

Definitive Interconnection  
System Impact Study for  
Generation Interconnection  
Requests  
(DISIS-2012-002-3)

January 2014

Generation Interconnection

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## Revision History

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Date	Author	Change Description
01/31/2013	SPP	Report Issued (DISIS-2012-002)
02/08/2013	SPP	Report Re-Issued for corrections
05/16/2013	SPP	Account for Withdrawn Projects, Report Re-Posted (DISIS-2012-002-1)
08/05/2013	SPP	Account for Withdrawn Projects, Report Re-Posted (DISIS-2012-002-2)
01/23/2014	SPP	Account for Withdrawn Projects, Report Re-Posted (DISIS-2012-002-3)

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## Executive Summary

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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 September 30, 2012. The customers will be referred to in this study as the DISIS-2012-002 Interconnection Customers. This System Impact Study analyzes the interconnecting of multiple generation interconnection requests associated with new generation totaling approximately 2,639.55 MW of new generation which would be located within the transmission systems of American Electric Cooperative Corporation (AEPW), Lincoln Electric System (LES), Midwest Energy Inc. (MIDW), Nebraska Public Power District (NPPD), Oklahoma Gas and Electric (OKGE), Sunflower Electric Power Corporation/Mid-Kansas Electric Power LLC (SUNC)/(MKEC), Southwestern Public Service (SPS), Westar Energy Inc. (WERE), and Western Farmers Electric Cooperative (WFEC). The various generation interconnection requests have differing proposed in-service dates<sup>1</sup>. 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. This restudy was performed to account for withdrawals within the DISIS-2012-002 study and/or higher queued projects withdrawing.

Power flow analysis has indicated that for the power flow cases studied, 2,639.55 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 Order No. 661-A 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.

It should be noted that although this study analyzed many of the most probable contingencies, it is not an all-inclusive list that can account for every operational situation. Additionally, the generator[s] may not be able to inject any power onto the Transmission System due to constraints that fall below the threshold of mitigation for a Generator Interconnection request. Because of this, it is likely that the Customer[s] may be required to reduce their generation output to 0 MW under certain system conditions to allow system operators to maintain the reliability of the transmission network.

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<sup>1</sup> 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 Customer's 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-2012-002 interconnection customers is \$140,761,884.01. These costs are shown in Appendix E and F. Interconnection Service to DISIS-2012-002 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 the Energy Resource (ERIS) Interconnection Request. 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.

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## Introduction

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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 September 30, 2012. The customers will be referred to in this study as the DISIS-2012-002 Interconnection Customers. This System Impact Study analyzes the interconnecting of multiple generation interconnection requests associated with new generation totaling 2,639.55 MW of new generation which would be located within the transmission systems of American Electric Cooperative Corporation (AEPW), Lincoln Electric System (LES), Midwest Energy Inc. (MIDW), Nebraska Public Power District (NPPD), Oklahoma Gas and Electric (OKGE), Sunflower Electric Power Corporation/Mid-Kansas Electric Power LLC (SUNC)/(MKEC), Southwestern Public Service (SPS), Westar Energy Inc. (WERE), and Western Farmers Electric Cooperative (WFEC). The various generation interconnection requests have differing proposed in-service dates<sup>2</sup>. 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. This restudy was performed to account for withdrawals within the DISIS-2012-002 study and/or higher queued projects withdrawing.

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

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<sup>2</sup> 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 Customer's that proceed to the Facility Study will be provided a new in-service date based on the competition of the Facility Study.

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## Model Development

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### Interconnection Requests Included in the Cluster

SPP has included all interconnection requests that submitted a Definitive Interconnection System Impact Study Agreement no later than September 30, 2012 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 Requests

Also included in this Definitive Interconnection System Impact Study is a single Affected System Study, located on the Farmers Electric Cooperative, Inc. (FEC) system, which shares connections to the SPS system. The Affected System Study Requests has been given the designations: ASGI-2012-002 (18MW, Point of Interconnection is FEC-Clovis Interchange 115kV).

### 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, 2019 summer and winter peak, and the 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 were used as starting points for this study.

## Base Case Upgrades

The following facilities are part of the SPP Transmission Expansion Plan or the Balanced Portfolio or recently approved Priority Projects. These facilities, have an approved Notice 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-2012-002 Customers have not been assigned acceleration costs for the below listed projects. The DISIS-2012-002 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.

