	GEN640028 1-COLUMCOGENERATION
FDNS	00G12_005	0	14SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.2507	100.0678	COLUMWEST - GRAND ISLAND 230KV CKT 1
FDNS	00G12_005	0	19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25656	100.0625	103RD & ROKEBY - SUB 3458 NEB CTY 345KV CKT 1
FDNS	00G12_005	0	14SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.26084	100	GEN542955 1-LACYGNE UNIT #1
FDNS	00G12_005	0	19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25824	100	BLOOMFIELD - GAVINS POINT 115KV CKT 1
FDNS	00G12_005	0	19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25767	100	KEYSTONE - SIDNEY 345KV CKT 1
FDNS	00G12_005	0	19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25727	100	GEN514805 1-SOONER UNIT 1
FDNS	00G12_005	0	19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25727	100	GEN514806 1-SOONER UNIT 2
FDNS	00G12_005	0	19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25727	100	GEN525562 1-TOLK GEN #2 24 KV
FDNS	00G12_005	0	24SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25726	100	GEN542955 1-LACYGNE UNIT #1
FDNS	00G12_005	0	14SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.26404	99.9	TYNDALL - WHITE SWAN 115KV CKT 1
FDNS	00G12_005	0	14SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.26259	99.9	GAVINS POINT - HARTINGTON 115KV CKT 1
FDNS	00G12_005	0	14SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.26137	99.9	KEYSTONE - SIDNEY 345KV CKT 1
FDNS	00G12_005	0	14SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.26084	99.9	GEN542956 2-LACYGNE UNIT #2
FDNS	00G12_005	0	14SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.26084	99.9	GEN542956 2-LACYGNE UNIT #2
FDNS	00G12_005	0	19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25824	99.9	BLOOMFIELD - CREIGHTON 115KV CKT 1
FDNS	00G12_005	0	19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25824	99.9	BLOOMFIELD - CREIGHTON 115KV CKT 1
FDNS	00G12_005	0	19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25821	99.9	DAK01WAPAB2
FDNS	00G12_005	0	19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25727	99.9	GEN525561 1-TOLK GEN #1 24 KV
FDNS	00G12_005	0	19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25727	99.9	GEN525561 1-TOLK GEN #1 24 KV
FDNS	00G12_005	0	19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25726	99.9	GEN525561 1-TOLK GEN #1 24 KV
FDNS	00G12_005	0	19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25726	99.9	COUNCIL BLUFFS - SUB 3456 345KV CKT 1
FDNS	00G12_005	0	19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25726	99.9	COUNCIL BLUFFS - SUB 3456 345KV CKT 1
FDNS	00G12_005	0	24SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25726	99.9	GEN640028 1-COLUMCOGENERATION
FDNS	00G12_005	0	24SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25726	99.9	GEN640028 1-COLUMCOGENERATION
FDNS	00G12_005	0	24SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25726	99.9	GEN645001 1-FORT CALHOUN 1
FDNS	00G12_005	0	24SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25726	99.9	GEN645001 1-FORT CALHOUN 1
FDNS	00G12_005	0	24SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.24743	99.9	COLUMWEST - GRAND ISLAND 230KV CKT 1
FDNS	00G12_005	0	24SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.24743	99.9	COLUMWEST - GRAND ISLAND 230KV CKT 1
FDNS	09NR_BPSON	0	14G	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	112.3759	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	09G12_005_BPSON	0	14G	G12_005	2013DIS130	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	107.3008	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	09_BPSON	0	14G	G12_005	2013DIS130	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	102.0956	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	00NR	2	24SP	G12_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.04385	107.9842	BASE CASE
FDNS	00NR	2	19SP	G12_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.04406	103.1902	BASE CASE
FDNS	00NR	2	24SP	G12_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.04183	102.5164	HOSKINS - NELIGH.EAST3345.00 345KV CKT 1
FDNS	00NR	2	24SP	G12_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.04183	102.4613	NELIGH.EAST3345.00 (NELIGH.E T1) 345/115/13.8KV TRANSFORMER CKT 1
FDNS	00G12_005	2	19SP	G12_005	FROM->TO	MEADOWGROVE 230.00 - S_NORFOLK 230.00 230KV CKT 1	320	0.2628	104.1987	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G12_005	2	24SP	G12_005	FROM->TO	MEADOWGROVE 230.00 - S_NORFOLK 230.00 230KV CKT 1	320	0.26281	103.3125	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G12_005	2	14SP	G12_005	FROM->TO	MEADOWGROVE 230.00 - S_NORFOLK 230.00 230KV CKT 1	320	0.26615	102.1877	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G12_005	2	19SP	G12_005	FROM->TO	S_NORFOLK 345.00 (SNORFOLK) 345/230/13.8KV TRANSFORMER CKT 1	336	0.2628	100.5856	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_004	0	14SP	G13_004	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	127.0523	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_004	0	24SP	G13_004	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	126.9896	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	126.9721	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_004	0	14WP	G13_004	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	126.8702	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_004	0	19WP	G13_004	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	126.8637	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09G13_004	0	14G	G13_004	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	126.8101	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09G13_004	0	14G	G13_004	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	121.7156	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09NR	0	14G	G13_004	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	110.5274	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	9	0	14G	G13_004	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	100.6181	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09G13_004_BPSON	0	14G	G13_004	2013DIS130	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	121.716	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09NR_BPSON	0	14G	G13_004	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	110.5277	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09_BPSON	0	14G	G13_004	2013DIS130	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	100.6186	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_004	0	14SP	G13_004	TO->FROM	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1	320	1	104.0605	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_004	0	24SP	G13_004	TO->FROM	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1	320	1	104.0093	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.995	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_004	0	14WP	G13_004	TO->FROM	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.9107	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_004	0	19WP	G13_004	TO->FROM	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.9053	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09G13_004	0	14G	G13_004	TO->FROM	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.8606	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09G13_004	0	14G	G13_004	TO->FROM	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.7893	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09G13_004_BPSON	0	14G	G13_004	2013DIS130	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.7898	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_004	0	24SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	129.2226	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	128.9757	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	09G13_004	0	14G	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	128.9191	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	00G13_004	0	19WP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	128.6069	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	00G13_004	0	14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	128.5298	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	00G13_004	0	14WP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	127.9622	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	09G13_004	0	14G	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	123.561	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	09NR	0	14G	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	112.3586	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	00G13_004	0	14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6724	109.6644	FT RANDAL - UTICA JCT 230KV CKT 1
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.67031	109.2741	FT RANDAL - UTICA JCT 230KV CKT 1
FDNS	00G13_004	0	24SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.67032	108.6208	FT RANDAL - UTICA JCT 230KV CKT 1
FDNS	00G13_004	0	14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.66798	105.377	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.66571	105.1745	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	00G13_004	0	14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.66166	104.3765	FT THOMPSON - GRAND ISLAND 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00G13_004	0	24SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.66572	104.3564	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65768	103.8427	FT RANDAL - SPENCER 115KV CKT 1
FDNS	00G13_004	0	24SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.8233	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.6435	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09G13_004	0	14G	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.6118	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09G13_004	0	14G	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.5967	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65768	103.5833	ONEILL - SPENCER 115KV CKT 1
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65589	103.5047	GRAND ISLAND - HOLT.CO3 345.00 345KV CKT 1
FDNS	00G13_004	0	24SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65768	103.4645	FT RANDAL - SPENCER 115KV CKT 1
FDNS	00G13_004	0	19WP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.4347	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_004	0	14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.3175	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_004	0	24SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65768	103.1688	ONEILL - SPENCER 115KV CKT 1
FDNS	00G13_004	0	14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65945	103.0357	FT RANDAL - SPENCER 115KV CKT 1
FDNS	00G13_004	0	14WP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.0028	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_004	0	14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65945	102.7669	ONEILL - SPENCER 115KV CKT 1
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.64889	102.6728	HOSKINS - RAUN 345KV CKT 1
FDNS	00G13_004	0	24SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65591	102.669	GRAND ISLAND - HOLT.CO3 345.00 345KV CKT 1
FDNS	00G13_004	0	24SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.64888	102.5803	HOSKINS - RAUN 345KV CKT 1
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	102.2576	GEN640009 1-COOPER NUCLEAR STATION
FDNS	9	0	14G	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	102.143	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	102.0076	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	00G13_004	0	14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65051	101.9363	HOSKINS - RAUN 345KV CKT 1
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.64179	101.7451	COLUMEAST - NW68TH & HOLDREGE 345KV CKT 1
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.66022	101.7064	FT THOMPSON - HOLT.CO3 345.00 345KV CKT 1
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	101.6459	GEN645012 2-NEBRASKA CITY 2
FDNS	00G13_004	0	24SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6418	101.5973	COLUMEAST - NW68TH & HOLDREGE 345KV CKT 1
FDNS	00G13_004	0	24SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	101.5397	GEN640009 1-COOPER NUCLEAR STATION
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	101.4916	GEN645011 1-NEBRASKA CITY 1
FDNS	00G13_004	0	14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	101.4082	GEN640009 1-COOPER NUCLEAR STATION
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65918	101.3609	RASMUSN - UTICA JCT 230KV CKT 1
FDNS	00G13_004	0	24SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	101.302	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	101.2643	GEN542962 2-IATAN UNIT #2
FDNS	00G13_004	0	24SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6602	101.2301	FT THOMPSON - HOLT.CO3 345.00 345KV CKT 1
FDNS	00G13_004	0	14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	101.1762	GEN645012 2-NEBRASKA CITY 2
FDNS	00G13_004	0	14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	101.1344	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	00G13_004	0	14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.66142	101.1313	RASMUSN - UTICA JCT 230KV CKT 1
FDNS	00G13_004	0	14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	101.0262	GEN645011 1-NEBRASKA CITY 1
FDNS	00G13_004	0	24SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	100.9614	GEN645012 2-NEBRASKA CITY 2
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100.8849	GEN640011 2-GERALD GENTLEMAN STATION UNIT 2
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100.8737	GEN542957 1-IATAN UNIT #1
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100.8296	GEN532652 1-JEFFREY ENERGY CENTER UNIT 2
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100.8293	GEN532653 1-JEFFREY ENERGY CENTER UNIT 3
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100.827	GEN532651 1-JEFFREY ENERGY CENTER UNIT 1
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100.8219	GEN640010 1-GERALD GENTLEMAN STATION UNIT 1
FDNS	00G13_004	0	24SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	100.8109	GEN645011 1-NEBRASKA CITY 1
FDNS	09G13_004	0	14G	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.67231	100.741	FT RANDAL - UTICA JCT 230KV CKT 1
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100.658	GEN542955 1-LACYGNE UNIT #1
FDNS	00G13_004	0	24SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	100.5887	GEN542962 2-IATAN UNIT #2
FDNS	00G13_004	0	14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	100.583	GEN542962 2-IATAN UNIT #2
FDNS	00G13_004	0	14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	100.5679	GEN640011 2-GERALD GENTLEMAN STATION UNIT 2
FDNS	00G13_004	0	24SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65919	100.5667	RASMUSN - UTICA JCT 230KV CKT 1
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100.5157	GEN645001 1-FORT CALHOUN 1
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100.4944	GEN640028 1-COLUMCOGENERATION
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.63474	100.4778	COLUMWEST - GRAND ISLAND 230KV CKT 1
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100.4561	GEN542956 2-LACYGNE UNIT #2
FDNS	00G13_004	0	14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	100.4242	GEN640010 1-GERALD GENTLEMAN STATION UNIT 1
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100.3324	GEN542951 5-HAWTHORN UNIT #5
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100.2868	GEN641089 2-ENERGY CENTER 2
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65576	100.2713	GAVINS POINT - HARTINGTON 115KV CKT 1
FDNS	00G13_004	0	14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	100.2477	GEN542957 1-IATAN UNIT #1
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65671	100.241	FT RANDAL - WHITE SWAN 115KV CKT 1
FDNS	00G13_004	0	14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	100.2221	GEN532651 1-JEFFREY ENERGY CENTER UNIT 1
FDNS	00G13_004	0	14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	100.2157	GEN532652 1-JEFFREY ENERGY CENTER UNIT 2
FDNS	00G13_004	0	14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	100.2154	GEN532653 1-JEFFREY ENERGY CENTER UNIT 3
FDNS	00G13_004	0	24SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	100.2143	GEN542957 1-IATAN UNIT #1
FDNS	00G13_004	0	24SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	100.2123	GEN640011 2-GERALD GENTLEMAN STATION UNIT 2
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65433	100.208	GRAND ISLAND - SWEETWATER 345KV CKT 1
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65576	100.1958	HANLON - STORLA 230KV CKT 1
FDNS	00G13_004	0	24SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	100.1623	GEN532652 1-JEFFREY ENERGY CENTER UNIT 2
FDNS	00G13_004	0	24SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	100.162	GEN532653 1-JEFFREY ENERGY CENTER UNIT 3
FDNS	00G13_004	0	24SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	100.16	GEN532651 1-JEFFREY ENERGY CENTER UNIT 1
FDNS	00G13_004	0	24SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	100.1518	GEN640010 1-GERALD GENTLEMAN STATION UNIT 1
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65671	100.1487	TYNDALL - WHITE SWAN 115KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00G13_004		0 14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65769	100.132	HANLON - STORLA 230KV CKT 1
FDNS	00G13_004		0 19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65561	100.1116	FT THOMPSON - LETCHER 230KV CKT 1
FDNS	00G13_004		0 14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	100.0873	GEN640028 1-COLUMCOGENERATION
FDNS	00G13_004		0 14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.63627	100.0678	COLUMWEST - GRAND ISLAND 230KV CKT 1
FDNS	00G13_004		0 19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65442	100.0625	103RD & ROKEBY - SUB 3458 NEB CTY 345KV CKT 1
FDNS	00G13_004		0 14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65864	100	FT RANDAL - WHITE SWAN 115KV CKT 1
FDNS	00G13_004		0 14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65753	100	FT THOMPSON - LETCHER 230KV CKT 1
FDNS	00G13_004		0 14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	100	GEN542955 1-LACYGNE UNIT #1
FDNS	00G13_004		0 19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65562	100	KEYSTONE - SIDNEY 345KV CKT 1
FDNS	00G13_004		0 19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65545	100	BLOOMFIELD - GAVINS POINT 115KV CKT 1
FDNS	00G13_004		0 19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100	GEN514805 1-SOONER UNIT 1
FDNS	00G13_004		0 19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100	GEN514806 1-SOONER UNIT 2
FDNS	00G13_004		0 19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100	GEN525562 1-TOLK GEN #2 24 KV
FDNS	00G13_004		0 24SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	100	GEN542955 1-LACYGNE UNIT #1
FDNS	00G13_004		0 14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65864	99.9	TYNDALL - WHITE SWAN 115KV CKT 1
FDNS	00G13_004		0 14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65864	99.9	TYNDALL - WHITE SWAN 115KV CKT 1
FDNS	00G13_004		0 14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6578	99.9	GAVINS POINT - HARTINGTON 115KV CKT 1
FDNS	00G13_004		0 14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6578	99.9	GAVINS POINT - HARTINGTON 115KV CKT 1
FDNS	00G13_004		0 14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65763	99.9	KEYSTONE - SIDNEY 345KV CKT 1
FDNS	00G13_004		0 14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65763	99.9	KEYSTONE - SIDNEY 345KV CKT 1
FDNS	00G13_004		0 14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	99.9	GEN542956 2-LACYGNE UNIT #2
FDNS	00G13_004		0 14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	99.9	GEN542956 2-LACYGNE UNIT #2
FDNS	00G13_004		0 19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65583	99.9	DAK01WAPAB2
FDNS	00G13_004		0 19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65545	99.9	BLOOMFIELD - CREIGHTON 115KV CKT 1
FDNS	00G13_004		0 19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65545	99.9	BLOOMFIELD - CREIGHTON 115KV CKT 1
FDNS	00G13_004		0 19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	99.9	GEN525561 1-TOLK GEN #1 24 KV
FDNS	00G13_004		0 19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	99.9	GEN525561 1-TOLK GEN #1 24 KV
FDNS	00G13_004		0 19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65524	99.9	COUNCIL BLUFFS - SUB 3456 345KV CKT 1
FDNS	00G13_004		0 19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65524	99.9	COUNCIL BLUFFS - SUB 3456 345KV CKT 1
FDNS	00G13_004		0 24SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	99.9	GEN640028 1-COLUMCOGENERATION
FDNS	00G13_004		0 24SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	99.9	GEN640028 1-COLUMCOGENERATION
FDNS	00G13_004		0 24SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	99.9	GEN645001 1-FORT CALHOUN 1
FDNS	00G13_004		0 24SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	99.9	GEN645001 1-FORT CALHOUN 1
FDNS	00G13_004		0 24SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.63475	99.9	COLUMWEST - GRAND ISLAND 230KV CKT 1
FDNS	00G13_004		0 24SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.63475	99.9	COLUMWEST - GRAND ISLAND 230KV CKT 1
FDNS	09G13_004_BPSON		0 14G	G13_004	2013DIS130	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	123.5186	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	09NR_BPSON		0 14G	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	112.3759	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	09G13_004_BPSON		0 14G	G13_004	2013DIS130	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.5947	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09_BPSON		0 14G	G13_004	2013DIS130	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	102.0956	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	00G13_004		2 19SP	G13_004	FROM->TO	MEADOWGROVE 230.00 - S_NORFOLK 230.00 230KV CKT 1	320	0.67982	104.1987	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_004		2 24SP	G13_004	FROM->TO	MEADOWGROVE 230.00 - S_NORFOLK 230.00 230KV CKT 1	320	0.67986	103.3125	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_004		2 14SP	G13_004	FROM->TO	MEADOWGROVE 230.00 - S_NORFOLK 230.00 230KV CKT 1	320	0.6792	102.1877	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_004		2 19SP	G13_004	FROM->TO	S_NORFOLK 345.00 (SNORFOLKT) 345/230/13.8KV TRANSFORMER CKT 1	336	0.67982	100.5856	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_005		0 14SP	G13_005	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	127.0523	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_005		0 24SP	G13_005	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	126.9896	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	126.9721	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_005		0 14WP	G13_005	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	126.8702	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_005		0 19WP	G13_005	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	126.8637	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09G13_005		0 14G	G13_005	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	126.8101	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09G13_005		0 14G	G13_005	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	121.7156	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09NR		0 14G	G13_005	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	110.5274	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	9		0 14G	G13_005	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	100.6181	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09G13_005_BPSON		0 14G	G13_005	2013DIS130	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	121.716	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09NR_BPSON		0 14G	G13_005	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	110.5277	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09_BPSON		0 14G	G13_005	2013DIS130	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	100.6186	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_005		0 14SP	G13_005	TO->FROM	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1	320	1	104.0605	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_005		0 24SP	G13_005	TO->FROM	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1	320	1	104.0093	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.995	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_005		0 14WP	G13_005	TO->FROM	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.9107	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_005		0 19WP	G13_005	TO->FROM	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.9053	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09G13_005		0 14G	G13_005	TO->FROM	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.8606	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09G13_005		0 14G	G13_005	TO->FROM	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.7893	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09G13_005_BPSON		0 14G	G13_005	2013DIS130	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.7898	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_005		0 24SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	129.2226	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	128.9757	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	09G13_005		0 14G	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	128.9191	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	00G13_005		0 19WP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	128.6069	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	00G13_005		0 14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	128.5298	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	00G13_005		0 14WP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	127.9622	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	09G13_005		0 14G	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	123.561	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	09NR		0 14G	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	112.3586	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	00G13_005		0 14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6724	109.6644	FT RANDAL - UTICA JCT 230KV CKT 1
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.67031	109.2741	FT RANDAL - UTICA JCT 230KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00G13_005		0 24SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.67032	108.6208	FT RANDAL - UTICA JCT 230KV CKT 1
FDNS	00G13_005		0 14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.66798	105.377	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.66571	105.1745	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	00G13_005		0 14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.66166	104.3765	FT THOMPSON - GRAND ISLAND 345KV CKT 1
FDNS	00G13_005		0 24SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.66572	104.3564	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65768	103.8427	FT RANDAL - SPENCER 115KV CKT 1
FDNS	00G13_005		0 24SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.8233	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.6435	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09G13_005		0 14G	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.6118	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09G13_005		0 14G	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.5967	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65768	103.5833	ONEILL - SPENCER 115KV CKT 1
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65589	103.5047	GRAND ISLAND - HOLT.CO3 345.00 345KV CKT 1
FDNS	00G13_005		0 24SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65768	103.4645	FT RANDAL - SPENCER 115KV CKT 1
FDNS	00G13_005		0 19WP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.4347	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_005		0 14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.3175	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_005		0 24SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65768	103.1688	ONEILL - SPENCER 115KV CKT 1
FDNS	00G13_005		0 14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65945	103.0357	FT RANDAL - SPENCER 115KV CKT 1
FDNS	00G13_005		0 14WP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.0028	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_005		0 14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65945	102.7669	ONEILL - SPENCER 115KV CKT 1
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.64889	102.6728	HOSKINS - RAUN 345KV CKT 1
FDNS	00G13_005		0 24SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65591	102.669	GRAND ISLAND - HOLT.CO3 345.00 345KV CKT 1
FDNS	00G13_005		0 24SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.64888	102.5803	HOSKINS - RAUN 345KV CKT 1
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	102.2576	GEN640009 1-COOPER NUCLEAR STATION
FDNS	9		0 14G	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	102.143	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	102.0076	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	00G13_005		0 14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65051	101.9363	HOSKINS - RAUN 345KV CKT 1
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.64179	101.7451	COLUMEAST - NW68TH & HOLDREGE 345KV CKT 1
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.66022	101.7064	FT THOMPSON - HOLT.CO3 345.00 345KV CKT 1
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	101.6459	GEN645012 2-NEBRASKA CITY 2
FDNS	00G13_005		0 24SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6418	101.5973	COLUMEAST - NW68TH & HOLDREGE 345KV CKT 1
FDNS	00G13_005		0 24SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	101.5397	GEN640009 1-COOPER NUCLEAR STATION
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	101.4916	GEN645011 1-NEBRASKA CITY 1
FDNS	00G13_005		0 14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	101.4082	GEN640009 1-COOPER NUCLEAR STATION
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65918	101.3609	RASMUSN - UTICA JCT 230KV CKT 1
FDNS	00G13_005		0 24SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	101.302	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	101.2643	GEN542962 2-IATAN UNIT #2
FDNS	00G13_005		0 24SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6602	101.2301	FT THOMPSON - HOLT.CO3 345.00 345KV CKT 1
FDNS	00G13_005		0 14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	101.1762	GEN645012 2-NEBRASKA CITY 2
FDNS	00G13_005		0 14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	101.1344	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	00G13_005		0 14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.66142	101.1313	RASMUSN - UTICA JCT 230KV CKT 1
FDNS	00G13_005		0 14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	101.0262	GEN645011 1-NEBRASKA CITY 1
FDNS	00G13_005		0 24SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	100.9614	GEN645012 2-NEBRASKA CITY 2
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100.8849	GEN640011 2-GERALD GENTLEMAN STATION UNIT 2
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100.8737	GEN542957 1-IATAN UNIT #1
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100.8296	GEN532652 1-JEFFREY ENERGY CENTER UNIT 2
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100.8293	GEN532653 1-JEFFREY ENERGY CENTER UNIT 3
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100.827	GEN532651 1-JEFFREY ENERGY CENTER UNIT 1
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100.8219	GEN640010 1-GERALD GENTLEMAN STATION UNIT 1
FDNS	00G13_005		0 24SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	100.8109	GEN645011 1-NEBRASKA CITY 1
FDNS	09G13_005		0 14G	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.67231	100.741	FT RANDAL - UTICA JCT 230KV CKT 1
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100.658	GEN542955 1-LACYGNE UNIT #1
FDNS	00G13_005		0 24SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	100.5887	GEN542962 2-IATAN UNIT #2
FDNS	00G13_005		0 14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	100.583	GEN542962 2-IATAN UNIT #2
FDNS	00G13_005		0 14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	100.5679	GEN640011 2-GERALD GENTLEMAN STATION UNIT 2
FDNS	00G13_005		0 24SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65919	100.5667	RASMUSN - UTICA JCT 230KV CKT 1
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100.5157	GEN645001 1-FORT CALHOUN 1
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100.4944	GEN640028 1-COLUMCOGENERATION
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.63474	100.4778	COLUMWEST - GRAND ISLAND 230KV CKT 1
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100.4561	GEN542956 2-LACYGNE UNIT #2
FDNS	00G13_005		0 14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	100.4242	GEN640010 1-GERALD GENTLEMAN STATION UNIT 1
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100.3324	GEN542951 5-HAWTHORN UNIT #5
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100.2868	GEN641089 2-ENERGY CENTER 2
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65576	100.2713	GAVINS POINT - HARTINGTON 115KV CKT 1
FDNS	00G13_005		0 14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	100.2477	GEN542957 1-IATAN UNIT #1
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65671	100.241	FT RANDAL - WHITE SWAN 115KV CKT 1
FDNS	00G13_005		0 14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	100.2221	GEN532651 1-JEFFREY ENERGY CENTER UNIT 1
FDNS	00G13_005		0 14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	100.2157	GEN532652 1-JEFFREY ENERGY CENTER UNIT 2
FDNS	00G13_005		0 14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	100.2154	GEN532653 1-JEFFREY ENERGY CENTER UNIT 3
FDNS	00G13_005		0 24SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	100.2143	GEN542957 1-IATAN UNIT #1
FDNS	00G13_005		0 24SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	100.2123	GEN640011 2-GERALD GENTLEMAN STATION UNIT 2
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65433	100.208	GRAND ISLAND - SWEETWATER 345KV CKT 1
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65576	100.1958	HANLON - STORLA 230KV CKT 1
FDNS	00G13_005		0 24SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	100.1623	GEN532652 1-JEFFREY ENERGY CENTER UNIT 2