- Hitchland 230/115kV area projects<sup>3</sup>:
  - Hitchland – Ochiltree 230kV Project, (placed in-service 2013)
- Balanced Portfolio Projects<sup>4</sup>:
  - 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, scheduled for 12/31/2013 in-service
  - Tap Stillwell – Swissvale 345kV line at West Gardner, (placed in-service 2013)
- Priority Projects<sup>5</sup>:
  - 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 double circuit 345kV, scheduled for 12/31/2014 in-service
  - Clark – 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
- Various MKEC Transmission System Upgrades<sup>6</sup>
  - Harper – Flat Ridge 138kV rebuild (placed in-service in 2013)
  - Flat Ridge – Medicine Lodge 138kV rebuild, scheduled for 12/31/2013 in-service
  - Pratt – Medicine Lodge 115kV rebuild, scheduled for 6/15/2014 in-service
  - Medicine Lodge 138/115kV autotransformer replacement (placed in-service in 2013)
- Woodward (OKGE) – Woodward (WFEC) 69kV rebuild, scheduled for 6/1/2015 in-service<sup>7</sup>
- Sheldon – SW7<sup>th</sup> and Pleasant Hill 115kV circuit #2 rebuild (placed in-service in 2013)<sup>8</sup>

## 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-2012-002 study and are assumed to be in service. This list may not be all inclusive. The DISIS-2012-002 Customers at this time do not have responsibility for these facilities but may later be assigned

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<sup>3</sup> SPP Regional Reliability Projects identified in 2007 STEP. As of the writing of this report, SPP Project Tracking TAGIT shows some of these project's in-service dates have been delayed from the original 2010/2011 in-service dates.

<sup>4</sup> Notice to Construct (NTC) issued June 2009.

<sup>5</sup> Notice to Construct (NTC) issued June 2010.

<sup>6</sup> SPP Transmission Service Projects identified in SPP-2007-AG3-AFS-9.

<sup>7</sup> SPP Regional Reliability Project. Per SPP-NTC-20003.

<sup>8</sup> SPP Regional Reliability 2012 ITPNT Project. Per SPP-NTC-200171.



the cost of these facilities if higher queued customers terminate their GIA or withdraw from the interconnection queue. The DISIS-2012-002 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
  - Line Traps at Amarillo South – Swisher 230kV
- Upgrades assigned to DISIS-2009-001 Interconnection Customers:
  - Fort Dodge – North Fort Dodge – Spearville 115kV circuit #2
  - Albion – Petersburg – Neligh 115kV circuit #1 rerate (placed In-Service in 2011)
  - Fort Randall – Madison County – Kelly 230kV circuit #1 rerate (320MVA)
  - Spearville 345/115kV autotransformer circuit #1
- Upgrades assigned to DISIS-2010-001 Interconnection Customers:
  - Beaver County 345kV Expansion (Tap & Tie Hitchland – Woodward circuit #2 into Beaver County 345kV)
  - Switch 2749 – Wildorado 69kV circuit # 1 rebuild
  - Washita – Gracemont 138kV circuit #2 (placed In-Service in 2012)
- Upgrades assigned to DISIS-2010-002 Interconnection Customers:
  - Twin Church – Dixon County 230kV circuit #1 rerate (320MVA)
- Upgrades assigned to DISIS-2011-001 Interconnection Customers:
  - Beaver County – Buckner 345kV circuit #1 build
  - Tatonga – Matthewson – Cimarron 345kV circuit #2 build
    - Tatonga terminal equipment upgrade (1792 MVA)
  - Rice County – Circle 230kV conversion (placed In-Service in 2012)
  - Rice County – Lyons 115kV rebuild (placed In-Service in 2013)
  - Rice County 230/115kV autotransformer (placed In-Service in 2012)
  - Lyons – Wheatland 115kV rerate (199 MVA) (placed In-Service in 2012)
  - Hoskins – Dixon County – Twin Church 230kV circuit #1 rerate
  - (NRIS only) Spearville – Mullergren 230kV circuit #1 rebuild
  - (NRIS only) FPL Switch – Woodward - Mooreland 138kV circuit #1 rebuild
  - (NRIS only) Hitchland 230/115kV transformer circuit #2, build
  - (NRIS only) TUCO – New Deal 345kV Project , build
- 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)
  - GEN-2011-017 Tap – Mullergren 345kV circuit #1 build
    - Build Mullergren 345/230kV Substation
    - Build Mullergren 345/230/13kV Transformer
  - SUB 967 - SUB 968 69kV circuit #1 replace terminal equipment
  - (NRIS only) Hydro Carbon Tap - Sub974 69kV circuit #1 rewire CT
  - (NRIS only) Lubbock South 230/115kV Autotransformer build circuit #2
  - (NRIS only) Build Mullergren – Reno 345kV circuit #1
  - (NRIS only) Nebraska City U Syracuse – SUB 970 circuit #1 replace terminal equipment
  - (NRIS only ) Yoakum 230/115kV transformer circuit #1 and circuit #2
- Upgrades assigned to DISIS-2012-001 Interconnection Customers:
  - Mustang – Yoakum 230kV circuit #1 replace line traps