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00G13_005		0 24SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	100.162	GEN532653 1-JEFFREY ENERGY CENTER UNIT 3
FDNS	00G13_005		0 24SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	100.16	GEN532651 1-JEFFREY ENERGY CENTER UNIT 1
FDNS	00G13_005		0 24SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	100.1518	GEN640010 1-GERALD GENTLEMAN STATION UNIT 1
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65671	100.1487	TYNDALL - WHITE SWAN 115KV CKT 1
FDNS	00G13_005		0 14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65769	100.132	HANLON - STORLA 230KV CKT 1
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65561	100.1116	FT THOMPSON - LETCHER 230KV CKT 1
FDNS	00G13_005		0 14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	100.0873	GEN640028 1-COLUMCOGENERATION
FDNS	00G13_005		0 14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.63627	100.0678	COLUMWEST - GRAND ISLAND 230KV CKT 1
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65442	100.0625	103RD & ROKEBY - SUB 3458 NEB CTY 345KV CKT 1
FDNS	00G13_005		0 14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65864	100	FT RANDAL - WHITE SWAN 115KV CKT 1
FDNS	00G13_005		0 14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65753	100	FT THOMPSON - LETCHER 230KV CKT 1
FDNS	00G13_005		0 14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	100	GEN542955 1-LACYGNE UNIT #1
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65562	100	KEYSTONE - SIDNEY 345KV CKT 1
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65545	100	BLOOMFIELD - GAVINS POINT 115KV CKT 1
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100	GEN514805 1-SOONER UNIT 1
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100	GEN514806 1-SOONER UNIT 2
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100	GEN525562 1-TOLK GEN #2 24 KV
FDNS	00G13_005		0 24SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	100	GEN542955 1-LACYGNE UNIT #1
FDNS	00G13_005		0 14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65864	99.9	TYNDALL - WHITE SWAN 115KV CKT 1
FDNS	00G13_005		0 14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65864	99.9	TYNDALL - WHITE SWAN 115KV CKT 1
FDNS	00G13_005		0 14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6578	99.9	GAVINS POINT - HARTINGTON 115KV CKT 1
FDNS	00G13_005		0 14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6578	99.9	GAVINS POINT - HARTINGTON 115KV CKT 1
FDNS	00G13_005		0 14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65763	99.9	KEYSTONE - SIDNEY 345KV CKT 1
FDNS	00G13_005		0 14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65763	99.9	KEYSTONE - SIDNEY 345KV CKT 1
FDNS	00G13_005		0 14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	99.9	GEN542956 2-LACYGNE UNIT #2
FDNS	00G13_005		0 14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	99.9	GEN542956 2-LACYGNE UNIT #2
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65583	99.9	DAK01WAPAB2
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65545	99.9	BLOOMFIELD - CREIGHTON 115KV CKT 1
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65545	99.9	BLOOMFIELD - CREIGHTON 115KV CKT 1
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	99.9	GEN525561 1-TOLK GEN #1 24 KV
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	99.9	GEN525561 1-TOLK GEN #1 24 KV
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65524	99.9	COUNCIL BLUFFS - SUB 3456 345KV CKT 1
FDNS	00G13_005		0 19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65524	99.9	COUNCIL BLUFFS - SUB 3456 345KV CKT 1
FDNS	00G13_005		0 24SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	99.9	GEN640028 1-COLUMCOGENERATION
FDNS	00G13_005		0 24SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	99.9	GEN640028 1-COLUMCOGENERATION
FDNS	00G13_005		0 24SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	99.9	GEN645001 1-FORT CALHOUN 1
FDNS	00G13_005		0 24SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	99.9	GEN645001 1-FORT CALHOUN 1
FDNS	00G13_005		0 24SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.63475	99.9	COLUMWEST - GRAND ISLAND 230KV CKT 1
FDNS	00G13_005		0 24SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.63475	99.9	COLUMWEST - GRAND ISLAND 230KV CKT 1
FDNS	09G13_005_BPSON		0 14G	G13_005	2013DIS130	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	123.5186	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	09NR_BPSON		0 14G	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	112.3759	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	09G13_005_BPSON		0 14G	G13_005	2013DIS130	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.5947	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09_BPSON		0 14G	G13_005	2013DIS130	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	102.0956	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	00G13_005		2 19SP	G13_005	FROM->TO	MEADOWGROVE 230.00 - S_NORFOLK 230.00 230KV CKT 1	320	0.6792	104.1987	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_005		2 24SP	G13_005	FROM->TO	MEADOWGROVE 230.00 - S_NORFOLK 230.00 230KV CKT 1	320	0.67986	103.3125	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_005		2 14SP	G13_005	FROM->TO	MEADOWGROVE 230.00 - S_NORFOLK 230.00 230KV CKT 1	320	0.6792	102.1877	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_005		2 19SP	G13_005	FROM->TO	S_NORFOLK 345.00 (SNORFOLK) 345/230/13.8KV TRANSFORMER CKT 1	336	0.6792	100.5856	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_006		0 14SP	G13_006	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	127.0523	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_006		0 24SP	G13_006	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	126.9896	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	126.9721	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_006		0 14WP	G13_006	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	126.8702	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_006		0 19WP	G13_006	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	126.8637	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09G13_006		0 14G	G13_006	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	126.8101	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09G13_006		0 14G	G13_006	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	121.7156	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	9		0 14G	G13_006	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	100.6181	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09G13_006_BPSON		0 14G	G13_006	2013DIS130	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	121.716	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09_BPSON		0 14G	G13_006	2013DIS130	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	100.6186	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_006		0 14SP	G13_006	TO->FROM	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1	320	1	104.0605	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_006		0 24SP	G13_006	TO->FROM	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1	320	1	104.0093	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.995	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_006		0 14WP	G13_006	TO->FROM	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.9107	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_006		0 19WP	G13_006	TO->FROM	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.9053	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09G13_006		0 14G	G13_006	TO->FROM	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.8606	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09G13_006		0 14G	G13_006	TO->FROM	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.7893	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09G13_006_BPSON		0 14G	G13_006	2013DIS130	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.7898	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_006		0 24SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	129.2226	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	128.9757	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	09G13_006		0 14G	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	128.9191	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	00G13_006		0 19WP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	128.6069	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	00G13_006		0 14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	128.5298	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	00G13_006		0 14WP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	127.9622	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	09G13_006		0 14G	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	123.561	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	00G13_006		0 14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6724	109.6644	FT RANDAL - UTICA JCT 230KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.67031	109.2741	FT RANDAL - UTICA JCT 230KV CKT 1
FDNS	00G13_006		0 24SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.67032	108.6208	FT RANDAL - UTICA JCT 230KV CKT 1
FDNS	00G13_006		0 14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.66798	105.377	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.66571	105.1745	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	00G13_006		0 14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.66166	104.3765	FT THOMPSON - GRAND ISLAND 345KV CKT 1
FDNS	00G13_006		0 24SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.66572	104.3564	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65768	103.8427	FT RANDAL - SPENCER 115KV CKT 1
FDNS	00G13_006		0 24SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.8233	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.6435	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09G13_006		0 14G	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.6118	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09G13_006		0 14G	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.5967	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65768	103.5833	ONEILL - SPENCER 115KV CKT 1
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65589	103.5047	GRAND ISLAND - HOLT.CO3 345.00 345KV CKT 1
FDNS	00G13_006		0 24SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65768	103.4645	FT RANDAL - SPENCER 115KV CKT 1
FDNS	00G13_006		0 19WP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.4347	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_006		0 14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.3175	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_006		0 24SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65768	103.1688	ONEILL - SPENCER 115KV CKT 1
FDNS	00G13_006		0 14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65945	103.0357	FT RANDAL - SPENCER 115KV CKT 1
FDNS	00G13_006		0 14WP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.0028	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_006		0 14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65945	102.7669	ONEILL - SPENCER 115KV CKT 1
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.64889	102.6728	HOSKINS - RAUN 345KV CKT 1
FDNS	00G13_006		0 24SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65591	102.669	GRAND ISLAND - HOLT.CO3 345.00 345KV CKT 1
FDNS	00G13_006		0 24SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.64888	102.5803	HOSKINS - RAUN 345KV CKT 1
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	102.2576	GEN640009 1-COOPER NUCLEAR STATION
FDNS	9		0 14G	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	102.143	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	102.0076	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	00G13_006		0 14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65051	101.9363	HOSKINS - RAUN 345KV CKT 1
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.64179	101.7451	COLUMEAST - NW68TH & HOLDREGE 345KV CKT 1
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.66022	101.7064	FT THOMPSON - HOLT.CO3 345.00 345KV CKT 1
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	101.6459	GEN645012 2-NEBRASKA CITY 2
FDNS	00G13_006		0 24SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6418	101.5973	COLUMEAST - NW68TH & HOLDREGE 345KV CKT 1
FDNS	00G13_006		0 24SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	101.5397	GEN640009 1-COOPER NUCLEAR STATION
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	101.4916	GEN645011 1-NEBRASKA CITY 1
FDNS	00G13_006		0 14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	101.4082	GEN640009 1-COOPER NUCLEAR STATION
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65918	101.3609	RASMUSN - UTICA JCT 230KV CKT 1
FDNS	00G13_006		0 24SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	101.302	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	101.2643	GEN542962 2-IATAN UNIT #2
FDNS	00G13_006		0 24SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6602	101.2301	FT THOMPSON - HOLT.CO3 345.00 345KV CKT 1
FDNS	00G13_006		0 14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	101.1762	GEN645012 2-NEBRASKA CITY 2
FDNS	00G13_006		0 14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	101.1344	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	00G13_006		0 14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.66142	101.1313	RASMUSN - UTICA JCT 230KV CKT 1
FDNS	00G13_006		0 14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	101.0262	GEN645011 1-NEBRASKA CITY 1
FDNS	00G13_006		0 24SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	100.9614	GEN645012 2-NEBRASKA CITY 2
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100.8849	GEN640011 2-GERALD GENTLEMAN STATION UNIT 2
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100.8737	GEN542957 1-IATAN UNIT #1
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100.8296	GEN532652 1-JEFFREY ENERGY CENTER UNIT 2
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100.8293	GEN532653 1-JEFFREY ENERGY CENTER UNIT 3
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100.827	GEN532651 1-JEFFREY ENERGY CENTER UNIT 1
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100.8219	GEN640010 1-GERALD GENTLEMAN STATION UNIT 1
FDNS	00G13_006		0 24SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	100.8109	GEN645011 1-NEBRASKA CITY 1
FDNS	09G13_006		0 14G	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.67231	100.741	FT RANDAL - UTICA JCT 230KV CKT 1
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100.658	GEN542955 1-LACYGNE UNIT #1
FDNS	00G13_006		0 24SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	100.5887	GEN542962 2-IATAN UNIT #2
FDNS	00G13_006		0 14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	100.583	GEN542962 2-IATAN UNIT #2
FDNS	00G13_006		0 14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	100.5679	GEN640011 2-GERALD GENTLEMAN STATION UNIT 2
FDNS	00G13_006		0 24SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65919	100.5667	RASMUSN - UTICA JCT 230KV CKT 1
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100.5157	GEN645001 1-FORT CALHOUN 1
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100.4944	GEN640028 1-COLUMCOGENERATION
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.63474	100.4778	COLUMWEST - GRAND ISLAND 230KV CKT 1
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100.4561	GEN542956 2-LACYGNE UNIT #2
FDNS	00G13_006		0 14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	100.4242	GEN640010 1-GERALD GENTLEMAN STATION UNIT 1
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100.3324	GEN542951 5-HAWTHORN UNIT #5
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100.2868	GEN641089 2-ENERGY CENTER 2
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65576	100.2713	GAVINS POINT - HARTINGTON 115KV CKT 1
FDNS	00G13_006		0 14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	100.2477	GEN542957 1-IATAN UNIT #1
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65671	100.241	FT RANDAL - WHITE SWAN 115KV CKT 1
FDNS	00G13_006		0 14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	100.2221	GEN532651 1-JEFFREY ENERGY CENTER UNIT 1
FDNS	00G13_006		0 14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	100.2157	GEN532652 1-JEFFREY ENERGY CENTER UNIT 2
FDNS	00G13_006		0 14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	100.2154	GEN532653 1-JEFFREY ENERGY CENTER UNIT 3
FDNS	00G13_006		0 24SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	100.2143	GEN542957 1-IATAN UNIT #1
FDNS	00G13_006		0 24SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	100.2123	GEN640011 2-GERALD GENTLEMAN STATION UNIT 2
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65433	100.208	GRAND ISLAND - SWEETWATER 345KV CKT 1
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65576	100.1958	HANLON - STORLA 230KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00G13_006		0 24SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	100.1623	GEN532652 1-JEFFREY ENERGY CENTER UNIT 2
FDNS	00G13_006		0 24SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	100.162	GEN532653 1-JEFFREY ENERGY CENTER UNIT 3
FDNS	00G13_006		0 24SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	100.16	GEN532651 1-JEFFREY ENERGY CENTER UNIT 1
FDNS	00G13_006		0 24SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	100.1518	GEN640010 1-GERALD GENTLEMAN STATION UNIT 1
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65671	100.1487	TYNDALL - WHITE SWAN 115KV CKT 1
FDNS	00G13_006		0 14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65769	100.132	HANLON - STORLA 230KV CKT 1
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65561	100.1116	FT THOMPSON - LETCHER 230KV CKT 1
FDNS	00G13_006		0 14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	100.0873	GEN640028 1-COLUMCOGENERATION
FDNS	00G13_006		0 14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.63627	100.0678	COLUMWEST - GRAND ISLAND 230KV CKT 1
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65442	100.0625	103RD & ROKEBY - SUB 3458 NEB CTY 345KV CKT 1
FDNS	00G13_006		0 14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65864	100	FT RANDAL - WHITE SWAN 115KV CKT 1
FDNS	00G13_006		0 14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65753	100	FT THOMPSON - LETCHER 230KV CKT 1
FDNS	00G13_006		0 14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	100	GEN542955 1-LACYGNE UNIT #1
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65562	100	KEYSTONE - SIDNEY 345KV CKT 1
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65545	100	BLOOMFIELD - GAVINS POINT 115KV CKT 1
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100	GEN514805 1-SOONER UNIT 1
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100	GEN514806 1-SOONER UNIT 2
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	100	GEN525562 1-TOLK GEN #2 24 KV
FDNS	00G13_006		0 24SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	100	GEN542955 1-LACYGNE UNIT #1
FDNS	00G13_006		0 14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65864	99.9	TYNDALL - WHITE SWAN 115KV CKT 1
FDNS	00G13_006		0 14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65864	99.9	TYNDALL - WHITE SWAN 115KV CKT 1
FDNS	00G13_006		0 14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6578	99.9	GAVINS POINT - HARTINGTON 115KV CKT 1
FDNS	00G13_006		0 14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6578	99.9	GAVINS POINT - HARTINGTON 115KV CKT 1
FDNS	00G13_006		0 14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65763	99.9	KEYSTONE - SIDNEY 345KV CKT 1
FDNS	00G13_006		0 14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65763	99.9	KEYSTONE - SIDNEY 345KV CKT 1
FDNS	00G13_006		0 14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	99.9	GEN542956 2-LACYGNE UNIT #2
FDNS	00G13_006		0 14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65733	99.9	GEN542956 2-LACYGNE UNIT #2
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65583	99.9	DAK01WAPAB2
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65545	99.9	BLOOMFIELD - CREIGHTON 115KV CKT 1
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65545	99.9	BLOOMFIELD - CREIGHTON 115KV CKT 1
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	99.9	GEN525561 1-TOLK GEN #1 24 KV
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6554	99.9	GEN525561 1-TOLK GEN #1 24 KV
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65524	99.9	COUNCIL BLUFFS - SUB 3456 345KV CKT 1
FDNS	00G13_006		0 19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65524	99.9	COUNCIL BLUFFS - SUB 3456 345KV CKT 1
FDNS	00G13_006		0 24SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	99.9	GEN640028 1-COLUMCOGENERATION
FDNS	00G13_006		0 24SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	99.9	GEN640028 1-COLUMCOGENERATION
FDNS	00G13_006		0 24SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.63475	99.9	COLUMWEST - GRAND ISLAND 230KV CKT 1
FDNS	00G13_006		0 24SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.63475	99.9	COLUMWEST - GRAND ISLAND 230KV CKT 1
FDNS	00G13_006		0 24SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	99.9	GEN645001 1-FORT CALHOUN 1
FDNS	00G13_006		0 24SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65541	99.9	GEN645001 1-FORT CALHOUN 1
FDNS	00G13_006		0 24SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.63475	99.9	COLUMWEST - GRAND ISLAND 230KV CKT 1
FDNS	00G13_006		0 24SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.63475	99.9	COLUMWEST - GRAND ISLAND 230KV CKT 1
FDNS	09G13_006_BPSO		0 14G	G13_006	2013DIS130	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	123.5186	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	09G13_006_BPSO		0 14G	G13_006	2013DIS130	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.5947	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09_BPSO		0 14G	G13_006	2013DIS130	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	102.0956	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	00G13_006		2 19SP	G13_006	FROM->TO	MEADOWGROVE 230.00 - S_NORFOLK 230.00 230KV CKT 1	320	0.67982	104.1987	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_006		2 24SP	G13_006	FROM->TO	MEADOWGROVE 230.00 - S_NORFOLK 230.00 230KV CKT 1	320	0.67986	103.3125	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_006		2 14SP	G13_006	FROM->TO	MEADOWGROVE 230.00 - S_NORFOLK 230.00 230KV CKT 1	320	0.6792	102.1877	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_006		2 19SP	G13_006	FROM->TO	S_NORFOLK 345.00 (SNORFOLK) 345/230/13.8KV TRANSFORMER CKT 1	336	0.67982	100.5856	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00NR		0 19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.15539	135.5269	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00NR		0 19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.15539	135.3341	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00NR		0 14WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.15483	119.5636	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00NR		0 14WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.15483	119.3347	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00NR		0 19SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.15604	116.3235	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00NR		0 19SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.15604	116.1408	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00NR		0 14SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.1553	115.5354	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00NR		0 14SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.1553	115.3313	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00NR		0 24SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.15616	108.6501	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00NR		0 24SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.15616	108.4304	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	08NR		0 14G	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.15525	106.408	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	08NR		0 14G	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.15525	106.0816	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00NR		0 19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.08299	102.7479	KETCHUM5 161.00 - PENSACOLA 161KV CKT 1
FDNS	00NR		0 19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.08299	101.4541	AFTON - KETCHUM5 161.00 161KV CKT 1
FDNS	00NR		0 19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.0869	100.4088	PENSACOLA (PENAUTO1) 161/69/13.8KV TRANSFORMER CKT 1
FDNS	00NR		0 19WP	G13_009	FROM->TO	EASTERN STATE HOSPITAL TAP - VINITA NEO TAP 69KV CKT 1	48	0.15539	107.8671	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00NR		0 19WP	G13_009	FROM->TO	EASTERN STATE HOSPITAL TAP - VINITA NEO TAP 69KV CKT 1	48	0.15539	107.7043	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00NR		0 19WP	G13_009	TO->FROM	EXPLORER PIPELINE TAP - J6 69KV CKT 1	48	0.15539	103.6959	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00NR		0 19WP	G13_009	TO->FROM	EXPLORER PIPELINE TAP - J6 69KV CKT 1	48	0.15539	103.5163	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00NR		0 19WP	G13_009	TO->FROM	J6 - VINITA NEO TAP 69KV CKT 1	48	0.15539	105.719	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00NR		0 19WP	G13_009	TO->FROM	J6 - VINITA NEO TAP 69KV CKT 1	48	0.15539	105.5498	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00NR		0 14SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.09772	110.1458	NORTHEAST STATION - OWASSO SOUTH 138KV CKT 1
FDNS	00NR		0 24SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.10105	108.8779	NORTHEAST STATION - OWASSO SOUTH 138KV CKT 1
FDNS	00NR		0 19SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.10267	106.0215	NORTHEAST STATION - OWASSO SOUTH 138KV CKT 1
FDNS	00NR		0 14SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.09772	104.3396	OWASSO SOUTH - PORT OF CATOOSA TAP 138KV CKT 1
FDNS	00NR		0 24SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.10105	103.3091	OWASSO SOUTH - PORT OF CATOOSA TAP 138KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR		2 14WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.17606	132.25	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00NR		2 14WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.17606	132.0623	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00NR		2 19SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.17738	130.874	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00NR		2 19SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.17738	130.7556	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00NR		2 14SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.17657	129.9764	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00NR		2 14SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.17657	129.8376	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00NR		2 24SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.17751	122.4997	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00NR		2 24SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.17751	122.3486	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	08NR		2 14G	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.17652	118.3942	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	08NR		2 14G	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.17652	118.1345	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00NR		2 19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.09937	115.116	KETCHUM5 161.00 - PENSACOLA 161KV CKT 1
FDNS	00NR		2 19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.09937	113.7665	AFTON - KETCHUM5 161.00 161KV CKT 1
FDNS	00NR		2 19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10318	112.618	PENSACOLA (PENAUTO1) 161/69/13.8KV TRANSFORMER CKT 1
FDNS	00NR		2 19SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10348	109.52	PENSACOLA (PENAUTO1) 161/69/13.8KV TRANSFORMER CKT 1
FDNS	00NR		2 19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.09649	108.8976	CLEORA TAP - PENSACOLA 69KV CKT 1
FDNS	00NR		2 19SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.09966	108.6395	KETCHUM5 161.00 - PENSACOLA 161KV CKT 1
FDNS	00NR		2 14SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10306	107.993	PENSACOLA (PENAUTO1) 161/69/13.8KV TRANSFORMER CKT 1
FDNS	00NR		2 19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10291	107.731	MAID - PENSACOLA 161KV CKT 1
FDNS	00NR		2 19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10291	107.1384	PENSACOLA - PENSACOLA 161KV CKT 1
FDNS	00NR		2 19SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.09966	106.9059	AFTON - KETCHUM5 161.00 161KV CKT 1
FDNS	00NR		2 14SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.0992	106.2424	KETCHUM5 161.00 - PENSACOLA 161KV CKT 1
FDNS	00NR		2 19SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.09682	105.7858	CLEORA TAP - PENSACOLA 69KV CKT 1
FDNS	00NR		2 24SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10356	105.0542	PENSACOLA (PENAUTO1) 161/69/13.8KV TRANSFORMER CKT 1
FDNS	00NR		2 14SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.0992	104.7392	AFTON - KETCHUM5 161.00 161KV CKT 1
FDNS	00NR		2 19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.09649	104.0023	AFTON - CLEORA TAP 69KV CKT 1
FDNS	00NR		2 19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10516	103.9176	BASE CASE
FDNS	00NR		2 24SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.09977	103.8737	KETCHUM5 161.00 - PENSACOLA 161KV CKT 1
FDNS	00NR		2 14WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.09884	102.97	KETCHUM5 161.00 - PENSACOLA 161KV CKT 1
FDNS	00NR		2 19SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.09818	102.5501	AFTON (AFTAUTO1) 161/69/13.8KV TRANSFORMER CKT 1
FDNS	00NR		2 24SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.09977	101.9481	AFTON - KETCHUM5 161.00 161KV CKT 1
FDNS	00NR		2 14SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.09638	101.8376	CLEORA TAP - PENSACOLA 69KV CKT 1
FDNS	00NR		2 14WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.09884	101.7233	AFTON - KETCHUM5 161.00 161KV CKT 1
FDNS	00NR		2 19SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10322	101.4022	MAID - PENSACOLA 161KV CKT 1
FDNS	00NR		2 19SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10322	100.6757	PENSACOLA - PENSACOLA 161KV CKT 1
FDNS	00NR		2 24SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.09692	99.9	CLEORA TAP - PENSACOLA 69KV CKT 1
FDNS	00NR		2 19WP	G13_009	FROM->TO	EASTERN STATE HOSPITAL TAP - VINITA NEO TAP 69KV CKT 1	48	0.17666	119.5986	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00NR		2 19WP	G13_009	FROM->TO	EASTERN STATE HOSPITAL TAP - VINITA NEO TAP 69KV CKT 1	48	0.17666	119.4759	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00NR		2 14WP	G13_009	FROM->TO	EASTERN STATE HOSPITAL TAP - VINITA NEO TAP 69KV CKT 1	48	0.17606	105.3542	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00NR		2 14WP	G13_009	FROM->TO	EASTERN STATE HOSPITAL TAP - VINITA NEO TAP 69KV CKT 1	48	0.17606	105.1966	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00NR		2 19SP	G13_009	FROM->TO	EASTERN STATE HOSPITAL TAP - VINITA NEO TAP 69KV CKT 1	48	0.17738	103.1471	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00NR		2 19SP	G13_009	FROM->TO	EASTERN STATE HOSPITAL TAP - VINITA NEO TAP 69KV CKT 1	48	0.17738	103.0435	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00NR		2 14SP	G13_009	FROM->TO	EASTERN STATE HOSPITAL TAP - VINITA NEO TAP 69KV CKT 1	48	0.17657	102.3142	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00NR		2 14SP	G13_009	FROM->TO	EASTERN STATE HOSPITAL TAP - VINITA NEO TAP 69KV CKT 1	48	0.17657	102.1927	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00NR		2 19WP	G13_009	TO->FROM	EXPLORER PIPELINE TAP - J6 69KV CKT 1	48	0.17666	115.3238	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00NR		2 19WP	G13_009	TO->FROM	EXPLORER PIPELINE TAP - J6 69KV CKT 1	48	0.17666	115.1883	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00NR		2 14WP	G13_009	TO->FROM	EXPLORER PIPELINE TAP - J6 69KV CKT 1	48	0.17606	101.7445	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00NR		2 14WP	G13_009	TO->FROM	EXPLORER PIPELINE TAP - J6 69KV CKT 1	48	0.17606	101.5729	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00NR		2 19WP	G13_009	TO->FROM	J6 - VINITA NEO TAP 69KV CKT 1	48	0.17666	117.4112	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00NR		2 19WP	G13_009	TO->FROM	J6 - VINITA NEO TAP 69KV CKT 1	48	0.17666	117.2842	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00NR		2 14WP	G13_009	TO->FROM	J6 - VINITA NEO TAP 69KV CKT 1	48	0.17606	103.6134	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00NR		2 14WP	G13_009	TO->FROM	J6 - VINITA NEO TAP 69KV CKT 1	48	0.17606	103.4518	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00NR		2 14SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.09459	109.3443	NORTHEAST STATION - OWASSO SOUTH 138KV CKT 1
FDNS	00NR		2 24SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.09792	108.0664	NORTHEAST STATION - OWASSO SOUTH 138KV CKT 1
FDNS	00NR		2 19SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.09954	105.2026	NORTHEAST STATION - OWASSO SOUTH 138KV CKT 1
FDNS	00NR		2 14SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.09459	103.5453	OWASSO SOUTH - PORT OF CATOOSA TAP 138KV CKT 1
FDNS	00NR		2 24SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.09792	102.5074	OWASSO SOUTH - PORT OF CATOOSA TAP 138KV CKT 1
FDNS	00NR		2 14SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.08763	102.2025	40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1
FDNS	00NR		2 24SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.0912	101.8481	40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1
FDNS	00NR		2 14SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.08763	101.4097	CLAREMORE (CLAUTO4) 161/138/13.8KV TRANSFORMER CKT 1
FDNS	00NR		2 14SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.08763	101.4094	40OLOGAH 138.00 - CLAREMORE 138KV CKT 1
FDNS	00NR		2 24SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.0912	100.9795	40OLOGAH 138.00 - CLAREMORE 138KV CKT 1
FDNS	00NR		2 24SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.0912	100.9788	CLAREMORE (CLAUTO4) 161/138/13.8KV TRANSFORMER CKT 1
FDNS	00NR		2 19SP	G13_009	TO->FROM	VINITA - VINITA JUNCTION 69KV CKT 1	69	0.29079	125.013	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00NR		2 19SP	G13_009	TO->FROM	VINITA - VINITA JUNCTION 69KV CKT 1	69	0.29079	124.915	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00NR		2 14SP	G13_009	TO->FROM	VINITA - VINITA JUNCTION 69KV CKT 1	69	0.28961	124.6211	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00NR		2 14SP	G13_009	TO->FROM	VINITA - VINITA JUNCTION 69KV CKT 1	69	0.28961	124.5112	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00NR		2 24SP	G13_009	TO->FROM	VINITA - VINITA JUNCTION 69KV CKT 1	69	0.29085	120.6521	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00NR		2 24SP	G13_009	TO->FROM	VINITA - VINITA JUNCTION 69KV CKT 1	69	0.29085	120.5415	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00NR		2 19SP	G13_009	TO->FROM	VINITA - VINITA JUNCTION 69KV CKT 1	69	0.18385	120.5265	BASE CASE
FDNS	00G13_009		2 19SP	G13_009	TO->FROM	VINITA - VINITA JUNCTION 69KV CKT 1	69	0.29519	119.2728	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00G13_009		2 19SP	G13_009	TO->FROM	VINITA - VINITA JUNCTION 69KV CKT 1	69	0.29519	119.1677	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00NR		2 24SP	G13_009	TO->FROM	VINITA - VINITA JUNCTION 69KV CKT 1	69	0.18382	118.5492	BASE CASE
FDNS	00NR		2 14SP	G13_009	TO->FROM	VINITA - VINITA JUNCTION 69KV CKT 1	69	0.18321	118.5154	BASE CASE

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB		TC%LOADING		CONTINGENCY
							(MVA)	TDF	(% MVA)		
FDNS	00G13_009	2	14SP	G13_009	TO->FROM	VINITA - VINITA JUNCTION 69KV CKT 1	69	0.29531	118.4881	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1	
FDNS	00G13_009	2	14SP	G13_009	TO->FROM	VINITA - VINITA JUNCTION 69KV CKT 1	69	0.29531	118.3713	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1	
FDNS	00G13_009	2	24SP	G13_009	TO->FROM	VINITA - VINITA JUNCTION 69KV CKT 1	69	0.29533	111.6852	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1	
FDNS	00G13_009	2	24SP	G13_009	TO->FROM	VINITA - VINITA JUNCTION 69KV CKT 1	69	0.29533	111.5702	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1	
FDNS	00NR	2	19WP	G13_009	TO->FROM	VINITA - VINITA JUNCTION 69KV CKT 1	78	0.28964	111.2327	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1	
FDNS	00NR	2	19WP	G13_009	TO->FROM	VINITA - VINITA JUNCTION 69KV CKT 1	78	0.28964	111.1228	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1	
FDNS	00G13_009	2	19WP	G13_009	TO->FROM	VINITA - VINITA JUNCTION 69KV CKT 1	78	0.29496	108.7835	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1	
FDNS	00G13_009	2	19WP	G13_009	TO->FROM	VINITA - VINITA JUNCTION 69KV CKT 1	78	0.29496	108.6664	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1	
FDNS	00NR	3	19WP	G13_009	TO->FROM	AFTON - EXPLORER PIPELINE TAP 69KV CKT 1	48	0.1783	104.6349	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1	
FDNS	00NR	3	19WP	G13_009	TO->FROM	AFTON - EXPLORER PIPELINE TAP 69KV CKT 1	48	0.1783	104.4543	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1	
FDNS	00NR	3	19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.1783	151.5706	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1	
FDNS	00NR	3	19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.1783	151.4215	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1	
FDNS	00NR	3	14WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.1777	133.6049	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1	
FDNS	00NR	3	14WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.1777	133.4145	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1	
FDNS	00NR	3	19SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.17903	132.4122	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1	
FDNS	00NR	3	19SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.17903	132.295	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1	
FDNS	00NR	3	14SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.17821	131.5078	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1	
FDNS	00NR	3	14SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.17821	131.3704	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1	
FDNS	00NR	3	24SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.17916	123.9565	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1	
FDNS	00NR	3	24SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.17916	123.8071	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1	
FDNS	08NR	3	14G	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.17816	119.656	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1	
FDNS	08NR	3	14G	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.17816	119.3959	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1	
FDNS	00NR	3	19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10067	116.4032	KETCHUM5 161.00 - PENSACOLA 161KV CKT 1	
FDNS	00NR	3	19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10067	115.0404	AFTON - KETCHUM5 161.00 161KV CKT 1	
FDNS	00NR	3	19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10448	113.903	PENSACOLA (PENAUTO1) 161/69/13.8KV TRANSFORMER CKT 1	
FDNS	00NR	3	19SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10478	110.9586	PENSACOLA (PENAUTO1) 161/69/13.8KV TRANSFORMER CKT 1	
FDNS	00NR	3	19SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10097	110.0966	KETCHUM5 161.00 - PENSACOLA 161KV CKT 1	
FDNS	00NR	3	19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.0977	110.0692	CLEORA TAP - PENSACOLA 69KV CKT 1	
FDNS	00NR	3	14SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10435	109.4177	PENSACOLA (PENAUTO1) 161/69/13.8KV TRANSFORMER CKT 1	
FDNS	00NR	3	19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10422	108.9995	MAID - PENSACOLA 161KV CKT 1	
FDNS	00NR	3	19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10422	108.4056	PENSACOLA - PENSACOLA 161KV CKT 1	
FDNS	00NR	3	19SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10097	108.3553	AFTON - KETCHUM5 161.00 161KV CKT 1	
FDNS	00NR	3	14SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10051	107.6734	KETCHUM5 161.00 - PENSACOLA 161KV CKT 1	
FDNS	00NR	3	19SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.09804	107.1223	CLEORA TAP - PENSACOLA 69KV CKT 1	
FDNS	00NR	3	24SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10486	106.4502	PENSACOLA (PENAUTO1) 161/69/13.8KV TRANSFORMER CKT 1	
FDNS	00NR	3	14SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10051	106.1566	AFTON - KETCHUM5 161.00 161KV CKT 1	
FDNS	00NR	3	24SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10108	105.3077	KETCHUM5 161.00 - PENSACOLA 161KV CKT 1	
FDNS	00NR	3	19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10648	105.2246	BASE CASE	
FDNS	00NR	3	19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.0977	105.1371	AFTON - CLEORA TAP 69KV CKT 1	
FDNS	00NR	3	19SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.09938	104.0367	AFTON (AFTAUTO1) 161/69/13.8KV TRANSFORMER CKT 1	
FDNS	00NR	3	14WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10014	103.9274	KETCHUM5 161.00 - PENSACOLA 161KV CKT 1	
FDNS	00NR	3	24SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10108	103.375	AFTON - KETCHUM5 161.00 161KV CKT 1	
FDNS	00NR	3	14SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.09759	103.1417	CLEORA TAP - PENSACOLA 69KV CKT 1	
FDNS	00NR	3	14WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10014	102.8344	AFTON - KETCHUM5 161.00 161KV CKT 1	
FDNS	00NR	3	19SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10453	102.8225	MAID - PENSACOLA 161KV CKT 1	
FDNS	00NR	3	19SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10453	102.0942	PENSACOLA - PENSACOLA 161KV CKT 1	
FDNS	00NR	3	24SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.09813	101.1928	CLEORA TAP - PENSACOLA 69KV CKT 1	
FDNS	00NR	3	14SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.09896	101.0015	AFTON (AFTAUTO1) 161/69/13.8KV TRANSFORMER CKT 1	
FDNS	00NR	3	14SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10408	100.8557	MAID - PENSACOLA 161KV CKT 1	
FDNS	00NR	3	14WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10405	100.2876	PENSACOLA (PENAUTO1) 161/69/13.8KV TRANSFORMER CKT 1	
FDNS	00NR	3	14SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10408	100.1824	PENSACOLA - PENSACOLA 161KV CKT 1	
FDNS	00NR	3	19SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10429	100	SUB 377 - QUAPAW (EAGLE PICHER) - SUB 404 - HOCKERVILLE 69KV CKT 1	
FDNS	00NR	3	19WP	G13_009	FROM->TO	EASTERN STATE HOSPITAL TAP - VINITA NEO TAP 69KV CKT 1	48	0.1783	120.8578	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1	
FDNS	00NR	3	19WP	G13_009	FROM->TO	EASTERN STATE HOSPITAL TAP - VINITA NEO TAP 69KV CKT 1	48	0.1783	120.7333	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1	
FDNS	00NR	3	14WP	G13_009	FROM->TO	EASTERN STATE HOSPITAL TAP - VINITA NEO TAP 69KV CKT 1	48	0.1777	106.4482	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1	
FDNS	00NR	3	14WP	G13_009	FROM->TO	EASTERN STATE HOSPITAL TAP - VINITA NEO TAP 69KV CKT 1	48	0.1777	106.2891	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1	
FDNS	00NR	3	19SP	G13_009	FROM->TO	EASTERN STATE HOSPITAL TAP - VINITA NEO TAP 69KV CKT 1	48	0.17903	104.3861	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1	
FDNS	00NR	3	19SP	G13_009	FROM->TO	EASTERN STATE HOSPITAL TAP - VINITA NEO TAP 69KV CKT 1	48	0.17903	104.2844	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1	
FDNS	00NR	3	14SP	G13_009	FROM->TO	EASTERN STATE HOSPITAL TAP - VINITA NEO TAP 69KV CKT 1	48	0.17821	103.547	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1	
FDNS	00NR	3	14SP	G13_009	FROM->TO	EASTERN STATE HOSPITAL TAP - VINITA NEO TAP 69KV CKT 1	48	0.17821	103.4276	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1	
FDNS	00NR	3	19WP	G13_009	TO->FROM	EXPLORER PIPELINE TAP - J6 69KV CKT 1	48	0.1783	116.5641	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1	
FDNS	00NR	3	19WP	G13_009	TO->FROM	EXPLORER PIPELINE TAP - J6 69KV CKT 1	48	0.1783	116.4278	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1	
FDNS	00NR	3	14WP	G13_009	TO->FROM	EXPLORER PIPELINE TAP - J6 69KV CKT 1	48	0.1777	102.8204	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1	
FDNS	00NR	3	14WP	G13_009	TO->FROM	EXPLORER PIPELINE TAP - J6 69KV CKT 1	48	0.1777	102.6482	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1	
FDNS	00NR	3	19WP	G13_009	TO->FROM	J6 - VINITA NEO TAP 69KV CKT 1	48	0.1783	118.664	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1	
FDNS	00NR	3	19WP	G13_009	TO->FROM	J6 - VINITA NEO TAP 69KV CKT 1	48	0.1783	118.5357	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1	
FDNS	00NR	3	14WP	G13_009	TO->FROM	J6 - VINITA NEO TAP 69KV CKT 1	48	0.1777	104.7022	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1	
FDNS	00NR	3	14WP	G13_009	TO->FROM	J6 - VINITA NEO TAP 69KV CKT 1	48	0.1777	104.5394	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1	
FDNS	00NR	3	19SP	G13_009	TO->FROM	J6 - VINITA NEO TAP 69KV CKT 1	48	0.17903	101.0683	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1	
FDNS	00NR	3	19SP	G13_009	TO->FROM	J6 - VINITA NEO TAP 69KV CKT 1	48	0.17903	100.9595	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1	
FDNS	00NR	3	14SP	G13_009	TO->FROM	J6 - VINITA NEO TAP 69KV CKT 1	48	0.17821	100.6221	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1	
FDNS	00NR	3	14SP	G13_009	TO->FROM	J6 - VINITA NEO TAP 69KV CKT 1	48	0.17821	100.4956	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1	
FDNS	00NR	3	14SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.09435	109.2782	NORTHEAST STATION - OWASSO SOUTH 138KV CKT 1	