- Dobson – Gano 115kV circuit #1 replace terminal equipment
- Garden City – Kansas Avenue 115kV circuit #1 replace terminal equipment

### **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 in fifteen different 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 equal 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 each interconnection request modeled at 100% nameplate.

Peaking units were not dispatched in the 2014 spring model. To study peaking units' impacts, the 2014 summer and winter, 2019 summer and winter, and 2024 summer peak 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 dispatched at 100% nameplate output while the other groups were dispatched at 20% output for wind requests and 100% output for thermal requests.

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## Identification of Network Constraints

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The initial set of network constraints were found by using PTI 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 considered for mitigation.

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## Determination of Cost Allocated Network Upgrades

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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 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.

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## **Required Interconnection Facilities**

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The requirement to interconnect the 2,639.55 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 \$140,761,884.01. 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.

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## **Power Flow Analysis**

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### **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, and 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 (ER) Interconnection Request. Certain requests that requested 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 AECl, NPPD, OKGE, SPS, and WFEc transmission systems under system intact and contingency conditions in the peak seasons.

**Cluster Group 1 (Woodward Area)**

In addition to the 4,635.1 MW of previously queued generation in the area, 512.0 MW of new interconnection service was studied. No new constraints were 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 4,210.4 MW of previously queued generation in the area, 180.0 MW of new interconnection service was studied. Power flow analysis indicates a need for Mullergren – Reno 345kV line due to potential voltage collapse for the outage of Clark County - Thistle 345kV circuit #2. This is a prior queued NRIS upgrade from DISIS 2011-002-3. The cost of this upgrade is approximately \$107,000,000 and may be assigned to DISIS-2012-002 Customers in the case of a higher queued request withdrawal.

Group 3: ERIS Constraints			
MONITORED ELEMENT	RATE B (MVA)	TC%LOADI NG (% MVA)	CONTINGENCY
Non-converged Contingency	1793	-	CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 2

**Cluster Group 4 (NW Kansas Group)**

In addition to the 1,888.1 MW of previously queued generation in the area, 100.0 MW of new interconnection service was studied. No new constraints were found in this area.

**Cluster Group 5 (Amarillo Area)**

In addition to the 1,332.6 MW of previously queued generation in the area, 0.0 MW of new interconnection service was studied. No new constraints were found in this area.

**Cluster Group 6 (South Texas Panhandle/New Mexico)**

In addition to the 2,471.5 MW of previously queued generation in the area, 720.15 MW of new interconnection service was studied. No new constraints were found in this area.

**Cluster Group 7 (Southwestern Oklahoma)**

In addition to the 1,825.2 MW of previously queued generation in the area, 74.8 MW of new interconnection service was studied. Constraints for mitigation in this area consist of replacing the CT on Lake Creek – Lone Wolf 69kV.

Group 7: ERS Constraints			
MONITORED ELEMENT	RATE B (MVA)	TC%LOADING NG (% MVA)	CONTINGENCY
LAKE CREEK - LONEWOLF 69KV CKT 1	48	132.2	ELK CITY (ELKCTY-4) 138/69/13.8KV TRANSFORMER CKT 1

### Cluster Group 8 (South Central Kansas/North Oklahoma)

In addition to the 1,909.5 MW of previously queued generation in the area, 847.8 MW of new interconnection service was studied. Per AECI Affected System Study the Remington – Fairfax 138kV circuit #1 and Fairfax 138/69kV circuit #1 overloads were fixed for ERS upgrades. For interconnection requests with NRIS, a number of additional upgrades were identified in Appendix F for mitigation of the overloads.

Group 8: NRIS Constraints			
MONITORED ELEMENT	RATE B (MVA)	TC%LOADING (% MVA)	CONTINGENCY
OAK - RAINBOW 69KV CKT 1	43	111.4618	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1
CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	111.4406	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1
CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	110	111.3105	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1
ARKANSAS CITY - PARIS 69KV CKT 1	72	109.0056	CRESWELL - OAK 69KV CKT 1
CITY OF WINFIELD - RAINBOW 69KV CKT 1	43	107.0533	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1
CRESWELL - OAK 69KV CKT 1	108	102.8503	CRESWELL - PARIS 69KV CKT 1
CRESWELL - PARIS 69KV CKT 1	100	100.4388	CRESWELL - OAK 69KV CKT 1

### Cluster Group 9/10 (Nebraska)

In addition to the 1,587.9 MW of previously queued generation in the area, 204.8 MW of new interconnection service was studied. An additional 200 MW of requested generation on the Twin Church – Hoskins 230kV line will cause the need for additional 230kV transmission reinforcements in this area. To mitigate this constraint, a new 230kV line to the Western Area Power Administration (WAPA) is proposed. Further coordination with WAPA will occur in the Facility Study.

Group 9: ERS Constraints			
MONITORED ELEMENT	RATE B (MVA)	TC%LOADING (% MVA)	CONTINGENCY
G10-51T 230.00 - TWIN CHURCH 230KV CKT 1	320	166.0609	G10-51T 230.00 - HOSKINS 230KV CKT 1
G10-51T 230.00 - HOSKINS 230KV CKT 1	320	165.6882	G10-51T 230.00 - TWIN CHURCH 230KV CKT 1
SIOUX CITY - TWIN CHURCH 230KV CKT 1	320	110.7479	G10-51T 230.00 - HOSKINS 230KV CKT 1
HOSKINS (HOSKINS T1) 230/115/13.8KV TRANSFORMER CKT 1	187	104.4975	G10-51T 230.00 - TWIN CHURCH 230KV CKT 1

### Cluster Group 12 (Northwest Arkansas)

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

### 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, 0.0 MW of new interconnection service was studied. No new constraints were found in this area.

**Curtailement 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 under certain system conditions to allow system operators to maintain the reliability of the transmission network.

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## Stability Analysis

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A stability analysis was conducted for each Interconnection Customer's facility using modified versions of the 2013 series SPP Model Development Working Group (MDWG) Models 2014 winter, 2015 summer, and 2024 summer peak dynamic models. 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.

### **Cluster Group 1 (Woodward Area)**

The Group 1 stability analysis was not performed again for this restudy. The original analysis in DISIS-2012-002 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-2012-002 is still valid.

### **Cluster Group 4 (Mingo Area)**

The Group 4 stability analysis was not performed again for this restudy. The original analysis in DISIS-2012-002 is still valid.

### **Cluster Group 5 (Amarillo Area)**

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

### **Cluster Group 6 (South Texas Panhandle/New Mexico)**

The Group 6 stability analysis was not performed again for this restudy. The original analysis in DISIS-2012-002 is still valid.

### **Cluster Group 7 (Southwest Oklahoma Area)**

The Group 7 stability analysis was not performed again for this restudy. The original analysis in DISIS-2012-002 is still valid.

### **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-2012-002 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-2012-002 is still valid.



### **Cluster Group 11 (North Central Kansas Area)**

This area number is reserved.

### **Cluster Group 12 (Northwest Arkansas Area)**

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

### **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)**

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

### **Cluster Group 15 (reserved)**

This group has been retired and all prior Group 15 requests have been re-designated as Group 9/10 requests.

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## Conclusion

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The minimum cost of interconnecting 2,639.55 MW of new interconnection requests included in this Definitive Interconnection System Impact Study is estimated at \$140,761,884.01 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).