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR	3	24SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.09767	108.0024	NORTHEAST STATION - OWASSO SOUTH 138KV CKT 1
FDNS	00NR	3	19SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.09929	105.1369	NORTHEAST STATION - OWASSO SOUTH 138KV CKT 1
FDNS	00NR	3	14SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.09435	103.4765	OWASSO SOUTH - PORT OF CATOOSA TAP 138KV CKT 1
FDNS	00NR	3	24SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.09767	102.4464	OWASSO SOUTH - PORT OF CATOOSA TAP 138KV CKT 1
FDNS	00NR	3	14SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.08738	102.136	40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1
FDNS	00NR	3	24SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.09096	101.7824	40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1
FDNS	00NR	3	14SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.08738	101.3433	CLAREMORE (CLAUTO4) 161/138/13.8KV TRANSFORMER CKT 1
FDNS	00NR	3	14SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.08738	101.343	40OLOGAH 138.00 - CLAREMORE 138KV CKT 1
FDNS	00NR	3	24SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.09096	100.9139	40OLOGAH 138.00 - CLAREMORE 138KV CKT 1
FDNS	00NR	3	24SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.09096	100.9132	CLAREMORE (CLAUTO4) 161/138/13.8KV TRANSFORMER CKT 1
FDNS	00NR	4	19WP	G13_009	TO->FROM	AFTON - EXPLORER PIPELINE TAP 69KV CKT 1	48	0.18494	109.6824	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00NR	4	19WP	G13_009	TO->FROM	AFTON - EXPLORER PIPELINE TAP 69KV CKT 1	48	0.18494	109.5226	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00NR	4	14SP	G13_009	TO->FROM	CATOOSA - TERRA NITROGEN TAP 138KV CKT 1	136	0.09641	101.0795	NORTHEAST STATION - OWASSO SOUTH 138KV CKT 1
FDNS	00NR	4	24SP	G13_009	TO->FROM	CATOOSA - TERRA NITROGEN TAP 138KV CKT 1	136	0.09981	100.5571	NORTHEAST STATION - OWASSO SOUTH 138KV CKT 1
FDNS	03NR	0	14G	G13_010	TO->FROM	HAYS PLANT - SOUTH HAYS 115KV CKT 1	99	0.0476	121.6032	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1
FDNS	03NR	0	14G	G13_010	FROM->TO	HAYS PLANT - VINE STREET 115KV CKT 1	88	0.0476	113.6793	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1
FDNS	03NR	0	14G	G13_010	TO->FROM	KNOLL - N HAYS3 115.00 115KV CKT 1	88	0.0476	100.0521	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1
FDNS	03NR	4	14G	G13_010	TO->FROM	HAYS PLANT - SOUTH HAYS 115KV CKT 1	99	0.04866	122.9702	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1
FDNS	03NR	4	14G	G13_010	FROM->TO	HAYS PLANT - VINE STREET 115KV CKT 1	88	0.04866	115.2767	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1
FDNS	03NR	4	14G	G13_010	TO->FROM	KNOLL - N HAYS3 115.00 115KV CKT 1	88	0.04866	101.9824	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1
FDNS	06NR	0	14G	G13_013	FROM->TO	CURRY COUNTY INTERCHANGE - DEAF SMITH REC-#20 115KV CKT 1	96	0.03225	100.6959	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	00G13_013	0	14SP	G13_013	TO->FROM	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1	351	0.22784	112.3413	PLANT X STATION - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNS	00G13_013	0	14SP	G13_013	TO->FROM	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1	351	0.19556	104.1029	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	00G13_013	0	19SP	G13_013	TO->FROM	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1	351	0.21031	102.7705	NEWHART 230 - PLANT X STATION 230KV CKT 1
FDNS	00G13_013	0	14SP	G13_013	TO->FROM	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1	351	0.20812	101.4958	TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1
FDNS	06NR	0	14G	G13_013	TO->FROM	PLANT X STATION - TOLK STATION EAST 230KV CKT 2	502	0.23922	122.0011	PLANT X STATION - TOLK STATION WEST 230KV CKT 1
FDNS	06NR	0	14G	G13_013	TO->FROM	PLANT X STATION - TOLK STATION WEST 230KV CKT 1	502	0.24111	122.8528	PLANT X STATION - TOLK STATION EAST 230KV CKT 2
FDNS	00NR	0	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.05425	119.6532	LAMB COUNTY INTERCHANGE - TOLK STATION WEST 230KV CKT 1
FDNS	00NR	0	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.05425	119.6355	LAMB COUNTY INTERCHANGE (WH ALM20172) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	0	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.05425	117.8791	LAMB COUNTY INTERCHANGE - TOLK STATION WEST 230KV CKT 1
FDNS	00NR	0	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.05425	117.8649	LAMB COUNTY INTERCHANGE (WH ALM20172) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	0	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.06011	108.9478	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	00NR	0	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.06011	107.3291	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	00NR	0	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.0405	102.9624	SWISHER COUNTY INTERCHANGE (GE M101686) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	0	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.0405	102.9567	KRESS INTERCHANGE - SWISHER COUNTY INTERCHANGE 115KV CKT 1
FDNS	00NR	0	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.0405	101.3592	SWISHER COUNTY INTERCHANGE (GE M101686) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	0	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.0405	101.3497	KRESS INTERCHANGE - SWISHER COUNTY INTERCHANGE 115KV CKT 1
FDNS	06NR	0	14G	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.048	101.2487	LAMB COUNTY INTERCHANGE - TOLK STATION WEST 230KV CKT 1
FDNS	06NR	0	14G	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.048	101.2343	LAMB COUNTY INTERCHANGE (WH ALM20172) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	0	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03943	101.2274	HALE CO INTERCHANGE - TUCO INTERCHANGE 115KV CKT 1
FDNS	06NR	0	14G	G13_013	FROM->TO	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	560	0.04539	106.181	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06NR	0	14G	G13_013	FROM->TO	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	560	0.04539	104.8582	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06NR	0	14G	G13_013	FROM->TO	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2	560	0.04481	104.8713	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06NR	0	14G	G13_013	FROM->TO	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2	560	0.04481	103.4487	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	00NR	2	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.05617	121.0558	LAMB COUNTY INTERCHANGE - TOLK STATION WEST 230KV CKT 1
FDNS	00NR	2	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.05617	121.0372	LAMB COUNTY INTERCHANGE (WH ALM20172) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	2	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.05617	119.2651	LAMB COUNTY INTERCHANGE - TOLK STATION WEST 230KV CKT 1
FDNS	00NR	2	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.05617	119.2466	LAMB COUNTY INTERCHANGE (WH ALM20172) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	2	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.06296	110.9417	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	00NR	2	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.06296	109.1943	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	00NR	2	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.04328	104.8858	SWISHER COUNTY INTERCHANGE (GE M101686) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	2	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.04328	104.8779	KRESS INTERCHANGE - SWISHER COUNTY INTERCHANGE 115KV CKT 1
FDNS	06NR	2	14G	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.0498	103.429	LAMB COUNTY INTERCHANGE (WH ALM20172) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06NR	2	14G	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.0498	103.3831	LAMB COUNTY INTERCHANGE - TOLK STATION WEST 230KV CKT 1
FDNS	00NR	2	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.04328	103.2873	SWISHER COUNTY INTERCHANGE (GE M101686) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	2	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.04328	103.2755	KRESS INTERCHANGE - SWISHER COUNTY INTERCHANGE 115KV CKT 1
FDNS	00NR	2	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.04208	103.0815	HALE CO INTERCHANGE - TUCO INTERCHANGE 115KV CKT 1
FDNS	06NR	2	14G	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.05757	102.5826	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	00NR	2	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.04208	101.5444	HALE CO INTERCHANGE - TUCO INTERCHANGE 115KV CKT 1
FDNS	06NR	2	14G	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.0498	100.6428	LAMB COUNTY INTERCHANGE (WH ALM20172) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06NR	2	14G	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.0498	100.6269	LAMB COUNTY INTERCHANGE - TOLK STATION WEST 230KV CKT 1
FDNS	00NR	2	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.05091	100.5063	LAMB COUNTY INTERCHANGE - PLANT X STATION 115KV CKT 1
FDNS	06NR	2	14G	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.05757	100.454	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	06NR	2	14G	G13_013	FROM->TO	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	560	0.04432	105.6654	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06NR	2	14G	G13_013	FROM->TO	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	560	0.04432	104.3579	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06NR	2	14G	G13_013	FROM->TO	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2	560	0.04376	104.3568	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06NR	2	14G	G13_013	FROM->TO	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2	560	0.04376	102.9527	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06NR	4	14G	G13_013	FROM->TO	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	560	0.04443	105.677	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06NR	4	14G	G13_013	FROM->TO	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	560	0.04443	104.3657	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06NR	4	14G	G13_013	FROM->TO	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2	560	0.04387	104.438	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06NR	4	14G	G13_013	FROM->TO	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2	560	0.04387	103.0263	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1

H: Power Flow Analysis (Other Constraints Not Requiring Mitigation)

See next page.

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY	
FDNS	05ALL		0	14G	ASGI_13_001	FROM->TO	BUFFALO 230.00 - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1	350.57	0.07652	101.178	GEN525562 1-TOLK GEN #2 24 KV
FDNS	05ALL		0	14G	ASGI_13_001	FROM->TO	BUFFALO 230.00 - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1	350.57	0.07652	100.493	GEN525561 1-TOLK GEN #1 24 KV
FDNS	03ALL		0	14G	ASGI_13_001	TO->FROM	CHISHOLM - MAIZEE 4 138.00 138KV CKT 1	287	0.03012	108.3519	BENTON - WICHITA 345KV CKT 1
FDNS	03ALL		0	14G	ASGI_13_001	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	318.7	0.03004	110.9649	DBL-WICH-THI
FDNS	00ASGI_13_001		0	24SP	ASGI_13_001	TO->FROM	NORTHWEST INTERCHANGE - ROLLHILLS 3115.00 115KV CKT 1	154	0.03288	103.0282	BASE CASE
FDNS	0		0	24SP	ASGI_13_001	TO->FROM	NORTHWEST INTERCHANGE - ROLLHILLS 3115.00 115KV CKT 1	154	0.03288	102.7931	BASE CASE
FDNS	00ASGI_13_001		0	24SP	ASGI_13_001	TO->FROM	NORTHWEST INTERCHANGE - ROLLHILLS 3115.00 115KV CKT 1	154	0.03124	101.8293	RANDALL COUNTY INTERCHANGE - SOUTH GEORGIA INTERCHANGE 115KV CKT 1
FDNS	0		0	24SP	ASGI_13_001	TO->FROM	NORTHWEST INTERCHANGE - ROLLHILLS 3115.00 115KV CKT 1	154	0.03124	101.6569	RANDALL COUNTY INTERCHANGE - SOUTH GEORGIA INTERCHANGE 115KV CKT 1
FDNS	06ALL		0	14G	ASGI_13_001	FROM->TO	SPSSPTTIESB	620	0.37497	119.5394	BASE CASE
FDNS	06ALL		0	14G	ASGI_13_001	FROM->TO	SPSSPTTIESB1	620	0.26463	101.2464	BASE CASE
FDNS	06ALL		0	14G	ASGI_13_001	FROM->TO	SPSSPTTIESC	620	0.26463	101.2464	BASE CASE
FDNS	06ALL		0	14G	ASGI_13_001	FROM->TO	SPSSPTTIESC1	620	0.37497	119.5394	BASE CASE
FDNS	06ALL		0	14G	ASGI_13_001	FROM->TO	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	560	0.17355	117.6087	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL		0	14G	ASGI_13_001	FROM->TO	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	560	0.17355	115.6988	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL		0	14G	ASGI_13_001	FROM->TO	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2	560	0.17134	116.1736	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL		0	14G	ASGI_13_001	FROM->TO	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2	560	0.17134	114.1066	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	6		2	14G	ASGI_13_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05143	101.5009	DBL-WWRD-G12
FDNS	06ALL		0	14G	ASGI_13_002	FROM->TO	CURRY COUNTY INTERCHANGE - DEAF SMITH REC-#20 115KV CKT 1	96	0.19241	107.6332	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	03ALL		0	14G	ASGI_13_002	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	318.7	0.03932	145.1233	G11-17T 345.00 - SPEARVILLE 345KV CKT 1
FDNS	3		0	14G	ASGI_13_002	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	318.7	0.04041	116.9771	G11-17T 345.00 - SPEARVILLE 345KV CKT 1
FDNS	06ALL		0	14G	ASGI_13_002	TO->FROM	PLANT X STATION - TOLK STATION EAST 230KV CKT 2	502	0.33224	131.515	PLANT X STATION - TOLK STATION WEST 230KV CKT 1
FDNS	06ALL		0	14G	ASGI_13_002	TO->FROM	PLANT X STATION - TOLK STATION WEST 230KV CKT 1	502	0.33497	132.4732	PLANT X STATION - TOLK STATION EAST 230KV CKT 2
FDNS	06ALL		0	14G	ASGI_13_002	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.06664	103.0967	LAMB COUNTY INTERCHANGE - TOLK STATION WEST 230KV CKT 1
FDNS	06ALL		0	14G	ASGI_13_002	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.06664	103.0599	LAMB COUNTY INTERCHANGE (WH ALM20172) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL		0	14G	ASGI_13_002	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.06664	103.0599	SPP-SWPS-K37
FDNS	06ALL		0	14G	ASGI_13_002	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.07338	102.1133	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	06ALL		0	14G	ASGI_13_002	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.06664	100.4969	LAMB COUNTY INTERCHANGE - TOLK STATION WEST 230KV CKT 1
FDNS	06ALL		0	14G	ASGI_13_002	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.06664	100.4753	LAMB COUNTY INTERCHANGE (WH ALM20172) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL		0	14G	ASGI_13_002	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.06664	100.4753	SPP-SWPS-K37
FDNS	06ALL		0	14G	ASGI_13_002	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.07338	100	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	06ALL		0	14G	ASGI_13_002	FROM->TO	SPSSPTTIESB	620	0.41844	119.5394	BASE CASE
FDNS	06ALL		0	14G	ASGI_13_002	FROM->TO	SPSSPTTIESB1	620	0.32252	101.2464	BASE CASE
FDNS	06ALL		0	14G	ASGI_13_002	FROM->TO	SPSSPTTIESC	620	0.32252	101.2464	BASE CASE
FDNS	06ALL		0	14G	ASGI_13_002	FROM->TO	SPSSPTTIESC1	620	0.41844	119.5394	BASE CASE
FDNS	06ALL		0	14G	ASGI_13_002	FROM->TO	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	560	0.35757	117.6087	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL		0	14G	ASGI_13_002	FROM->TO	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	560	0.35757	115.6988	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL		0	14G	ASGI_13_002	FROM->TO	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 1	560	0.35302	116.1736	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL		0	14G	ASGI_13_002	FROM->TO	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2	560	0.35302	114.1066	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	6		2	14G	ASGI_13_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05643	101.5009	DBL-WWRD-G12
FDNS	06ALL		0	14G	ASGI_13_002	FROM->TO	CURRY COUNTY INTERCHANGE - DEAF SMITH REC-#20 115KV CKT 1	96	0.17677	107.6332	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	03ALL		0	14G	ASGI_13_003	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	318.7	0.03926	145.1233	G11-17T 345.00 - SPEARVILLE 345KV CKT 1
FDNS	3		0	14G	ASGI_13_003	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	318.7	0.04036	116.9771	G11-17T 345.00 - SPEARVILLE 345KV CKT 1
FDNS	06ALL		0	14G	ASGI_13_003	TO->FROM	PLANT X STATION - TOLK STATION EAST 230KV CKT 2	502	0.34272	131.515	PLANT X STATION - TOLK STATION WEST 230KV CKT 1
FDNS	06ALL		0	14G	ASGI_13_003	TO->FROM	PLANT X STATION - TOLK STATION WEST 230KV CKT 1	502	0.34553	132.4732	PLANT X STATION - TOLK STATION EAST 230KV CKT 2
FDNS	06ALL		0	14G	ASGI_13_003	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.06908	103.0967	LAMB COUNTY INTERCHANGE - TOLK STATION WEST 230KV CKT 1
FDNS	06ALL		0	14G	ASGI_13_003	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.06908	103.0599	LAMB COUNTY INTERCHANGE (WH ALM20172) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL		0	14G	ASGI_13_003	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.06908	103.0599	SPP-SWPS-K37
FDNS	06ALL		0	14G	ASGI_13_003	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.07722	102.1133	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	06ALL		0	14G	ASGI_13_003	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.06908	100.4969	LAMB COUNTY INTERCHANGE - TOLK STATION WEST 230KV CKT 1
FDNS	06ALL		0	14G	ASGI_13_003	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.06908	100.4753	LAMB COUNTY INTERCHANGE (WH ALM20172) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL		0	14G	ASGI_13_003	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.06908	100.4753	SPP-SWPS-K37
FDNS	06ALL		0	14G	ASGI_13_003	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.07722	100	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	06ALL		0	14G	ASGI_13_003	FROM->TO	SPSSPTTIESB	620	0.41846	119.5394	BASE CASE
FDNS	06ALL		0	14G	ASGI_13_003	FROM->TO	SPSSPTTIESB1	620	0.32308	101.2464	BASE CASE
FDNS	06ALL		0	14G	ASGI_13_003	FROM->TO	SPSSPTTIESC	620	0.32308	101.2464	BASE CASE
FDNS	06ALL		0	14G	ASGI_13_003	FROM->TO	SPSSPTTIESC1	620	0.41846	119.5394	BASE CASE
FDNS	06ALL		0	14G	ASGI_13_003	FROM->TO	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	560	0.35927	117.6087	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL		0	14G	ASGI_13_003	FROM->TO	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	560	0.35927	115.6988	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL		0	14G	ASGI_13_003	FROM->TO	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2	560	0.3547	116.1736	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL		0	14G	ASGI_13_003	FROM->TO	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2	560	0.3547	114.1066	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	6		2	14G	ASGI_13_003	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05646	101.5009	DBL-WWRD-G12
FNSL-Blown Up	03ALL		0	14G	G12_005		Non-Converged Contingency	0	0.06673	-	DBL-THIS-CLR
FDNS	09ALL		0	14G	G12_005	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	120	1	126.8273	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G12_005		0	24SP	G12_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	320	0.06204	108.8693	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G12_005		0	24SP	G12_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.03954	108.7664	MAXWELL - STAPLETON 115KV CKT 1
FDNS	00G12_005		0	24SP	G12_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.03995	107.9872	HOSKINS - NELIGH.EAST3345.00 345KV CKT 1
FDNS	00G12_005		0	24SP	G12_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.03995	107.9581	NELIGH.EAST3345.00 (NELIGH.E T1) 345/115/13.8KV TRANSFORMER CKT 1
FDNS	00G12_005		0	19SP	G12_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.06205	105.6779	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G12_005		0	14SP	G12_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.04079	105.3979	BASE CASE
FDNS	0		0	24SP	G12_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.04029	104.1569	MAXWELL - STAPLETON 115KV CKT 1
FDNS	00G12_005		0	24SP	G12_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.04225	103.9836	MAXWELL - NORTH PLATTE 115KV CKT 1
FDNS	00G12_005		0	19SP	G12_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.03954	103.8127	MAXWELL - STAPLETON 115KV CKT 1
FDNS	00G12_005		0	19SP	G12_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.03996	103.0458	HOSKINS - NELIGH.EAST3345.00 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TC%LOADING		CONTINGENCY
								TDF	(% MVA)	
FDNS	0	0	24SP	G12_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.04056	102.9183	HOSKINS - NELIGH.EAST3345.00 345KV CKT 1
FDNS	00G12_005	0	19SP	G12_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.03996	102.8892	NELIGH.EAST3345.00 (NELIGH.E T1) 345/115/13.8KV TRANSFORMER CKT 1
FDNS	0	0	24SP	G12_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.04056	102.8855	NELIGH.EAST3345.00 (NELIGH.E T1) 345/115/13.8KV TRANSFORMER CKT 1
FDNS	00G12_005	0	24SP	G12_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.03954	100.9192	STAPLETON - THEDFORD 115KV CKT 1
FDNS	00G12_005	0	19SP	G12_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.04225	100	MAXWELL - NORTH PLATTE 115KV CKT 1
FDNS	09ALL	0	14G	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	129.1998	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	00G12_005	0	14SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.29551	109.6815	DAK02WAPAB2
FDNS	00G12_005	0	19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.29121	109.3463	DAK02WAPAB2
FDNS	00G12_005	0	24SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.29118	108.6391	DAK02WAPAB2
FDNS	00G12_005	0	19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.26367	103.8672	LN-WAPA6
FDNS	00G12_005	0	19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.26367	103.8672	NEB001NPPB2
FDNS	00G12_005	0	24SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.26365	103.4701	LN-WAPA6
FDNS	00G12_005	0	24SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.26365	103.4701	NEB001NPPB2
FDNS	00G12_005	0	14SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.26656	103.0399	LN-WAPA6
FDNS	00G12_005	0	14SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.26656	103.0399	NEB001NPPB2
FDNS	00G12_005	0	19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.27594	102.5598	WAPA-OG-2
FDNS	00G12_005	0	14SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.27917	102.1553	WAPA-OG-2
FDNS	00G12_005	0	24SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.27593	102.0797	WAPA-OG-2
FDNS	09G12_005	0	14G	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.29544	101.0344	DAK02WAPAB2
FDNS	09ALL	0	14G	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.29551	100.5536	DAK02WAPAB2
FDNS	00G12_005	0	19SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.25866	100.3658	NEB02WAPAB2
FDNS	00G12_005	0	14SP	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.26259	100	NEB02WAPAB2
FDNS	09ALL	0	14G	G12_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.29479	100	FT RANDAL - UTICA JCT 230KV CKT 1
FDNS	06ALL	0	14G	G12_005	FROM->TO	LAWEASOKLUNI	425	0.03188	150.5	BASE CASE
FDNS	6	0	14G	G12_005	FROM->TO	LAWEASOKLUNI	425	0.03039	129	BASE CASE
FDNS	00G12_005	0	24SP	G12_005	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	0.06204	103.9909	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G12_005	0	24SP	G12_005	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	0.03954	103.7912	MAXWELL - STAPLETON 115KV CKT 1
FDNS	00G12_005	0	24SP	G12_005	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	0.03995	103.0065	HOSKINS - NELIGH.EAST3345.00 345KV CKT 1
FDNS	00G12_005	0	24SP	G12_005	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	0.03995	102.9771	NELIGH.EAST3345.00 (NELIGH.E T1) 345/115/13.8KV TRANSFORMER CKT 1
FDNS	00G12_005	0	19SP	G12_005	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	0.06205	101.1474	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00NR	0	24SP	G12_005	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	0.04463	99.1	HOSKINS - NELIGH.EAST3345.00 345KV CKT 1
FDNS	00NR	0	24SP	G12_005	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	0.04463	99.1	NELIGH.EAST3345.00 (NELIGH.E T1) 345/115/13.8KV TRANSFORMER CKT 1
FDNS	06ALL	0	14G	G12_005	FROM->TO	TUCXFR345230	300	0.03898	120.3	BASE CASE
FDNS	00G12_005	2	24SP	G12_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.04037	110.9941	BASE CASE
FDNS	0	2	24SP	G12_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.04036	106.8608	BASE CASE
FDNS	00G12_005	2	19SP	G12_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.04038	106.5655	BASE CASE
FDNS	00G12_005	2	24SP	G12_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.03762	105.4668	HOSKINS - NELIGH.EAST3345.00 345KV CKT 1
FDNS	00G12_005	2	24SP	G12_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.03762	105.4054	NELIGH.EAST3345.00 (NELIGH.E T1) 345/115/13.8KV TRANSFORMER CKT 1
FDNS	00G12_005	2	24SP	G12_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.03613	104.9913	MAXWELL - STAPLETON 115KV CKT 1
FDNS	0	2	24SP	G12_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.03613	102.538	MAXWELL - STAPLETON 115KV CKT 1
FDNS	0	2	19SP	G12_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.04037	102.4073	BASE CASE
FDNS	00G12_005	2	14SP	G12_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.03845	102.0644	BASE CASE
FDNS	0	2	24SP	G12_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.03761	101.9725	HOSKINS - NELIGH.EAST3345.00 345KV CKT 1
FDNS	0	2	24SP	G12_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.03761	101.9213	NELIGH.EAST3345.00 (NELIGH.E T1) 345/115/13.8KV TRANSFORMER CKT 1
FDNS	00G12_005	2	24SP	G12_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.04149	101.2559	MISSION - ST FRANCIS 115KV CKT 1
FDNS	00G12_005	2	19SP	G12_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.03763	100.5243	HOSKINS - NELIGH.EAST3345.00 345KV CKT 1
FDNS	00G12_005	2	19SP	G12_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.03763	100.3705	NELIGH.EAST3345.00 (NELIGH.E T1) 345/115/13.8KV TRANSFORMER CKT 1
FDNS	00G12_005	2	24SP	G12_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.04149	100.2803	HARMONY - ST FRANCIS 115KV CKT 1
FDNS	00G12_005	2	24SP	G12_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.03882	100.2053	MAXWELL - NORTH PLATTE 115KV CKT 1
FDNS	00G12_005	2	19SP	G12_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.03613	100.0831	MAXWELL - STAPLETON 115KV CKT 1
FDNS	00NR	2	19SP	G12_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.03751	99.2	MAXWELL - STAPLETON 115KV CKT 1
FDNS	00G12_005	2	24SP	G12_005	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	0.03762	100.5023	HOSKINS - NELIGH.EAST3345.00 345KV CKT 1
FDNS	00G12_005	2	24SP	G12_005	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	0.03762	100.4436	NELIGH.EAST3345.00 (NELIGH.E T1) 345/115/13.8KV TRANSFORMER CKT 1
FDNS	00G12_005	2	24SP	G12_005	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	0.03613	100	MAXWELL - STAPLETON 115KV CKT 1
FNSL-Blown Up	03ALL	0	14G	G13_002		Non-Converged Contingency	0	0.06963	-	DBL-THIS-CLR
FDNS	06ALL	0	14G	G13_002	FROM->TO	LAWEASOKLUNI	425	0.03075	150.5	BASE CASE
FDNS	06ALL	0	14G	G13_002	FROM->TO	TUCXFR345230	300	0.03871	120.3	BASE CASE
FNSL-Blown Up	03ALL	0	14G	G13_004		Non-Converged Contingency	0	0.0705	-	DBL-THIS-CLR
FDNS	09ALL	0	14G	G13_004	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	126.8273	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_004	0	24SP	G13_004	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.06204	108.8693	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_004	0	19SP	G13_004	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.06205	105.6779	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09ALL	0	14G	G13_004	TO->FROM	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.8749	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09ALL	0	14G	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	129.1998	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	00G13_004	0	14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.67277	109.6815	DAK02WAPAB2
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.67057	109.3463	DAK02WAPAB2
FDNS	00G13_004	0	24SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.67057	108.6391	DAK02WAPAB2
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65768	103.8672	LN-WAPA6
FDNS	00G13_004	0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65768	103.8672	NEB001NPPB2
FDNS	09ALL	0	14G	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.7852	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_004	0	24SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65768	103.4701	LN-WAPA6
FDNS	00G13_004	0	24SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65768	103.4701	NEB001NPPB2
FDNS	00G13_004	0	14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65945	103.0399	LN-WAPA6
FDNS	00G13_004	0	14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65945	103.0399	NEB001NPPB2