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# Appendix

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**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-2012-002	18.15	ER	SPS	FE-Clovis Interchange 115kV	FE-Clovis Interchange 115kV		
GEN-2012-016	312.00	ER	OKGE	Tap Woodward - Thistle 345kV Ckt 1	Tap Woodward - Thistle 345kV Ckt 1	3/1/2017	12/31/2014
GEN-2012-018	200.00	ER	NPPD	Tap Hoskins - Twin Church 230kV (GEN-2010-051T)	Tap Hoskins - Twin Church 230kV (GEN-2010-051T)	12/15/2014	TBD
GEN-2012-020	478.00	ER	SPS	TUCO 230kV	TUCO 230kV	9/30/2015	12/31/2014
GEN-2012-021	4.80	ER	LES	Terry Bundy Generating Station 115kV	Terry Bundy Generating Station 115kV	8/1/2013	TBD
GEN-2012-023	115.00	ER	WERE	Viola 345kV	Viola 345kV	12/31/2014	TBD
GEN-2012-024	180.00	ER	SUNCMKEC	Clark County 345kV	Clark County 345kV	12/31/2015	12/31/2014
GEN-2012-026	100.00	ER/NR	MIDW	Colby 115kV	Colby 115kV	12/31/2014	TBD
GEN-2012-027	136.00	ER	AEPW	Shidler 138kV	Shidler 138kV	12/1/2014	TBD
GEN-2012-028	74.80	ER	WFEC	Gotebo 69kV	Gotebo 69kV	12/1/2014	TBD
GEN-2012-031	200.00	ER	OKGE	Cimarron 345kV (GEN-2010-040 Sub)	Cimarron 345kV (GEN-2010-040 Sub)	11/30/2014	TBD
GEN-2012-032	300.00	ER	OKGE	Tap Rose Hill - Sooner 345kV	Tap Rose Hill - Sooner (Ranch) 345kV	11/30/2014	TBD
GEN-2012-033	98.80	ER	OKGE	Tap and Tie South 4th - Bunch Creek & Enid Tap - Fairmont (GEN-2012-033T) 138kV	Tap and Tie South 4th - Bunch Creek & Enid Tap - Fairmont (GEN-2012-033T) 138kV	12/1/2014	TBD
GEN-2012-034	7.00	ER	SPS	Mustang 230kV	Mustang 230kV	6/1/2013	TBD
GEN-2012-035	7.00	ER	SPS	Mustang 230kV	Mustang 230kV	6/1/2013	TBD
GEN-2012-036	7.00	ER	SPS	Mustang 230kV	Mustang 230kV	6/1/2013	TBD
GEN-2012-037	203.00	ER	SPS	TUCO 345kV	TUCO 345kV	3/1/2015	12/31/2014
GEN-2012-040	76.50	ER/NR	WFEC	Chilocco 138kV	Chilocco 138kV	12/1/2013	TBD
GEN-2012-041	121.50	ER	OKGE	Tap Rose Hill - Sooner 345kV	Tap Rose Hill - Sooner 345kV	4/15/2015	TBD
<b>Total: 2,639.55</b>							

\*Requests that 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-2012-006	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
GEN-2006-026	604.00	SPS	Hobbs 230kV & Hobbs 115kV	On-Line

Request	Amount	Area	Requested/Proposed Point of Interconnection	Status or In-Service Date
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 80MW
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 2014
GEN-2007-048	400.00	SPS	Tap Amarillo S - Swisher 230kV	On Schedule for 2014
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 Schedule for 2014
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	IA Pending
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 Schedule for 2014
GEN-2008-092	201.00	MIDW	Post Rock 230kV	IA Pending
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 Schedule for 2015



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 Schedule for 2015
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 Suspension
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	IA Pending
GEN-2011-018	73.60	NPPD	Steele City 115kV	On Schedule for 2013
GEN-2011-019	299.00	OKGE	Woodward 345kV	IA Pending
GEN-2011-020	299.00	OKGE	Woodward 345kV	IA Pending
GEN-2011-021	299.00	OKGE	Tap Hitchland - Woodward Dbl Ckt (Beaver County) 345kV	IA Pending
GEN-2011-022	299.00	SPS	Hitchland 345kV	IA Pending
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 Schedule for 2013
GEN-2011-048	175.00	SPS	Mustang 230kV	On Schedule for 2014
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	IA Pending
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
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
<b>Total: 23,369.5</b>				

## **C: Study Groupings**

See next page

## C. Study Groups

<b>GROUP 1: WOODWARD AREA</b>			
<b>Request</b>	<b>Capacity</b>	<b>Area</b>	<b>Proposed Point of Interconnection</b>
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
<b>PRIOR QUEUED SUBTOTAL</b>	<b>4,635.10</b>		
GEN-2012-016	312.00	OKGE	Tap Woodward - Thistle 345kV Ckt 1
GEN-2012-031	200.00	OKGE	Cimarron 345kV (GEN-2010-040 Sub)
<b>CURRENT CLUSTER SUBTOTAL</b>	<b>512.00</b>		
<b>AREA TOTAL</b>	<b>5,147.10</b>		

<b>GROUP 2: HITCHLAND AREA</b>			
<b>Request</b>	<b>Capacity</b>	<b>Area</b>	<b>Proposed Point of Interconnection</b>
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
<b>PRIOR QUEUED SUBTOTAL</b>	<b>2,961.20</b>		
<b>AREA TOTAL</b>	<b>2,961.20</b>		

<b>GROUP 3: SPEARVILLE AREA</b>			
<b>Request</b>	<b>Capacity</b>	<b>Area</b>	<b>Proposed Point of Interconnection</b>
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)
Gray County Wind (Montezuma)	110.00	SUNCMKEC	Gray County Tap 115kV
<b>PRIOR QUEUED SUBTOTAL</b>	<b>4,210.40</b>		
GEN-2012-024	180.00	SUNCMKEC	Clark County 345kV
<b>CURRENT CLUSTER SUBTOTAL</b>	<b>180.00</b>		
<b>AREA TOTAL</b>	<b>4,390.40</b>		

**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
<b>PRIOR QUEUED SUBTOTAL</b>	<b>1,888.10</b>		
GEN-2012-026	100.00	MIDW	Colby 115kV
<b>CURRENT CLUSTER SUBTOTAL</b>	<b>100.00</b>		
<b>AREA TOTAL</b>	<b>1,988.10</b>		

**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-2007-048	400.00	SPS	Tap Amarillo S - Swisher 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
<b>PRIOR QUEUED SUBTOTAL</b>	<b>1,332.60</b>		
<b>AREA TOTAL</b>	<b>1,332.60</b>		

<b>GROUP 6: S-TX PANHANDLE/W-TX AREA</b>			
<b>Request</b>	<b>Capacity</b>	<b>Area</b>	<b>Proposed Point of Interconnection</b>
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
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
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
<b>PRIOR QUEUED SUBTOTAL</b>	<b>2,471.50</b>		
ASGI-2012-002	18.15	SPS	FE-Clovis Interchange 115kV
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
<b>CURRENT CLUSTER SUBTOTAL</b>	<b>720.15</b>		
<b>AREA TOTAL</b>	<b>3,191.65</b>		



**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
<b>PRIOR QUEUED SUBTOTAL</b>	<b>1,825.20</b>		
GEN-2012-028	74.80	WFEC	Gotebo 69kV
<b>CURRENT CLUSTER SUBTOTAL</b>	<b>74.80</b>		
<b>AREA TOTAL</b>	<b>1,900.00</b>		

**GROUP 8: N-OK/S-KS AREA**

Request	Capacity	Area	Proposed Point of Interconnection
ASGI-2010-006	150.00	AECI	Tap Fairfax (AECI) - Schilder (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
<b>PRIOR QUEUED SUBTOTAL</b>	<b>1,909.50</b>		
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
<b>CURRENT CLUSTER SUBTOTAL</b>	<b>847.80</b>		
<b>AREA TOTAL</b>	<b>2,757.30</b>		

<b>GROUP 9/10: NEBRASKA AREA</b>			
<b>Request</b>	<b>Capacity</b>	<b>Area</b>	<b>Proposed Point of Interconnection</b>
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
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
<b>PRIOR QUEUED SUBTOTAL</b>	<b>1,587.90</b>		
GEN-2012-018	200.00	NPPD	Tap Hoskins - Twin Church 230kV (GEN-2010-051T)
GEN-2012-021	4.80	LES	Terry Bundy Generating Station 115kV
<b>CURRENT CLUSTER SUBTOTAL</b>	<b>204.80</b>		
<b>AREA TOTAL</b>	<b>1,792.70</b>		

**GROUP 12: NW-AR AREA**

Request	Capacity	Area	Proposed Point of Interconnection
<b>AREA TOTAL</b>	<b>0.00</b>		

**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
<b>PRIOR QUEUED SUBTOTAL</b>	<b>285.80</b>		
<b>AREA TOTAL</b>	<b>285.80</b>		