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB		TC%LOADING		CONTINGENCY
							(MVA)	TDF	(% MVA)		
FDNS	00G13_004		0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.66269	102.5598	WAPA-OG-2
FDNS	00G13_004		0	14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.66432	102.1553	WAPA-OG-2
FDNS	00G13_004		0	24SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6627	102.0797	WAPA-OG-2
FDNS	09G13_004		0	14G	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.67268	101.0344	DAK02WAPAB2
FDNS	09ALL		0	14G	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.67233	100.5536	DAK02WAPAB2
FDNS	00G13_004		0	19SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65576	100.3658	NEB02WAPAB2
FDNS	00G13_004		0	14SP	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6578	100	NEB02WAPAB2
FDNS	09ALL		0	14G	G13_004	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.67194	100	FT RANDAL - UTICA JCT 230KV CKT 1
FDNS	06ALL		0	14G	G13_004	FROM->TO	LAWEASOKLUNI	425	0.03106	150.5	BASE CASE
FDNS	00G13_004		0	24SP	G13_004	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	0.06204	103.9909	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_004		0	19SP	G13_004	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	0.06205	101.1474	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	06ALL		0	14G	G13_004	FROM->TO	TUCXFR345230	300	0.03866	120.3	BASE CASE
FNSL-Blown Up	03ALL		0	14G	G13_005		Non-Converged Contingency	0	0.0705	-	DBL-THIS-CLR
FDNS	09ALL		0	14G	G13_005	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	126.8273	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_005		0	24SP	G13_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.06204	108.8693	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_005		0	19SP	G13_005	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.06205	105.6779	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09ALL		0	14G	G13_005	TO->FROM	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.8749	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09ALL		0	14G	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	129.1998	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	00G13_005		0	14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.67277	109.6815	DAK02WAPAB2
FDNS	00G13_005		0	19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.67057	109.3463	DAK02WAPAB2
FDNS	00G13_005		0	24SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.67057	108.6391	DAK02WAPAB2
FDNS	00G13_005		0	19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65768	103.8672	LN-WAPA6
FDNS	00G13_005		0	19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65768	103.8672	NEB001NPPB2
FDNS	09ALL		0	14G	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.7852	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_005		0	24SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65768	103.4701	LN-WAPA6
FDNS	00G13_005		0	24SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65768	103.4701	NEB001NPPB2
FDNS	00G13_005		0	14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65945	103.0399	LN-WAPA6
FDNS	00G13_005		0	14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65945	103.0399	NEB001NPPB2
FDNS	00G13_005		0	19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.66269	102.5598	WAPA-OG-2
FDNS	00G13_005		0	14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.66432	102.1553	WAPA-OG-2
FDNS	00G13_005		0	24SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6627	102.0797	WAPA-OG-2
FDNS	09G13_005		0	14G	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.67268	101.0344	DAK02WAPAB2
FDNS	09ALL		0	14G	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.67233	100.5536	DAK02WAPAB2
FDNS	00G13_005		0	19SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65576	100.3658	NEB02WAPAB2
FDNS	00G13_005		0	14SP	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6578	100	NEB02WAPAB2
FDNS	09ALL		0	14G	G13_005	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.67194	100	FT RANDAL - UTICA JCT 230KV CKT 1
FDNS	06ALL		0	14G	G13_005	FROM->TO	LAWEASOKLUNI	425	0.03106	150.5	BASE CASE
FDNS	00G13_005		0	24SP	G13_005	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	0.06204	103.9909	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_005		0	19SP	G13_005	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	0.06205	101.1474	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	06ALL		0	14G	G13_005	FROM->TO	TUCXFR345230	300	0.03866	120.3	BASE CASE
FNSL-Blown Up	03ALL		0	14G	G13_006		Non-Converged Contingency	0	0.0705	-	DBL-THIS-CLR
FDNS	09ALL		0	14G	G13_006	TO->FROM	FT RANDAL - G12_005T 230.00 230KV CKT 1	320	1	126.8273	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_006		0	24SP	G13_006	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.06204	108.8693	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_006		0	19SP	G13_006	FROM->TO	FT RANDAL - SPENCER 115KV CKT 1	120	0.06205	105.6779	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09ALL		0	14G	G13_006	TO->FROM	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.8749	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	09ALL		0	14G	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	129.1998	FT RANDAL - G12_005T 230.00 230KV CKT 1
FDNS	00G13_006		0	14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.67277	109.6815	DAK02WAPAB2
FDNS	00G13_006		0	19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.67057	109.3463	DAK02WAPAB2
FDNS	00G13_006		0	24SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.67057	108.6391	DAK02WAPAB2
FDNS	00G13_006		0	19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65768	103.8672	LN-WAPA6
FDNS	00G13_006		0	19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65768	103.8672	NEB001NPPB2
FDNS	09ALL		0	14G	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	1	103.7852	G12_005T 230.00 - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_006		0	24SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65768	103.4701	LN-WAPA6
FDNS	00G13_006		0	24SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65768	103.4701	NEB001NPPB2
FDNS	00G13_006		0	14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65945	103.0399	LN-WAPA6
FDNS	00G13_006		0	14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65945	103.0399	NEB001NPPB2
FDNS	00G13_006		0	19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.66269	102.5598	WAPA-OG-2
FDNS	00G13_006		0	14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.66432	102.1553	WAPA-OG-2
FDNS	00G13_006		0	24SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6627	102.0797	WAPA-OG-2
FDNS	09G13_006		0	14G	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.67268	101.0344	DAK02WAPAB2
FDNS	09ALL		0	14G	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.67233	100.5536	DAK02WAPAB2
FDNS	00G13_006		0	19SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.65576	100.3658	NEB02WAPAB2
FDNS	00G13_006		0	14SP	G13_006	TO->FROM	KELLY - MEADOWGROVE 230.00 230KV CKT 1	320	0.6578	100	NEB02WAPAB2
FDNS	06ALL		0	14G	G13_006	FROM->TO	LAWEASOKLUNI	425	0.03106	150.5	BASE CASE
FDNS	00G13_006		0	24SP	G13_006	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	0.06204	103.9909	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	00G13_006		0	19SP	G13_006	TO->FROM	ONEILL - SPENCER 115KV CKT 1	120	0.06205	101.1474	KELLY - MEADOWGROVE 230.00 230KV CKT 1
FDNS	06ALL		0	14G	G13_006	FROM->TO	TUCXFR345230	300	0.03866	120.3	BASE CASE
FDNS	06ALL		0	14G	G13_007	FROM->TO	LAWEASOKLUNI	425	0.0884	150.5	BASE CASE
FDNS	6		0	14G	G13_007	FROM->TO	LAWEASOKLUNI	425	0.08691	129	BASE CASE
FDNS	0		0	14WP	G13_007	FROM->TO	LAWEASOKLUNI	425	0.0789	110	BASE CASE
FDNS	00G13_007		0	14WP	G13_007	FROM->TO	LAWEASOKLUNI	425	0.0789	107.8	BASE CASE
FDNS	0		0	19WP	G13_007	FROM->TO	LAWEASOKLUNI	425	0.07233	101.7	BASE CASE