**GROUP 14: S-OKLAHOMA AREA**

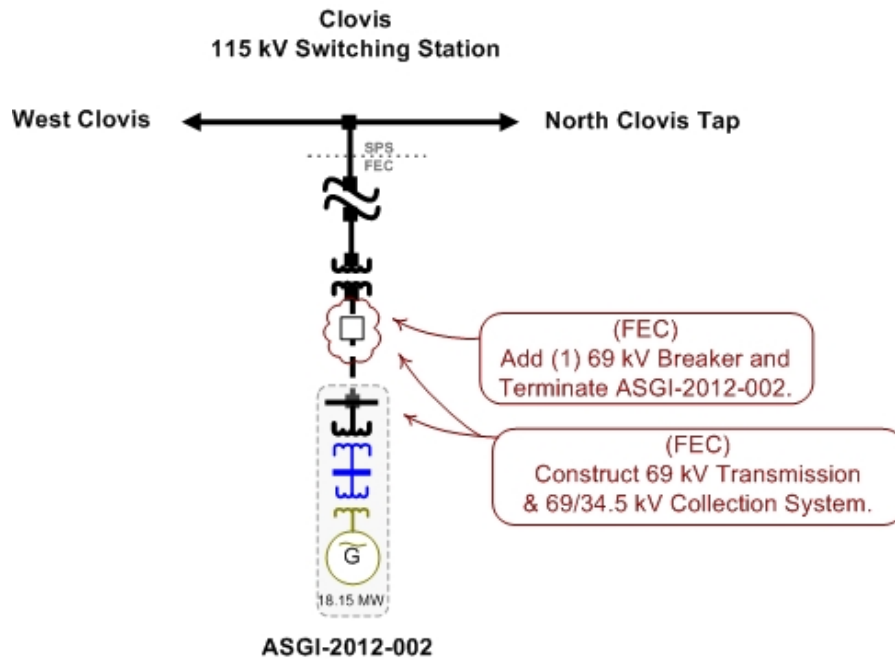
Request	Capacity	Area	Proposed Point of Interconnection
GEN-2011-040	111.00	OKGE	Tap Ratliff - Pooleville 138kV
GEN-2011-050	109.80	AEPW	Rush Springs Natural Gas Tap 138kV
GEN-2012-004	41.40	OKGE	Tap Ratliff - Pooleville (Carter County) 138kV
<b>PRIOR QUEUED SUBTOTAL</b>	<b>262.20</b>		
<b>AREA TOTAL</b>	<b>262.20</b>		

<b>CLUSTER TOTAL (CURRENT STUDY)</b>	<b>2,639.6</b>	<b>MW</b>
<b>PQ TOTAL (PRIOR QUEUED)</b>	<b>23,369.5</b>	<b>MW</b>
<b>CLUSTER TOTAL (INCLUDING PRIOR QUEUED)</b>	<b>26,009.1</b>	<b>MW</b>