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB	TC%LOADING		CONTINGENCY
							(MVA)	TDF	(% MVA)	
FDNS	00NR	0	14SP	G13_009	TO->FROM	CATOOSA - TERRA NITROGEN TAP 138KV CKT 1	136	0.09834	102.4354	SPP-AEPW-41
FDNS	00NR	0	24SP	G13_009	TO->FROM	CATOOSA - TERRA NITROGEN TAP 138KV CKT 1	136	0.10168	101.6223	SPP-AEPW-41
FDNS	00G13_009	0	14WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.16005	118.8602	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00G13_009	0	14WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.16005	118.6101	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00G13_009	0	19SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.15999	108.0881	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00G13_009	0	19SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.15999	107.8768	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	08ALL	0	14G	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.15993	106.5977	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	08ALL	0	14G	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.15993	106.2737	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	08G13_009	0	14G	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.15993	105.9705	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00G13_009	0	14SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.16014	105.9405	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00G13_009	0	14SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.16014	105.7107	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	08G13_009	0	14G	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.15993	105.6429	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	0	0	14WP	G13_009	FROM->TO	LAWEASOKLUNI	425	0.0423	110	BASE CASE
FDNS	00G13_009	0	14WP	G13_009	FROM->TO	LAWEASOKLUNI	425	0.04225	108.4	BASE CASE
FDNS	0	0	19WP	G13_009	FROM->TO	LAWEASOKLUNI	425	0.03748	101.7	BASE CASE
FDNS	00NR	0	24SP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	317	0.03625	147.8855	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00NR	0	19SP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	317	0.03579	136.5763	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00G13_009	0	19SP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	317	0.03665	129.6261	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	0	0	19SP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	317	0.03661	128.5652	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00G13_009	0	24SP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	317	0.03733	123.1481	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	0	0	24SP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	317	0.03735	121.9678	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00NR	0	14SP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	317	0.03583	112.3894	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00G13_009	0	14SP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	317	0.03601	108.6243	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	0	0	14SP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	317	0.03601	107.6717	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00NR	0	19WP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	375	0.05087	105.8829	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	0	0	19WP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	375	0.03967	103.4823	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00NR	0	14SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.09834	113.8524	SPP-AEPW-41
FDNS	00NR	0	24SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.10168	112.2705	SPP-AEPW-41
FDNS	00NR	0	14SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.09772	110.7299	SPP-AEPW-31
FDNS	00G13_009	0	14SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.11076	109.9631	SPP-AEPW-41
FDNS	00NR	0	24SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.10105	109.7479	SPP-AEPW-31
FDNS	00NR	0	19SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.1034	109.1272	SPP-AEPW-41
FDNS	00G13_009	0	14SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.11037	107.7443	SPP-AEPW-31
FDNS	00G13_009	0	14SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.11037	107.1572	NORTHEAST STATION - OWASSO SOUTH 138KV CKT 1
FDNS	00NR	0	19SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.10267	106.7437	SPP-AEPW-31
FDNS	00G13_009	0	24SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.11125	106.4569	SPP-AEPW-41
FDNS	00G13_009	0	24SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.11085	105.2991	SPP-AEPW-31
FDNS	00G13_009	0	24SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.11085	104.4268	NORTHEAST STATION - OWASSO SOUTH 138KV CKT 1
FDNS	00G13_009	0	19SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.11135	104.1032	SPP-AEPW-41
FDNS	00G13_009	0	19SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.11094	102.6894	SPP-AEPW-31
FDNS	0	0	14SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.11076	102.4872	SPP-AEPW-41
FDNS	00G13_009	0	19SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.11094	101.9658	NORTHEAST STATION - OWASSO SOUTH 138KV CKT 1
FDNS	00G13_009	0	14SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.11037	101.3473	OWASSO SOUTH - PORT OF CATOOSA TAP 138KV CKT 1
FDNS	0	0	14SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.11038	100.2935	SPP-AEPW-31
FDNS	00NR	0	14SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.09083	100	SPP-AEPW-39
FDNS	00NR	0	19SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.09562	99.5	40OLOGAH 138.00 - CLAREMORE 138KV CKT 1
FDNS	00NR	0	19SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.09562	99.5	CLAREMORE (CLRAUTO4) 161/138/13.8KV TRANSFORMER CKT 1
FDNS	00NR	0	24SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.09395	99.2	SPP-AEPW-39
FDNS	00G13_009	0	19SP	G13_009	TO->FROM	VINITA - VINITA JUNCTION 69KV CKT 1	69	0.15817	101.2971	BASE CASE
FDNS	00NR	0	19WP	G13_009	TO->FROM	VINITA - VINITA JUNCTION 69KV CKT 1	78	0.25443	99.3	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00NR	0	19WP	G13_009	TO->FROM	VINITA - VINITA JUNCTION 69KV CKT 1	78	0.25443	99.2	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	08ALL	0	14G	G13_009	FROM->TO	VINITA JUNCTION (VINITA)C 138/69/13.8KV TRANSFORMER CKT 1	62	0.25926	110.0628	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	08ALL	0	14G	G13_009	FROM->TO	VINITA JUNCTION (VINITA)C 138/69/13.8KV TRANSFORMER CKT 1	62	0.25926	110.0525	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	08ALL	0	14G	G13_009	FROM->TO	VINITA JUNCTION (VINITA)C 138/69/13.8KV TRANSFORMER CKT 1	62	0.25926	108.6002	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	08ALL	0	14G	G13_009	FROM->TO	VINITA JUNCTION (VINITA)C 138/69/13.8KV TRANSFORMER CKT 1	62	0.25926	108.4426	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00G13_009	2	19WP	G13_009	TO->FROM	AFTON - EXPLORER PIPELINE TAP 69KV CKT 1	48	0.18138	100.4242	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00G13_009	2	19WP	G13_009	TO->FROM	AFTON - EXPLORER PIPELINE TAP 69KV CKT 1	48	0.18138	100.2225	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00NR	2	14SP	G13_009	TO->FROM	CATOOSA - TERRA NITROGEN TAP 138KV CKT 1	136	0.09512	101.5825	SPP-AEPW-41
FDNS	00NR	2	24SP	G13_009	TO->FROM	CATOOSA - TERRA NITROGEN TAP 138KV CKT 1	136	0.09845	100.7766	SPP-AEPW-41
FDNS	00G13_009	2	19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.18138	146.1687	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00G13_009	2	19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.18138	146.0046	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00G13_009	2	14WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.18173	131.6376	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00G13_009	2	14WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.18173	131.4837	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00G13_009	2	19SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.18156	121.9535	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00G13_009	2	19SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.18156	121.8143	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00G13_009	2	14SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.18183	119.5896	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00G13_009	2	14SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.18183	119.4331	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	08ALL	2	14G	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.1816	118.6408	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	08ALL	2	14G	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.1816	118.3834	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	08G13_009	2	14G	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.1816	117.9372	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	08G13_009	2	14G	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.1816	117.6767	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00G13_009	2	19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10253	112.7241	KETCHUMS 161.00 - PENSACOLA 161KV CKT 1
FDNS	00G13_009	2	19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10253	111.5403	AFTON - KETCHUMS 161.00 161KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY	
FDNS	00G13_009		2	19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10577	110.4377	PENSACOLA (PENAUTO1) 161/69/13.8KV TRANSFORMER CKT 1
FDNS	00G13_009		2	24SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.18172	109.5273	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00G13_009		2	24SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.18172	109.3556	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	8		2	14G	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.1816	108.7531	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	8		2	14G	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.1816	108.5062	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00G13_009		2	19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.09937	106.5901	CLEORA TAP - PENSACOLA 69KV CKT 1
FDNS	00G13_009		2	19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10566	105.4639	MAID - PENSACOLA 161KV CKT 1
FDNS	00G13_009		2	19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10566	104.8703	PENSACOLA - PENSACOLA 161KV CKT 1
FDNS	00G13_009		2	19SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10578	104.8137	PENSACOLA (PENAUTO1) 161/69/13.8KV TRANSFORMER CKT 1
FDNS	0		2	19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.18138	104.813	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	0		2	19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.18138	104.6879	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00G13_009		2	19SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10254	103.0551	KETCHUM5 161.00 - PENSACOLA 161KV CKT 1
FDNS	00G13_009		2	14WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10273	102.2849	KETCHUM5 161.00 - PENSACOLA 161KV CKT 1
FDNS	00G13_009		2	19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.09937	101.7476	AFTON - CLEORA TAP 69KV CKT 1
FDNS	00G13_009		2	19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10774	101.5651	BASE CASE
FDNS	00G13_009		2	19SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10254	101.325	AFTON - KETCHUM5 161.00 161KV CKT 1
FDNS	00G13_009		2	14WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10273	101.0348	AFTON - KETCHUM5 161.00 161KV CKT 1
FDNS	00G13_009		2	14SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10596	100.3187	PENSACOLA (PENAUTO1) 161/69/13.8KV TRANSFORMER CKT 1
FDNS	00G13_009		2	19SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.09939	100.2967	CLEORA TAP - PENSACOLA 69KV CKT 1
FDNS	00NR		2	24SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.09692	99.9	CLEORA TAP - PENSACOLA 69KV CKT 1
FDNS	00NR		2	14SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.09777	99.6	AFTON (AFTAUTO1) 161/69/13.8KV TRANSFORMER CKT 1
FDNS	00NR		2	14SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10278	99.5	MAID - PENSACOLA 161KV CKT 1
FDNS	00NR		2	14WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10275	99.2	PENSACOLA (PENAUTO1) 161/69/13.8KV TRANSFORMER CKT 1
FDNS	00G13_009		2	19WP	G13_009	FROM->TO	EASTERN STATE HOSPITAL TAP - VINITA NEO TAP 69KV CKT 1	48	0.18138	116.4842	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00G13_009		2	19WP	G13_009	FROM->TO	EASTERN STATE HOSPITAL TAP - VINITA NEO TAP 69KV CKT 1	48	0.18138	116.3466	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00G13_009		2	14WP	G13_009	FROM->TO	EASTERN STATE HOSPITAL TAP - VINITA NEO TAP 69KV CKT 1	48	0.18173	104.8607	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00G13_009		2	14WP	G13_009	FROM->TO	EASTERN STATE HOSPITAL TAP - VINITA NEO TAP 69KV CKT 1	48	0.18173	104.7294	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00G13_009		2	19WP	G13_009	TO->FROM	EXPLORER PIPELINE TAP - J6 69KV CKT 1	48	0.18138	112.2299	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00G13_009		2	19WP	G13_009	TO->FROM	EXPLORER PIPELINE TAP - J6 69KV CKT 1	48	0.18138	112.0785	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00G13_009		2	14WP	G13_009	TO->FROM	EXPLORER PIPELINE TAP - J6 69KV CKT 1	48	0.18173	101.2596	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00G13_009		2	14WP	G13_009	TO->FROM	EXPLORER PIPELINE TAP - J6 69KV CKT 1	48	0.18173	101.1115	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00G13_009		2	19WP	G13_009	TO->FROM	J6 - VINITA NEO TAP 69KV CKT 1	48	0.18138	114.3059	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00G13_009		2	19WP	G13_009	TO->FROM	J6 - VINITA NEO TAP 69KV CKT 1	48	0.18138	114.1636	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00G13_009		2	14WP	G13_009	TO->FROM	J6 - VINITA NEO TAP 69KV CKT 1	48	0.18173	103.1233	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00G13_009		2	14WP	G13_009	TO->FROM	J6 - VINITA NEO TAP 69KV CKT 1	48	0.18173	102.9868	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00NR		2	19SP	G13_009	TO->FROM	J6 - VINITA NEO TAP 69KV CKT 1	48	0.17738	99.8	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00NR		2	19SP	G13_009	TO->FROM	J6 - VINITA NEO TAP 69KV CKT 1	48	0.17738	99.7	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00NR		2	14SP	G13_009	TO->FROM	J6 - VINITA NEO TAP 69KV CKT 1	48	0.17657	99.4	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00NR		2	14SP	G13_009	TO->FROM	J6 - VINITA NEO TAP 69KV CKT 1	48	0.17657	99.3	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	0		2	14WP	G13_009	FROM->TO	LAWEASOKLUNI	425	0.0423	109.8	BASE CASE
FDNS	00G13_009		2	14WP	G13_009	FROM->TO	LAWEASOKLUNI	425	0.04226	108.4	BASE CASE
FDNS	0		2	19WP	G13_009	FROM->TO	LAWEASOKLUNI	425	0.03748	101.6	BASE CASE
FDNS	00G13_009		2	19WP	G13_009	FROM->TO	LAWEASOKLUNI	425	0.03741	100.5	BASE CASE
FDNS	00NR		2	24SP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	317	0.03721	147.882	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00NR		2	19SP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	317	0.0367	136.6169	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00G13_009		2	19SP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	317	0.03758	129.7132	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	0		2	19SP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	317	0.03754	128.5927	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00G13_009		2	24SP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	317	0.03826	123.2442	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	0		2	24SP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	317	0.03826	122.2387	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00NR		2	14SP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	317	0.03672	112.425	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00G13_009		2	14SP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	317	0.03691	108.7084	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	0		2	14SP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	317	0.03692	107.6703	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00NR		2	19WP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	375	0.05182	105.8842	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00G13_009		2	19WP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	375	0.04062	104.3517	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	0		2	19WP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	375	0.0406	103.4884	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00NR		2	14WP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	375	0.03057	96.02135	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00NR		2	14SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.09512	112.9981	SPP-AEPW-41
FDNS	00NR		2	24SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.09845	111.423	SPP-AEPW-41
FDNS	00NR		2	14SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.09459	109.9348	SPP-AEPW-31
FDNS	00G13_009		2	14SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.10751	109.1177	SPP-AEPW-41
FDNS	00NR		2	24SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.09792	108.943	SPP-AEPW-31
FDNS	00NR		2	19SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.10017	108.277	SPP-AEPW-41
FDNS	00G13_009		2	14SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.10723	106.9369	SPP-AEPW-31
FDNS	00G13_009		2	14SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.10723	106.3434	NORTHEAST STATION - OWASSO SOUTH 138KV CKT 1
FDNS	00NR		2	19SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.09954	105.9308	SPP-AEPW-31
FDNS	00G13_009		2	24SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.10801	105.6279	SPP-AEPW-41
FDNS	00G13_009		2	24SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.1077	104.5074	SPP-AEPW-31
FDNS	00G13_009		2	24SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.1077	103.6286	NORTHEAST STATION - OWASSO SOUTH 138KV CKT 1
FDNS	00G13_009		2	19SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.1081	103.2419	SPP-AEPW-41
FDNS	0		2	14SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.10752	101.8874	SPP-AEPW-41
FDNS	00G13_009		2	19SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.10779	101.8659	SPP-AEPW-31
FDNS	00G13_009		2	19SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.10779	101.3651	NORTHEAST STATION - OWASSO SOUTH 138KV CKT 1
FDNS	00G13_009		2	14SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.10723	100.5458	OWASSO SOUTH - PORT OF CATOOSA TAP 138KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY	
FDNS	00NR		2	19SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.09954	99.6	OWASSO SOUTH - PORT OF CATOOSA TAP 138KV CKT 1
FDNS	00NR		2	19SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.09253	99.6	40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1
FDNS	00NR		2	14SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.08796	99.3	SPP-AEPW-39
FDNS	00G13_009		2	19SP	G13_009	TO->FROM	VINITA - VINITA JUNCTION 69KV CKT 1	69	0.18536	117.1464	BASE CASE
FDNS	00G13_009		2	14SP	G13_009	TO->FROM	VINITA - VINITA JUNCTION 69KV CKT 1	69	0.18535	114.7574	BASE CASE
FDNS	00G13_009		2	24SP	G13_009	TO->FROM	VINITA - VINITA JUNCTION 69KV CKT 1	69	0.18541	112.7447	BASE CASE
FDNS	00NR		2	14WP	G13_009	TO->FROM	VINITA - VINITA JUNCTION 69KV CKT 1	78	0.28915	99	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00G13_009		3	19WP	G13_009	TO->FROM	AFTON - EXPLORER PIPELINE TAP 69KV CKT 1	48	0.18305	101.5529	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00G13_009		3	19WP	G13_009	TO->FROM	AFTON - EXPLORER PIPELINE TAP 69KV CKT 1	48	0.18305	101.3538	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00NR		3	14SP	G13_009	TO->FROM	CATOOSA - TERRA NITROGEN TAP 138KV CKT 1	136	0.09486	101.5144	SPP-AEPW-41
FDNS	00NR		3	24SP	G13_009	TO->FROM	CATOOSA - TERRA NITROGEN TAP 138KV CKT 1	136	0.09819	100.7098	SPP-AEPW-41
FDNS	00G13_009		3	19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.18305	147.6769	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00G13_009		3	19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.18305	147.5099	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00G13_009		3	14WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.1834	133.0309	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00G13_009		3	14WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.1834	132.8379	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00G13_009		3	19SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.18324	123.4064	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00G13_009		3	19SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.18324	123.2692	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00G13_009		3	14SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.1835	121.0199	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00G13_009		3	14SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.1835	120.8655	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	08ALL		3	14G	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.18328	119.909	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	08ALL		3	14G	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.18328	119.6514	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	08G13_009		3	14G	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.18327	119.1971	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	08G13_009		3	14G	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.18327	118.9364	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00G13_009		3	19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10385	113.9654	KETCHUM5 161.00 - PENSACOLA 161KV CKT 1
FDNS	00G13_009		3	19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10385	112.7921	AFTON - KETCHUM5 161.00 161KV CKT 1
FDNS	00G13_009		3	19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10708	111.6893	PENSACOLA (PENAUTO1) 161/69/13.8KV TRANSFORMER CKT 1
FDNS	00G13_009		3	24SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.18339	110.8557	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00G13_009		3	24SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.18339	110.6874	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	8		3	14G	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.18327	109.8936	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	8		3	14G	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.18327	109.6469	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00G13_009		3	19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.1006	107.7266	CLEORA TAP - PENSACOLA 69KV CKT 1
FDNS	00G13_009		3	19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10698	106.6986	MAID - PENSACOLA 161KV CKT 1
FDNS	00G13_009		3	19SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10709	106.2105	PENSACOLA (PENAUTO1) 161/69/13.8KV TRANSFORMER CKT 1
FDNS	00G13_009		3	19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10698	106.1036	PENSACOLA - PENSACOLA 161KV CKT 1
FDNS	0		3	19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.18306	105.7761	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	0		3	19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.18306	105.649	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00G13_009		3	19SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10386	104.4698	KETCHUM5 161.00 - PENSACOLA 161KV CKT 1
FDNS	00G13_009		3	14WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10405	103.3781	KETCHUM5 161.00 - PENSACOLA 161KV CKT 1
FDNS	00G13_009		3	19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.1006	102.8465	AFTON - CLEORA TAP 69KV CKT 1
FDNS	00G13_009		3	19WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10908	102.8332	BASE CASE
FDNS	00G13_009		3	19SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10386	102.7334	AFTON - KETCHUM5 161.00 161KV CKT 1
FDNS	00G13_009		3	14WP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10405	102.1523	AFTON - KETCHUM5 161.00 161KV CKT 1
FDNS	00G13_009		3	19SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10062	101.5895	CLEORA TAP - PENSACOLA 69KV CKT 1
FDNS	00G13_009		3	14SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10727	101.1856	PENSACOLA (PENAUTO1) 161/69/13.8KV TRANSFORMER CKT 1
FDNS	00G13_009		3	14SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10412	100.468	KETCHUM5 161.00 - PENSACOLA 161KV CKT 1
FDNS	00NR		3	24SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.09946	99.2	AFTON (AFTAUTO1) 161/69/13.8KV TRANSFORMER CKT 1
FDNS	00NR		3	19SP	G13_009	TO->FROM	EASTERN STATE HOSPITAL TAP - VINITA 69KV CKT 1	39	0.10499	99.1	KERR - PENSACOLA 161KV CKT 1
FDNS	00G13_009		3	19WP	G13_009	FROM->TO	EASTERN STATE HOSPITAL TAP - VINITA NEO TAP 69KV CKT 1	48	0.18305	117.7032	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00G13_009		3	19WP	G13_009	FROM->TO	EASTERN STATE HOSPITAL TAP - VINITA NEO TAP 69KV CKT 1	48	0.18305	117.5637	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00G13_009		3	14WP	G13_009	FROM->TO	EASTERN STATE HOSPITAL TAP - VINITA NEO TAP 69KV CKT 1	48	0.1834	105.9847	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00G13_009		3	14WP	G13_009	FROM->TO	EASTERN STATE HOSPITAL TAP - VINITA NEO TAP 69KV CKT 1	48	0.1834	105.8232	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00G13_009		3	19WP	G13_009	TO->FROM	EXPLORER PIPELINE TAP - J6 69KV CKT 1	48	0.18305	113.429	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00G13_009		3	19WP	G13_009	TO->FROM	EXPLORER PIPELINE TAP - J6 69KV CKT 1	48	0.18305	113.2768	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00G13_009		3	14WP	G13_009	TO->FROM	EXPLORER PIPELINE TAP - J6 69KV CKT 1	48	0.1834	102.3625	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00G13_009		3	14WP	G13_009	TO->FROM	EXPLORER PIPELINE TAP - J6 69KV CKT 1	48	0.1834	102.1878	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00NR		3	19SP	G13_009	TO->FROM	EXPLORER PIPELINE TAP - J6 69KV CKT 1	48	0.17903	99.1	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00NR		3	19SP	G13_009	TO->FROM	EXPLORER PIPELINE TAP - J6 69KV CKT 1	48	0.17903	99	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00G13_009		3	19WP	G13_009	TO->FROM	J6 - VINITA NEO TAP 69KV CKT 1	48	0.18305	115.518	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00G13_009		3	19WP	G13_009	TO->FROM	J6 - VINITA NEO TAP 69KV CKT 1	48	0.18305	115.3744	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	00G13_009		3	14WP	G13_009	TO->FROM	J6 - VINITA NEO TAP 69KV CKT 1	48	0.1834	104.2408	SUB 404 - HOCKERVILLE - VINITA JUNCTION 138KV CKT 1
FDNS	00G13_009		3	14WP	G13_009	TO->FROM	J6 - VINITA NEO TAP 69KV CKT 1	48	0.1834	104.0757	SUB 404 - HOCKERVILLE (HOCK 138) 161/138/12.5KV TRANSFORMER CKT 1
FDNS	0		3	14WP	G13_009	FROM->TO	LAWEASOKLUNI	425	0.0423	109.8	BASE CASE
FDNS	00G13_009		3	14WP	G13_009	FROM->TO	LAWEASOKLUNI	425	0.04226	108.4	BASE CASE
FDNS	0		3	19WP	G13_009	FROM->TO	LAWEASOKLUNI	425	0.03748	101.6	BASE CASE
FDNS	00G13_009		3	19WP	G13_009	FROM->TO	LAWEASOKLUNI	425	0.03741	100.5	BASE CASE
FDNS	00NR		3	24SP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	317	0.03728	147.8919	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00NR		3	19SP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	317	0.03678	136.6288	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00G13_009		3	19SP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	317	0.03766	129.7239	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	0		3	19SP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	317	0.03761	128.5987	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00G13_009		3	24SP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	317	0.03833	123.252	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	0		3	24SP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	317	0.03833	122.2425	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00NR		3	14SP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	317	0.03679	112.4312	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00G13_009		3	14SP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	317	0.03698	108.7189	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB		TC%LOADING		CONTINGENCY
							(MVA)	TDF	(% MVA)		
FDNS	0		3	14SP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	317	0.03699	107.6762	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00NR		3	19WP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	375	0.05189	105.8927	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00G13_009		3	19WP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	375	0.0407	104.3604	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	0		3	19WP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	375	0.04068	103.4932	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00NR		3	14WP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	375	0.03064	96.02911	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00NR		3	14SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.09486	112.9297	SPP-AEPW-41
FDNS	00NR		3	24SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.09819	111.3559	SPP-AEPW-41
FDNS	00NR		3	14SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.09435	109.8692	SPP-AEPW-31
FDNS	00G13_009		3	14SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.10725	109.0494	SPP-AEPW-41
FDNS	00NR		3	24SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.09767	108.8796	SPP-AEPW-31
FDNS	00NR		3	19SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.09991	108.208	SPP-AEPW-41
FDNS	00G13_009		3	14SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.10697	106.8727	SPP-AEPW-31
FDNS	00G13_009		3	14SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.10697	106.2784	NORTHEAST STATION - OWASSO SOUTH 138KV CKT 1
FDNS	00NR		3	19SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.09929	105.8656	SPP-AEPW-31
FDNS	00G13_009		3	24SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.10775	105.5628	SPP-AEPW-41
FDNS	00G13_009		3	24SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.10745	104.4483	SPP-AEPW-31
FDNS	00G13_009		3	24SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.10745	103.5667	NORTHEAST STATION - OWASSO SOUTH 138KV CKT 1
FDNS	00G13_009		3	19SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.10784	103.1743	SPP-AEPW-41
FDNS	0		3	14SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.10726	101.838	SPP-AEPW-41
FDNS	00G13_009		3	19SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.10754	101.8017	SPP-AEPW-31
FDNS	00G13_009		3	19SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.10754	101.0714	NORTHEAST STATION - OWASSO SOUTH 138KV CKT 1
FDNS	00G13_009		3	14SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.10697	100.4811	OWASSO SOUTH - PORT OF CATOOSA TAP 138KV CKT 1
FDNS	00NR		3	19SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.09929	99.5	OWASSO SOUTH - PORT OF CATOOSA TAP 138KV CKT 1
FDNS	00NR		3	19SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.09229	99.5	40OLOGAH 138.00 - NORTHEAST STATION 138KV CKT 1
FDNS	00NR		3	14SP	G13_009	TO->FROM	TERRA NITROGEN TAP - VERDIGRIS 138KV CKT 1	136	0.08773	99.2	SPP-AEPW-39
FDNS	00NR		4	14SP	G13_009	TO->FROM	CATOOSA - TERRA NITROGEN TAP 138KV CKT 1	136	0.09688	104.7612	SPP-AEPW-41
FDNS	00NR		4	24SP	G13_009	TO->FROM	CATOOSA - TERRA NITROGEN TAP 138KV CKT 1	136	0.10029	103.9207	SPP-AEPW-41
FDNS	00NR		4	19SP	G13_009	TO->FROM	CATOOSA - TERRA NITROGEN TAP 138KV CKT 1	136	0.10205	100.3813	SPP-AEPW-41
FDNS	00NR		4	24SP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	317	0.03725	147.9595	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00NR		4	19SP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	317	0.03679	136.6498	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00NR		4	14SP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	317	0.03681	112.4714	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00NR		4	19WP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	375	0.05187	105.9415	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00NR		4	14WP	G13_009	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	375	0.03068	96.03844	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FNSL-Blown Up	03ALL		0	14G	G13_010		Non-Converged Contingency	0	0.25592	-	DBL-THIS-CLR
FDNS	03G13_010		0	14G	G13_010	TO->FROM	BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1	611.9	0.28097	114.5098	DBL-THIS-CLR
FDNS	03ALL		0	14G	G13_010	TO->FROM	CHISHOLM - MAIZEE 4 138.00 138KV CKT 1	287	0.03694	108.3519	BENTON - WICHITA 345KV CKT 1
FDNS	03ALL		0	14G	G13_010	TO->FROM	CIRCLE - MULLERGEREN 230KV CKT 1	318.7	0.08194	128.793	MULGREN7 345.00 - RENO COUNTY 345KV CKT 1
FDNS	03G13_010		0	14G	G13_010	TO->FROM	CIRCLE - MULLERGEREN 230KV CKT 1	318.7	0.08249	108.5178	MULGREN7 345.00 - RENO COUNTY 345KV CKT 1
FDNS	3		0	14G	G13_010	TO->FROM	CIRCLE - MULLERGEREN 230KV CKT 1	318.7	0.0826	103.1396	MULGREN7 345.00 - RENO COUNTY 345KV CKT 1
FDNS	03G13_010		0	14G	G13_010	TO->FROM	CIRCLE - MULLERGEREN 230KV CKT 1	318.7	0.06684	100.3577	DBL-THIS-CLR
FDNS	03ALL		0	14G	G13_010	TO->FROM	CIRCLE - MULLERGEREN 230KV CKT 1	318.7	0.06642	100	DBL-IRON-CLR
FDNS	03ALL		0	14G	G13_010	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03023	116.6375	G12-016 TAP 345.00 - MORELND 345.00 345KV CKT 1
FDNS	03ALL		0	14G	G13_010	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03023	116.5408	MORELND 345.00 (MRLNDAUTO) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	03ALL		0	14G	G13_010	FROM->TO	MOUNDRIDGE (MOUND10X) 138/115/13.8KV TRANSFORMER CKT 1	110	0.03686	108.2938	RENO COUNTY - WICHITA 345KV CKT 1
FDNS	03ALL		0	14G	G13_010	FROM->TO	MOUNDRIDGE (MOUND10X) 138/115/13.8KV TRANSFORMER CKT 1	110	0.03686	107.8189	RENO COUNTY - WICHITA 345KV CKT 1
FDNS	03ALL		0	14G	G13_010	TO->FROM	MULLERGEREN - SPEARVILLE 230KV CKT 1	318.7	0.03571	112.1897	G12-011T 345.00 - POST ROCK 345KV CKT 1
FDNS	03ALL		0	14G	G13_010	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.10495	106.8057	MULGREN7 345.00 - RENO COUNTY 345KV CKT 1
FDNS	03ALL		0	14G	G13_010	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11942	106.2015	AXTELL - POST ROCK 345KV CKT 1
FDNS	03ALL		0	14G	G13_010	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.09181	101.9902	DBL-WICH-THI
FDNS	03NR		0	14G	G13_010	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.06188	101.1096	DBL-THIS-CLR
FDNS	06ALL		0	14G	G13_010	FROM->TO	TUCXFR345230	300	0.0317	120.3	BASE CASE
FDNS	00G13_013		0	19SP	G13_013	TO->FROM	BAILEY COUNTY REC-EARTH INTERCHANGE - PLANT X STATION 115KV CKT 1	160	0.03808	101.1971	LAWTON EASTSIDE - OKLAUNION 345KV CKT 1
FDNS	00G13_013		0	14SP	G13_013	TO->FROM	BAILEY COUNTY REC-EARTH INTERCHANGE - PLANT X STATION 115KV CKT 1	160	0.03377	100.5313	PLANT X STATION - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNS	00G13_013		0	14SP	G13_013	TO->FROM	BAILEY COUNTY REC-EARTH INTERCHANGE - PLANT X STATION 115KV CKT 1	160	0.03098	100	CURRY COUNTY INTERCHANGE - DEAF SMITH REC-#20 115KV CKT 1
FDNS	00G13_013		0	14SP	G13_013	FROM->TO	CURRY COUNTY INTERCHANGE - DEAF SMITH REC-#20 115KV CKT 1	96	0.04006	99.9386	BAILEY COUNTY REC-EARTH INTERCHANGE - PLANT X STATION 115KV CKT 1
FDNS	00G13_013		0	14SP	G13_013	TO->FROM	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1	351	0.17954	117.1438	BAILEY COUNTY REC-EARTH INTERCHANGE - PLANT X STATION 115KV CKT 1
FDNS	00G13_013		0	19SP	G13_013	TO->FROM	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1	351	0.18881	108.2526	LAWTON EASTSIDE - OKLAUNION 345KV CKT 1
FDNS	00G13_013		0	14SP	G13_013	TO->FROM	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1	351	0.17954	105.4999	BAILEY COUNTY REC-EARTH INTERCHANGE - CASTRO COUNTY INTERCHANGE 115KV CKT 1
FDNS	00G13_013		0	14SP	G13_013	TO->FROM	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1	351	0.17954	105.3306	SPP-SWPS-26
FDNS	00G13_013		0	14SP	G13_013	TO->FROM	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1	351	0.19556	104.1614	SPP-AEPW-32
FDNS	00G13_013		0	14SP	G13_013	TO->FROM	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1	351	0.19801	104.1357	SPP-SWPS-01
FDNS	00G13_013		0	14SP	G13_013	TO->FROM	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1	351	0.18222	101.5373	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G13_013		0	14SP	G13_013	TO->FROM	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1	351	0.19036	100.3361	BORDER 7345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	03ALL		0	14G	G13_013	TO->FROM	MULLERGEREN - SPEARVILLE 230KV CKT 1	318.7	0.03875	145.1233	G11-17T 345.00 - SPEARVILLE 345KV CKT 1
FDNS	3		0	14G	G13_013	TO->FROM	MULLERGEREN - SPEARVILLE 230KV CKT 1	318.7	0.03985	116.9771	G11-17T 345.00 - SPEARVILLE 345KV CKT 1
FDNS	00G13_013		0	14SP	G13_013	FROM->TO	OASIS INTERCHANGE (ABB LLM60041) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03419	116.3971	ROOSEVELT COUNTY INTERCHANGE (ABB LMM60042) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G13_013		0	14SP	G13_013	FROM->TO	OASIS INTERCHANGE (ABB LLM60041) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03419	114.1302	ROOSEVELT COUNTY INTERCHANGE (ABB LMM60042) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0		0	14SP	G13_013	FROM->TO	OASIS INTERCHANGE (ABB LLM60041) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03428	108.7089	ROOSEVELT COUNTY INTERCHANGE (ABB LMM60042) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0		0	14SP	G13_013	FROM->TO	OASIS INTERCHANGE (ABB LLM60041) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03428	106.5678	ROOSEVELT COUNTY INTERCHANGE (ABB LMM60042) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL		0	14G	G13_013	TO->FROM	PLANT X STATION - TOLK STATION EAST 230KV CKT 1	502	0.39369	131.515	PLANT X STATION - TOLK STATION WEST 230KV CKT 1
FDNS	06ALL		0	14G	G13_013	TO->FROM	PLANT X STATION - TOLK STATION WEST 230KV CKT 1	502	0.39693	132.4732	PLANT X STATION - TOLK STATION EAST 230KV CKT 2
FDNS	00NR		0	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.05425	119.6355	SPP-SWPS-K37
FDNS	00NR		0	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.05425	117.8649	SPP-SWPS-K37

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB	TC%LOADING		CONTINGENCY
							(MVA)	TDF	(% MVA)	
FDNS	00G13_013	0	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.1068	108.6711	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	00NR	0	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03469	108.1243	DEAF SMITH COUNTY INTERCHANGE - DEAF SMITH REC-#21 115KV CKT 1
FDNS	00G13_013	0	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.1068	107.0564	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	00NR	0	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03469	105.936	DEAF SMITH COUNTY INTERCHANGE - DEAF SMITH REC-#21 115KV CKT 1
FDNS	00G13_013	0	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.08652	104.5961	LAMB COUNTY INTERCHANGE - TOLK STATION WEST 230KV CKT 1
FDNS	00G13_013	0	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.08652	104.5863	LAMB COUNTY INTERCHANGE (WH ALM20172) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G13_013	0	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.08652	104.5863	SPP-SWPS-K37
FDNS	00G13_013	0	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.08652	103.2177	LAMB COUNTY INTERCHANGE - TOLK STATION WEST 230KV CKT 1
FDNS	00G13_013	0	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.08652	103.2078	LAMB COUNTY INTERCHANGE (WH ALM20172) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G13_013	0	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.08652	103.2078	SPP-SWPS-K37
FDNS	06ALL	0	14G	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.08152	103.0967	LAMB COUNTY INTERCHANGE - TOLK STATION WEST 230KV CKT 1
FDNS	00NR	0	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03469	103.0822	CASTRO COUNTY INTERCHANGE - DEAF SMITH REC-#21 115KV CKT 1
FDNS	06ALL	0	14G	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.08152	103.0599	LAMB COUNTY INTERCHANGE (WH ALM20172) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	14G	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.08152	103.0599	SPP-SWPS-K37
FDNS	00NR	0	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03469	102.9918	SPP-SWPS-T04
FDNS	06ALL	0	14G	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.10181	102.1133	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	00NR	0	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03469	101.5461	CASTRO COUNTY INTERCHANGE - DEAF SMITH REC-#21 115KV CKT 1
FDNS	00NR	0	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03469	101.4569	SPP-SWPS-T04
FDNS	06NR	0	14G	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.048	101.2343	SPP-SWPS-K37
FDNS	06ALL	0	14G	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.08152	100.4969	LAMB COUNTY INTERCHANGE - TOLK STATION WEST 230KV CKT 1
FDNS	06ALL	0	14G	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.08152	100.4753	LAMB COUNTY INTERCHANGE (WH ALM20172) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	14G	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.10181	100	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	00NR	0	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03943	99.7	HALE CO INTERCHANGE - TUCO INTERCHANGE 115KV CKT 1
FDNS	06NR	0	14G	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.05495	99.7	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	00NR	0	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.04935	99.5	LAMB COUNTY INTERCHANGE - PLANT X STATION 115KV CKT 1
FDNS	00G13_013	0	14SP	G13_013	FROM->TO	ROOSEVELT COUNTY INTERCHANGE (ABB LMM60042) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03423	120.1372	OASIS INTERCHANGE (ABB LLM60041) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G13_013	0	14SP	G13_013	FROM->TO	ROOSEVELT COUNTY INTERCHANGE (ABB LMM60042) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03423	117.7814	OASIS INTERCHANGE (ABB LLM60041) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0	0	14SP	G13_013	FROM->TO	ROOSEVELT COUNTY INTERCHANGE (ABB LMM60042) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03433	112.4932	OASIS INTERCHANGE (ABB LLM60041) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0	0	14SP	G13_013	FROM->TO	ROOSEVELT COUNTY INTERCHANGE (ABB LMM60042) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03433	110.2807	OASIS INTERCHANGE (ABB LLM60041) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	14G	G13_013	FROM->TO	SPSSPPTIESB	620	0.41857	119.5394	BASE CASE
FDNS	00G13_013	0	14WP	G13_013	FROM->TO	SPSSPPTIESB	620	0.42931	107.5785	BASE CASE
FDNS	06ALL	0	14G	G13_013	FROM->TO	SPSSPPTIESB1	620	0.32792	101.2464	BASE CASE
FDNS	06ALL	0	14G	G13_013	FROM->TO	SPSSPPTIESC	620	0.32792	101.2464	BASE CASE
FDNS	06ALL	0	14G	G13_013	FROM->TO	SPSSPPTIESC1	620	0.41857	119.5394	BASE CASE
FDNS	00G13_013	0	14WP	G13_013	FROM->TO	SPSSPPTIESC1	620	0.42931	107.5785	BASE CASE
FDNS	06ALL	0	14G	G13_013	FROM->TO	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	560	0.37419	117.6087	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	0	14G	G13_013	FROM->TO	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	560	0.37419	115.6988	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	0	14G	G13_013	FROM->TO	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2	560	0.36943	116.1736	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	14G	G13_013	FROM->TO	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2	560	0.36943	114.1066	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	00G13_013	2	14SP	G13_013	TO->FROM	BAILEY COUNTY REC-EARTH INTERCHANGE - PLANT X STATION 115KV CKT 1	160	0.05826	121.8403	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	00G13_013	2	19SP	G13_013	TO->FROM	BAILEY COUNTY REC-EARTH INTERCHANGE - PLANT X STATION 115KV CKT 1	160	0.05731	106.046	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	00G13_013	2	24SP	G13_013	TO->FROM	BAILEY COUNTY REC-EARTH INTERCHANGE - PLANT X STATION 115KV CKT 1	160	0.05767	100.699	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	06NR	2	14G	G13_013	FROM->TO	CURRY COUNTY INTERCHANGE - DEAF SMITH REC-#20 115KV CKT 1	96	0.03165	99	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	06G13_013	2	14G	G13_013	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0567	103.8285	DBL-WWRD-G12
FDNS	6	2	14G	G13_013	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05676	101.5009	DBL-WWRD-G12
FDNS	00G13_013	2	14SP	G13_013	FROM->TO	OASIS INTERCHANGE (ABB LLM60041) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03272	111.3441	ROOSEVELT COUNTY INTERCHANGE (ABB LMM60042) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G13_013	2	14SP	G13_013	FROM->TO	OASIS INTERCHANGE (ABB LLM60041) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03272	109.1669	ROOSEVELT COUNTY INTERCHANGE (ABB LMM60042) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	2	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.05617	121.0372	SPP-SWPS-K37
FDNS	00NR	2	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.05617	119.2466	SPP-SWPS-K37
FDNS	00NR	2	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03747	110.0018	DEAF SMITH COUNTY INTERCHANGE - DEAF SMITH REC-#21 115KV CKT 1
FDNS	00NR	2	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03747	107.8138	DEAF SMITH COUNTY INTERCHANGE - DEAF SMITH REC-#21 115KV CKT 1
FDNS	00NR	2	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03747	104.979	CASTRO COUNTY INTERCHANGE - DEAF SMITH REC-#21 115KV CKT 1
FDNS	00NR	2	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03747	104.8475	SPP-SWPS-T04
FDNS	00NR	2	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03747	103.416	CASTRO COUNTY INTERCHANGE - DEAF SMITH REC-#21 115KV CKT 1
FDNS	06NR	2	14G	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.0498	103.4129	SPP-SWPS-K37
FDNS	00NR	2	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03747	103.2864	SPP-SWPS-T04
FDNS	06NR	2	14G	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.0498	100.6286	SPP-SWPS-K37
FDNS	00NR	2	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.04657	99.8	SWISHER COUNTY INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1
FDNS	00NR	2	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.04436	99.8	DEAF SMITH COUNTY INTERCHANGE (ELCO 13458-1) 230/115/13.8KV TRANSFORMER CKT 2
FDNS	00NR	2	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.05336	99.4	PLANT X STATION - SUNDOWN INTERCHANGE 230KV CKT 1
FDNS	00NR	2	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.04438	99.4	DEAF SMITH COUNTY INTERCHANGE (GE M101353) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	2	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.04447	99.3	SUNDOWN INTERCHANGE (WH XDS70381) 230/115/13.8KV TRANSFORMER CKT 1
FDNS	00NR	2	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.04087	99.2	lamb County REC-Opdyke Sub - SUNDOWN INTERCHANGE 115KV CKT 1
FDNS	00NR	2	14SP	G13_013	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.05091	99	LAMB COUNTY INTERCHANGE - PLANT X STATION 115KV CKT 1
FDNS	00G13_013	2	14SP	G13_013	FROM->TO	ROOSEVELT COUNTY INTERCHANGE (ABB LMM60042) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03268	115.1361	OASIS INTERCHANGE (ABB LLM60041) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G13_013	2	14SP	G13_013	FROM->TO	ROOSEVELT COUNTY INTERCHANGE (ABB LMM60042) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03268	112.8824	OASIS INTERCHANGE (ABB LLM60041) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00NR	4	14SP	G13_013	TO->FROM	BAILEY COUNTY REC-EARTH INTERCHANGE - PLANT X STATION 115KV CKT 1	160	0.03205	99.5	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FNSSL-Blown Up	03ALL	0	14G	G13_014		Non-Converged Contingency	0	0.09945	-	DBL-THIS-CLR
FDNS	03ALL	0	14G	G13_014	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03312	106.8057	MULGREN7 345.00 - RENO COUNTY 345KV CKT 1
FDNS	06ALL	0	14G	G13_014	FROM->TO	TUCXFR345230	300	0.03663	120.3	BASE CASE
FNSSL-Blown Up	03ALL	0	14G	G13_015		Non-Converged Contingency	0	0.10635	-	DBL-THIS-CLR
FDNS	03ALL	0	14G	G13_015	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03706	106.8057	MULGREN7 345.00 - RENO COUNTY 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB	TC%LOADING		CONTINGENCY
							(MVA)	TDF	(% MVA)	
FDNS	03ALL		0 14G	G13_015	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03151	101.9902	DBL-WICH-THI
FDNS	06ALL		0 14G	G13_015	FROM->TO	TUCXFR345230	300	0.03604	120.3	BASE CASE

I: Power Flow Analysis (Constraints from Category C Contingencies)

Available on Request

J: Group 6 Dynamic Stability Analysis Report

See report on next page



Group 6 Impact Study

DISIS-2013-001-2

January 2014
Generator Interconnection



Revision History

Date	Author	Change Description
8/30/2013	SPP	DISIS-2013-001-1 Group 6 Stability Report Issued
1/31/2014	SPP	Account for Withdrawn Projects, Report Re-Posted (DISIS-2013-001-2)

Executive Summary

DISIS-2013-001-2 Interconnection Customers have requested a Definitive Interconnection System Impact Study detailing the impacts of interconnecting the generation projects shown below.

- GEN-2013-013 – 248.4MW wind farm using Siemens 2.3MW generators connected to a 345kV substation along the Eddy County – Tolk 345kV transmission line on the Southwestern Public Service (SPS) Transmission System.
- GEN-2013-016 – 191MW/203MW (summer/winter) combustion turbine generation facility connected at TUCO 345kV Interchange on the Southwestern Public Service (SPS) Transmission System.
- ASGI-2013-002 – 18.4MW wind farm using Siemens 2.3MW generators connected to a 69kV substation on the Farmers Electric Cooperative transmission system. This request was studied as an Affected System request.
- ASGI-2013-003 – 18.4MW wind farm using Siemens 2.3MW generators connected to a 69kV substation on the Farmers Electric Cooperative transmission system. This request was studied as an Affected System request.

There are twenty-nine (29) previously queued generation projects in the Group 6 area.

A stability analysis was performed for the addition of the generation projects in Group 6 to re-evaluate the need for the Sweetwater 345kV Network Upgrades assigned in DISIS-2013-001-1. The analyses were performed on three seasonal models, the modified versions of the 2014 winter peak, the 2015 summer peak, and the 2024 summer peak cases. A total of nineteen (19) contingencies were evaluated for each season.

Transmission System Stability issues were observed with several studied contingencies as noted in Table III-2. Most notable of the issues was low voltage associated with transmission line faults causing the outage of the TUCO-Border-Woodward 345kV transmission line. The outage of these line segments caused voltage depression at the Oklaunion 345kV bus. 345kV transmission reactive power reinforcement is required to alleviate this potential voltage instability. The transmission reactive power reinforcement required is the following –

- Oklaunion 2 Steps of 30MVAR Capacitor Banks (60MVAR total) that may need to have dynamic capability.

With all Base Case Network Upgrades in service, previously assigned Network Upgrades in service, and the above listed newly assigned Network Upgrades in service, the Group 6 projects were found to remain on line, and the transmission system was found to remain stable for all conditions studied.

The analysis identified simulations unstable in the Category ‘C’ analysis for prior outage situation for DISIS-2013-001 Interconnection Requests in the 2014WP, 2015SP, and 2024SP models. The mitigation for this prior outage situation is to back down the dispatch output of the Interconnection Requests.

All generators in the monitored areas remained stable for all of the modeled disturbances.

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

Table of Contents

Revision History.....1

Executive Summary..... i

Table of Contentsiii

I. Introduction..... 1

II. Facilities..... 3

III. Stability Analysis..... 6

 Model Preparation6

 Disturbances.....6

 Results8

 FERC LVRT Compliance..... 10

IV. Power Factor Analysis..... Error! Bookmark not defined.

 Power Factor Analysis **Error! Bookmark not defined.**

 Low Wind Reactor Sizing Analysis **Error! Bookmark not defined.**

V. Conclusion 11

Appendix A: 2014 Winter Peak Stability Plots 12

Appendix B: 2015 Summer Peak Stability Plots 13

Appendix C: 2024 Summer Peak Stability Plots..... Error! Bookmark not defined.

Appendix D: Power Factor Analysis Tables Error! Bookmark not defined.

I. Introduction

DISIS-2013-001 Interconnection Customers have requested a Definitive Interconnection System Impact Study detailing the impacts of interconnecting the generation projects shown Table I-1 below.

Table I-1: Group 6 Interconnection Requests

Request	Capacity (MW)	Generator Model	Point of Interconnection
GEN-2013-013	248.4	Siemens 2.3MW	Tap Eddy County – Tolk 345kV (GEN-2013-013 POI, 560726)
GEN-2013-016	191 Summer 203 Winter	GENROU	TUCO 345kV (525832)
ASGI-2013-002	18.4	Siemens 2.3MW VS	Tucumcari 115kV (524509)
ASGI-2013-003	18.4	Siemens 2.3MW VS	Clovis 115kV (524808)

The previously queued generation projects in the Group 6 area are listed in Table I-2 below.

Table I-2: Group 6 Prior Queued Interconnection Requests

Request	Capacity (MW)	Generator Model	Point of Interconnection
GEN-2001-033	180	Mitsubishi 1000	San Juan Mesa 230kV (524885)
GEN-2001-036	80	CIMTR	Norton 115kV (524502)
GEN-2006-018	170	GENSAL	TUCO 230kV (525830)
GEN-2008-008	60	G.E. 1.5MW	Graham 69kV (526693)
GEN-2008-009	60	G.E. 1.5MW	San Juan Mesa 230kV (524885)
GEN-2008-022	300	G.E. 2.5MW	Tap on Eddy County – Tolk 345kV line (GEN-2008-022-POI, 560007)
GEN-2010-006	180 Summer 205 Winter	GENROU	Jones 230kV(526337)
ASGI-2010-010	42	GENSAL	Lovington 115kV (528334)
ASGI-2010-020	30	Nordex 2.5MW	Tap LE-Tatum – LE-Crossroads 69kV (ASGI-2010-020-POI, 560360)
GEN-2010-020	20	Emerson 0.5MW	Roswell 69kV (527563)
ASGI-2010-021	15	Mitsubishi MPS-1000A 1.0MW	Tap LE-Saunders Tap – LE-Anderson 69kV (ASGI-2010-021 POI, 560364)
GEN-2010-046	56	GENSAL	TUCO 230kV (525830)
GEN-2010-058	20	Emerson 0.5MW	Chaves County 115kV (527482)
ASGI-2011-003	10	Sany 2.0MW	Hendricks 69kV (525943)
ASGI-2011-001	27.3	Suzlon 2.1MW	Lovington 115kV (528334)
GEN-2011-025	80	G.E. 1.6MW	Tap on Floyd County – Crosby County 115kV line (GEN-2011-025 POI, 562004)
GEN-2011-045	180 Summer 205 Winter	GENROU	Jones 230kV (526337)
GEN-2011-046	23 Summer 27 Winter	GENROU	Quay County 115kV (524472)
GEN-2011-048	165 Summer 175 Winter	GENROU	Mustang 230kV (527151)
ASGI-2011-004	19.2	G.E. 1.6MW	Crosby 69kV (525915)

Table I-2: Group 6 Prior Queued Interconnection Requests

Request	Capacity (MW)	Generator Model	Point of Interconnection
GEN-2012-001	61.2	CCWE 3.6MW (WT4)	Tap Grassland – Borden 230kV (GEN-2012-001 POI, 526679)
GEN-2012-009	15 MW increase	GENROU	Mustang 230kV (527151)
GEN-2012-010	15 MW increase	GENROU	Mustang 230kV (527151)
GEN-2012-020	478	G.E. 1.68MW	TUCO 230kV (525830)
GEN-2012-034	7 MW increase	GENROU	Mustang 230kV (527151)
GEN-2012-035	7 MW increase	GENROU	Mustang 230kV (527151)
GEN-2012-036	7 MW increase	GENROU	Mustang 230kV (527151)
GEN-2012-037	196 Summer 203 Winter	GENROU	TUCO 345kV (525832)
ASGI-2012-002	18	Vestas 1.65MW V82	Clovis 115kV (524808)

A stability analysis and a power factor analysis were performed for the addition of the generation projects in Group 6. The analyses were performed on three seasonal models, the modified versions of the 2014 winter peak, the 2015 summer peak, and the 2024 summer peak cases.

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

The power factor analysis determines the power factor at the point of interconnection for the wind interconnection project for pre-contingency and post-contingency conditions. The contingencies used in the power factor analysis (Table IV-2) are a subset of the stability analysis contingencies shown in Table III-1.

Nothing in this System Impact Study constitutes a request for transmission service or grants the Interconnection Customer any rights to transmission service.

II. Facilities

A one-line drawing for each of the generation interconnection requests in this study is shown in Figure II-1 through Figure II-5.

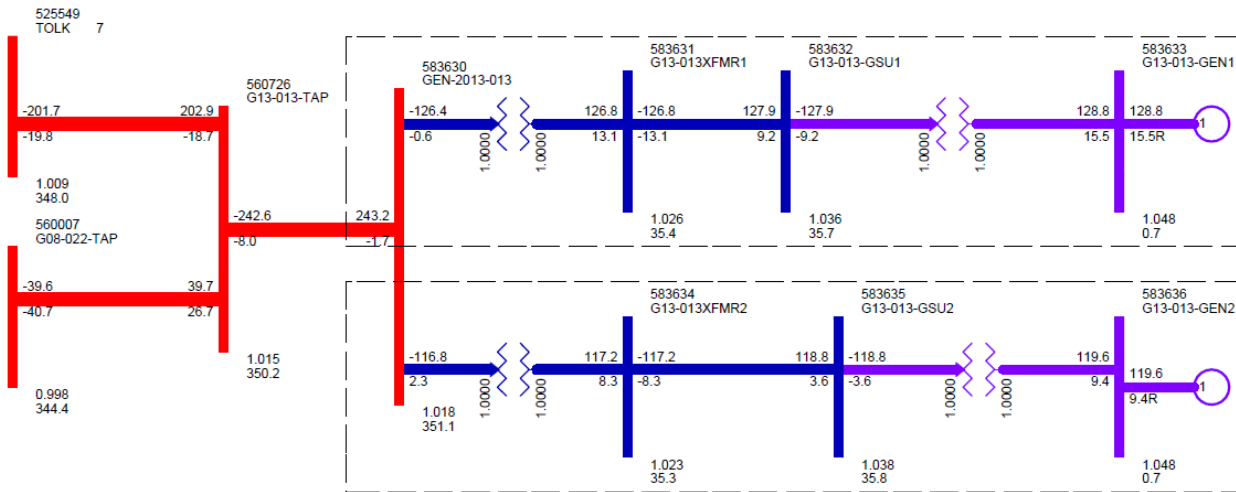


Figure II-1¹: GEN-2013-013 One-line Diagram

¹ Taken from Burns & McDonnell work product from B&M Project #74393 performed under contract to SPP.

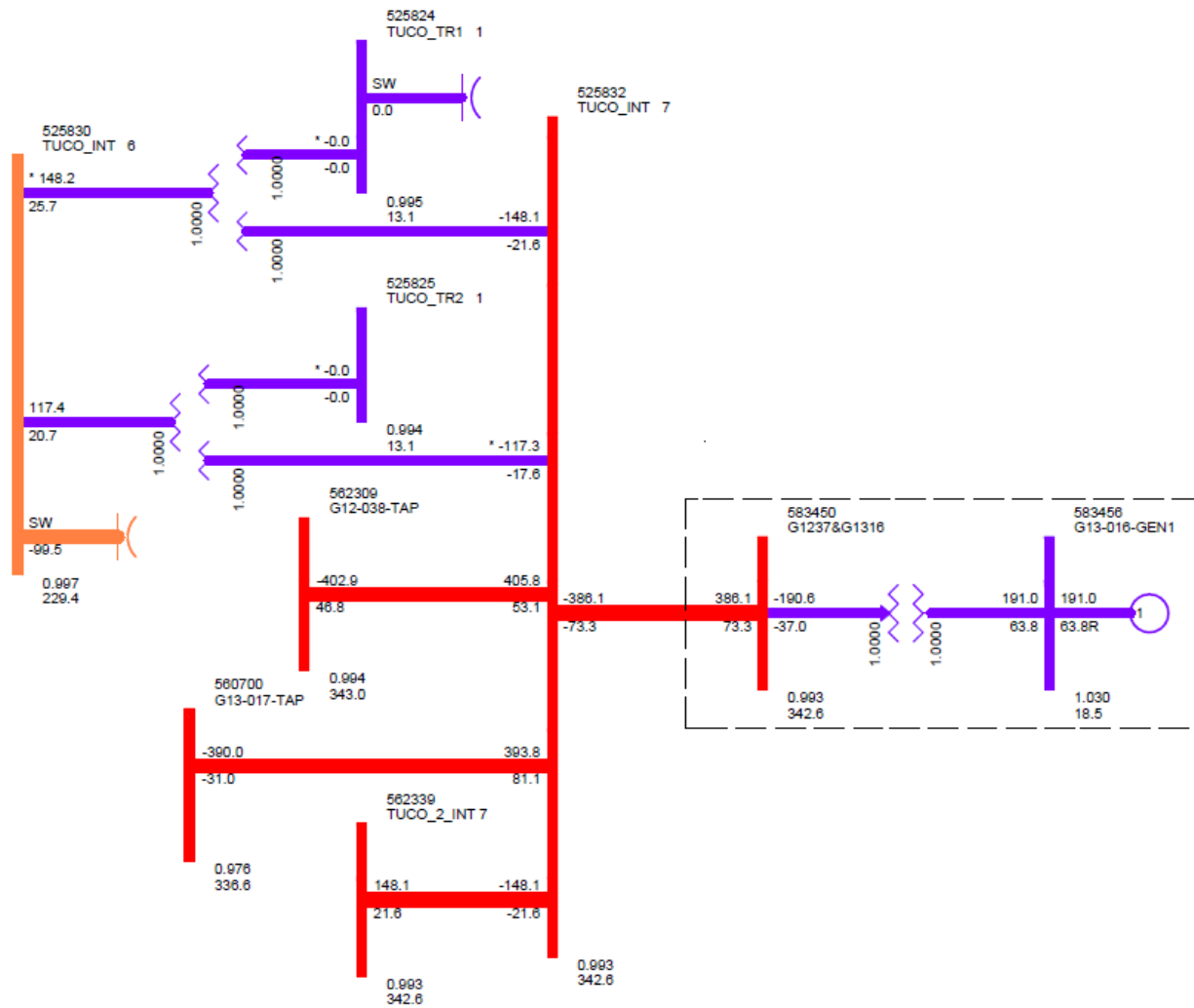


Figure II-2²: GEN-2013-016 One-line Diagram

² Taken from Burns & McDonnell work product from B&M Project #74393 performed under contract to SPP.

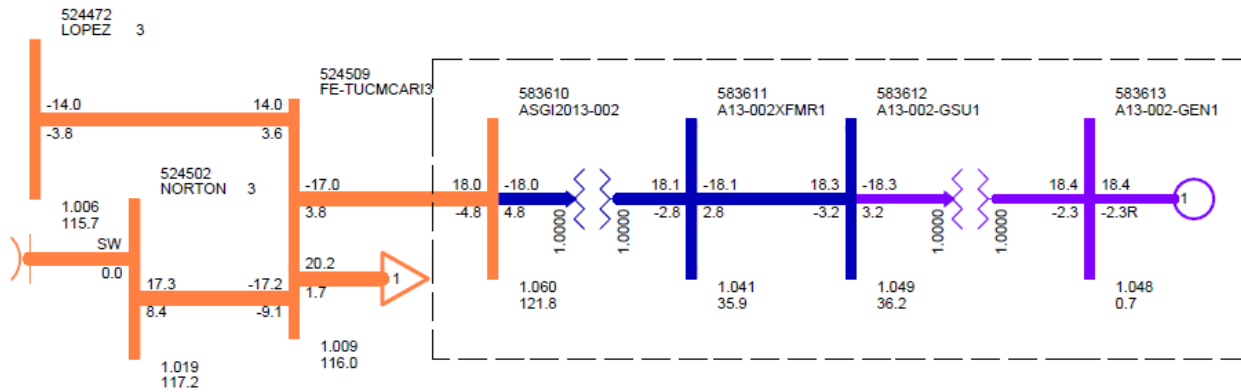


Figure II-4³: ASGI-2013-002 One-line Diagram

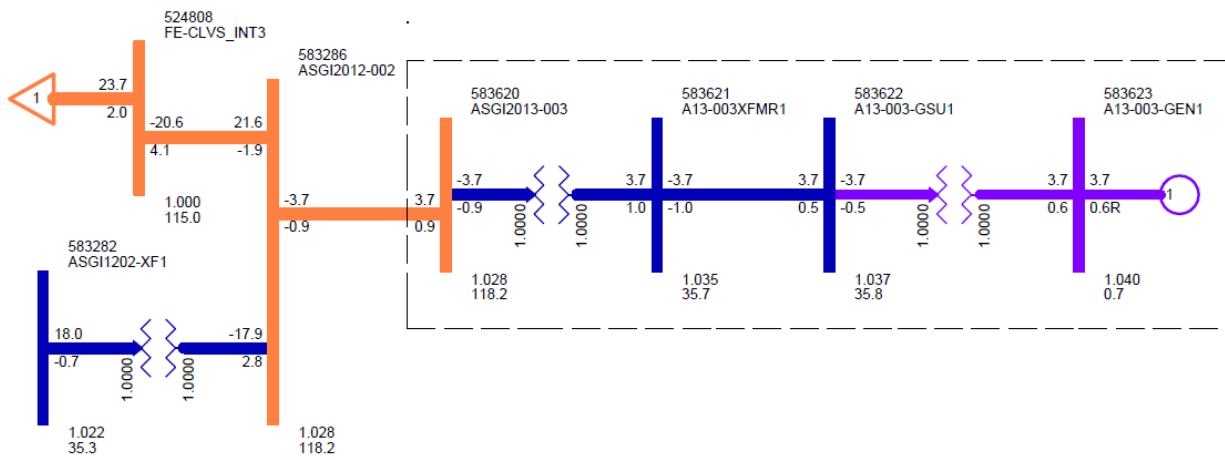


Figure II-5⁴: ASGI-2013-003 One-line Diagram

³ Taken from Burns & McDonnell work product from B&M Project #74393 performed under contract to SPP.

⁴ Taken from Burns & McDonnell work product from B&M Project #74393 performed under contract to SPP.

III. Stability Analysis

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

Model Preparation

Transient stability analysis was performed using modified versions of the 2013 series of Model Development Working Group (MDWG) dynamic study models including the 2014 winter peak, 2015 summer peak, and the 2024 summer peak seasonal models. For the 2024 summer peak season, SPS tie lines were adjusted to compare to the ITP model of the same year. The cases are then loaded with prior queued interconnection requests and network upgrades assigned to those interconnection requests. Finally the prior queued and study generation are dispatched into the SPP footprint. Initial simulations are then carried out for a no-disturbance run of twenty (20) seconds to verify the numerical stability of the model.

Disturbances

Nineteen (19) contingencies were identified for use in this study and are listed in Table III-1. These contingencies included three-phase faults and single-phase line faults at locations defined by SPP. Single-phase line faults were simulated by applying fault impedance to the positive sequence network at the fault location to represent the effect of the negative and zero sequence networks on the positive sequence network. The fault impedance was computed to give a positive sequence voltage at the specified fault location of approximately 60% of pre-fault voltage. This method is in agreement with SPP current practice.

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

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

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

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

The control area monitored is 526.

Table III-1: Contingencies Evaluated

Cont. No.	Contingency Name	Description
1	FLT_01_TUCOINT7_BORDER_345 kV_3PH	3 phase fault on the TUCO Interchange (525832) to Border (515458) 345kV line, near TUCO Interchange. a. Apply fault at the TUCO Interchange 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
2	FLT_02_TUCOINT7_BORDER_345 kV_1PH	<i>Single phase fault and sequence like previous</i>
3	FLT_03_TUCOINT7_OKU_345kV_3PH	3 phase fault on the TUCO Interchange (525832) to Oklaunion (515456) 345kV line, near TUCO Interchange. a. Apply fault at the TUCO Interchange 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
4	FLT_04_TUCOINT7_OKU_345kV_1PH	<i>Single phase fault and sequence like previous</i>
5	FLT_05_BORDER_WWRDEHV7_345kV_3PH	3 phase fault on the Border (515458) to Woodward (515375) 345kV line, near Border. a. Apply fault at the Border 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
6	FLT_06_BORDER_WWRDEHV7_345kV_1PH	<i>Single phase fault and sequence like previous</i>
7	FLT_07_TUCOINT7_TUCOINT6_345_230kV_3PH	3 phase fault on the TUCO Interchange 345kV (525832) / 230kV (525830) / 13.2kV (525825) transformer circuit #1, near TUCO Interchange 3455kV. a. Apply fault at the TUCO Interchange 345kV bus. b. Clear fault after 5 cycles by tripping the faulted transformer.
8	FLT_08_TUCOINT7_TUCOINT6_345_230kV_3PH	3 phase fault on the TUCO Interchange 345kV (525832) / 230kV (525830) / 13.2kV (525823) transformer circuit #2, near TUCO Interchange 3455kV. a. Apply fault at the TUCO Interchange 345kV bus. b. Clear fault after 5 cycles by tripping the faulted transformer.
9	FLT_09_TUCOINT6_SWISHER_230kV_3PH	3 phase fault on the TUCO Interchange (525830) to Swisher (525213) 230kV line, near TUCO Interchange. a. Apply fault at the TUCO Interchange 230kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
10	FLT_10_TUCOINT6_SWISHER_230kV_1PH	<i>Single phase fault and sequence like previous</i>
11	FLT_11_TUCOINT6_TOLKEAST_230kV_3PH	3 phase fault on the TUCO Interchange (525830) to Tolke East (525524) 230kV line, near TUCO Interchange. a. Apply fault at the TUCO Interchange 230kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
12	FLT_12_TUCOINT6_TOLKEAST_230kV_1PH	<i>Single phase fault and sequence like previous</i>

Table III-1: Contingencies Evaluated

Cont. No.	Contingency Name	Description
13	FLT_13_TUCOINT6_CARLISLE_230kV_3PH	3 phase fault on the TUCO Interchange (525830) to Carlisle (526161) 230kV line, near TUCO Interchange. a. Apply fault at the TUCO Interchange 230kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
14	FLT_14_TUCOINT6_CARLISLE_230kV_1PH	<i>Single phase fault and sequence like previous</i>
15	FLT_15_TUCOINT6_JONES_230kV_3PH	3 phase fault on the TUCO Interchange (525830) to Jones (526337) 230kV line, near TUCO Interchange. a. Apply fault at the TUCO Interchange 230kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
16	FLT_16_TUCOINT6_JONES_230kV_1PH	<i>Single phase fault and sequence like previous</i>
17	FLT_17_TUCOINT6_TUCOINT3_230_115kV_3PH	3 phase fault on the TUCO Interchange 230kV (525830) / 115kV (525828) / 13.2kV (525821) transformer circuit #1, near TUCO Interchange 345kV. a. Apply fault at the TUCO Interchange 345kV bus. b. Clear fault after 5 cycles by tripping the faulted transformer.
18	FLT_18_TUCOINT6_TUCOINT3_230_115kV_3PH	3 phase fault on the TUCO Interchange 230kV (525830) / 115kV (525828) / 13.2kV (525819) transformer circuit #2, near TUCO Interchange 345kV. a. Apply fault at the TUCO Interchange 345kV bus. b. Clear fault after 5 cycles by tripping the faulted transformer.
19	FLT_19_TUCOINT7_OKU_345kV_3PH_PO_TUCOINT7_Border	Prior outage on the Border (515458) to TUCO (525832) 345kV circuit #1: 3 phase fault on the Oklaunion (515456) to TUCO (525832) 345kV line, near TUCO. a. Prior outage of Border to Tuco 345kV Ckt 1. b. Apply fault at the TUCO 345kV bus. c. Clear fault after 5 cycles by tripping the faulted line. d. Wait 20 cycles, and then re-close the line in (c) back into the fault. e. Leave fault on for 5 cycles, then trip the line in (c) and remove fault.

NOTE: For prior outage contingencies assume that the network is at steady state after the prior outage.

Results

The stability analysis was performed and the results are summarized in Table III-2. Transmission system stability issues were observed. Most notable of stability issues was voltage depression that was associated with transmission line faults causing the outage of the TUCO-Border-Woodward 345kV transmission line. The outage of these line segments caused voltage depression at the Oklaunion 345kV bus. 345kV transmission reinforcement is required to alleviate this potential voltage instability. The transmission reinforcement required is the following:

- Oklaunion 2 Steps of 30MVAR Capacitor Banks (60MVAR total) that may need to have dynamic capability

The transmission reinforcement listed above were added into the models and all simulations were performed again. These results are listed in Table III-3. The results indicate that the transmission system remained stable for all Category “B” fault contingencies studied.

Some prior outage conditions that were studied indicated potential instability in the power system. For these Category “C” contingencies studied, it will be required to back down (curtail) studied and prior queued generation for the prior outage.

The stability plots will be available upon request.

Table III-2: Stability Analysis Results

	Contingency Number and Name	2014WP	2015SP	2024SP
1	FLT_01_TUPOINT7_BORDER_345kV_3PH	UNSTABLE	STABLE	STABLE
2	FLT_02_TUPOINT7_BORDER_345kV_1PH	UNSTABLE	STABLE	STABLE
3	FLT_03_TUPOINT7_OKU_345kV_3PH	STABLE	STABLE	STABLE
4	FLT_04_TUPOINT7_OKU_345kV_1PH	STABLE	STABLE	STABLE
5	FLT_05_BORDER_WWRDEHV7_345kV_3PH	UNSTABLE	STABLE	STABLE
6	FLT_06_BORDER_WWRDEHV7_345kV_1PH	UNSTABLE	STABLE	STABLE
7	FLT_07_TUPOINT7_TUPOINT6_345_230kV_3PH	STABLE	STABLE	STABLE
8	FLT_08_TUPOINT7_TUPOINT6_345_230kV_3PH	STABLE	STABLE	STABLE
9	FLT_09_TUPOINT6_SWISHER_230kV_3PH	STABLE	STABLE	STABLE
10	FLT_10_TUPOINT6_SWISHER_230kV_1PH	STABLE	STABLE	STABLE
11	FLT_11_TUPOINT6_TOLKEAST_230kV_3PH	STABLE	STABLE	STABLE
12	FLT_12_TUPOINT6_TOLKEAST_230kV_1PH	STABLE	STABLE	STABLE
13	FLT_13_TUPOINT6_CARLISLE_230kV_3PH	STABLE	STABLE	STABLE
14	FLT_14_TUPOINT6_CARLISLE_230kV_1PH	STABLE	STABLE	STABLE
15	FLT_15_TUPOINT6_JONES_230kV_3PH	STABLE	STABLE	STABLE
16	FLT_16_TUPOINT6_JONES_230kV_1PH	STABLE	STABLE	STABLE
17	FLT_17_TUPOINT6_TUPOINT3_230_115kV_3PH	STABLE	STABLE	STABLE
18	FLT_18_TUPOINT6_TUPOINT3_230_115kV_3PH	STABLE	STABLE	STABLE

Table III-3: Stability Analysis Results (with 2 Steps of 30MVAR Capacitor Banks at Oklaunion)

	Contingency Number and Name	2014WP	2015SP	2024SP
1	FLT_01_TUCOINT7_BORDER_345kV_3PH	STABLE	STABLE	STABLE
2	FLT_02_TUCOINT7_BORDER_345kV_1PH	STABLE	STABLE	STABLE
3	FLT_03_TUCOINT7_OKU_345kV_3PH	STABLE	STABLE	STABLE
4	FLT_04_TUCOINT7_OKU_345kV_1PH	STABLE	STABLE	STABLE
5	FLT_05_BORDER_WWRDEHV7_345kV_3PH	STABLE	STABLE	STABLE
6	FLT_06_BORDER_WWRDEHV7_345kV_1PH	STABLE	STABLE	STABLE
7	FLT_07_TUCOINT7_TUCOINT6_345_230kV_3PH	STABLE	STABLE	STABLE
8	FLT_08_TUCOINT7_TUCOINT6_345_230kV_3PH	STABLE	STABLE	STABLE
9	FLT_09_TUCOINT6_SWISHER_230kV_3PH	STABLE	STABLE	STABLE
10	FLT_10_TUCOINT6_SWISHER_230kV_1PH	STABLE	STABLE	STABLE
11	FLT_11_TUCOINT6_TOLKEAST_230kV_3PH	STABLE	STABLE	STABLE
12	FLT_12_TUCOINT6_TOLKEAST_230kV_1PH	STABLE	STABLE	STABLE
13	FLT_13_TUCOINT6_CARLISLE_230kV_3PH	STABLE	STABLE	STABLE
14	FLT_14_TUCOINT6_CARLISLE_230kV_1PH	STABLE	STABLE	STABLE
15	FLT_15_TUCOINT6_JONES_230kV_3PH	STABLE	STABLE	STABLE
16	FLT_16_TUCOINT6_JONES_230kV_1PH	STABLE	STABLE	STABLE
17	FLT_17_TUCOINT6_TUCOINT3_230_115kV_3PH	STABLE	STABLE	STABLE
18	FLT_18_TUCOINT6_TUCOINT3_230_115kV_3PH	STABLE	STABLE	STABLE
19	FLT_19_TUCOINT7_OKU_345kV_3PH_PO_TUCOINT7_Border	UNSTABLE	UNSTABLE	UNSTABLE
20	FLT_19_TUCOINT7_OKU_345kV_3PH_PO_TUCOINT7_Border (Study generation curtailed after the prior outage)	STABLE	STABLE	STABLE

FERC LVRT Compliance

FERC Order #661A places specific requirements on wind farms through its Low Voltage Ride Through (LVRT) provisions. For Interconnection Agreements signed after December 31, 2006, wind farms shall stay on line for faults at the POI that draw the voltage down at the POI to 0.0 pu.

LVRT compliance was not restudied for this analysis. Please refer to DISIS-2013-001-1 for LVRT compliance for wind farms.

IV. Conclusion

DISIS-2013-001 Interconnection Customers have requested an Impact Study to determine the impacts of interconnecting generation to the SPP Transmission System.

Transmission System Stability issues were observed with transmission line faults causing the outage of the TUCO-Border-Woodward 345kV transmission line. The outage of these line segments caused voltage depression at the Oklaunion 345kV bus. To alleviate this potential voltage instability an Oklaunion 2 Steps of 30MVAR Capacitor Banks (60MVAR total) is required.

With all Base Case Network Upgrades in service, previously assigned Network Upgrades in service, and the newly assigned Network Upgrades in service, the Group 6 projects were found to remain

All generators in the monitored areas remained stable for all of the modeled disturbances.

The analysis identified simulations unstable in the Category 'C' analysis for prior outage situation for DISIS-2013-001 Interconnection Requests in the 2014WP, 2015SP, and 2024SP models. The mitigation for this prior outage situation is to back down the dispatch output of the Interconnection Requests.

Any changes to the assumptions made in this study, for example, one or more of the previously queued requests withdraw, may require a re-study at the expense of the Customer.

Nothing in this System Impact Study constitutes a request for transmission service or confers upon the Interconnection Customer any right to receive transmission service.

Appendix A: 2014 Winter Peak Stability Plots

(Available on request)

Appendix B: 2015 Summer Peak Stability Plots

(Available on request)

Appendix C: 2024 Summer Peak Stability Plots

(Available on request)