### **D: Proposed Point of Interconnection One line Diagrams**

**\*\*Refer to most recent Facility study for each request for an updated one-line.\*\***

#### **ASGI-2012-002**



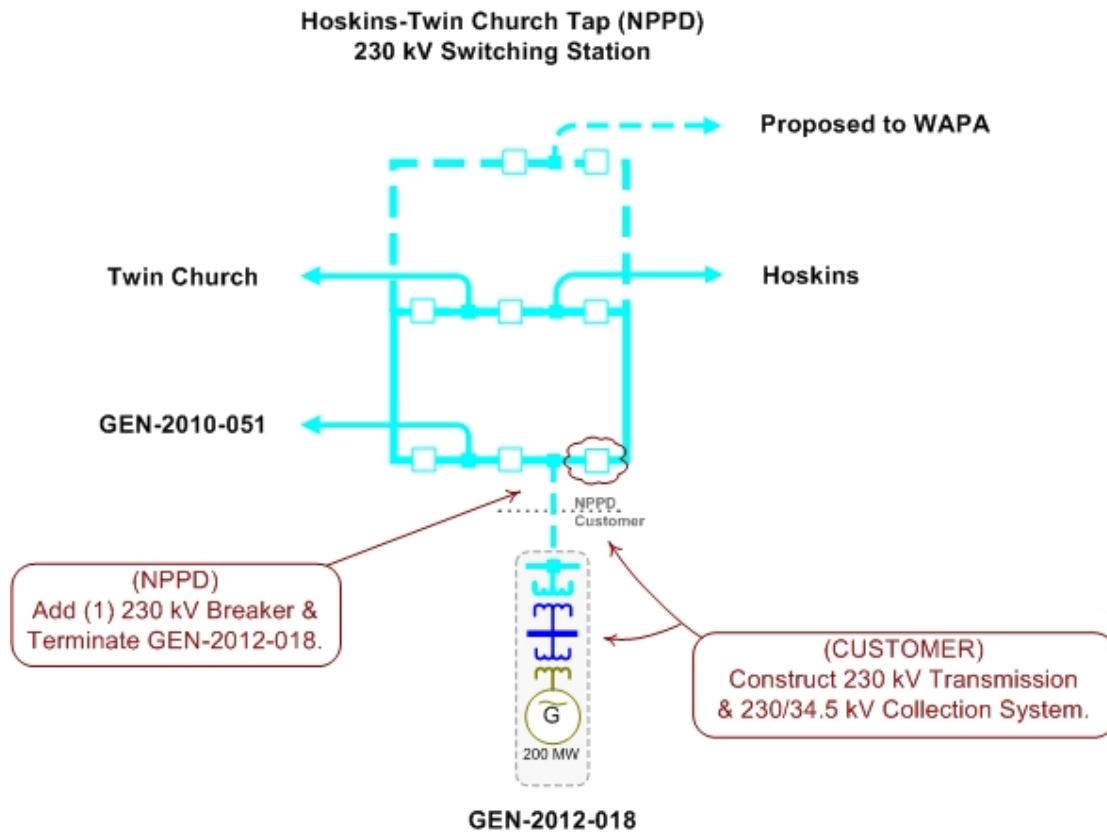
#### **GEN-2012-016**

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

#### **GEN-2012-017**

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

**GEN-2012-018**



**GEN-2012-020**

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

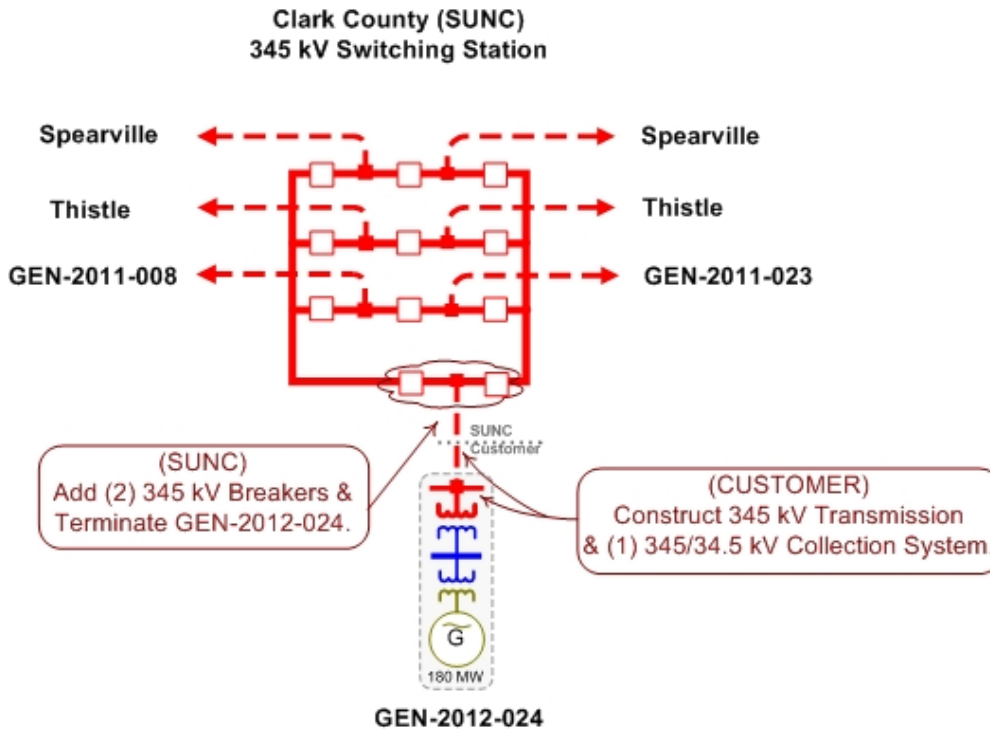
**GEN-2012-021**

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

**GEN-2012-023**

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

**GEN-2012-024**



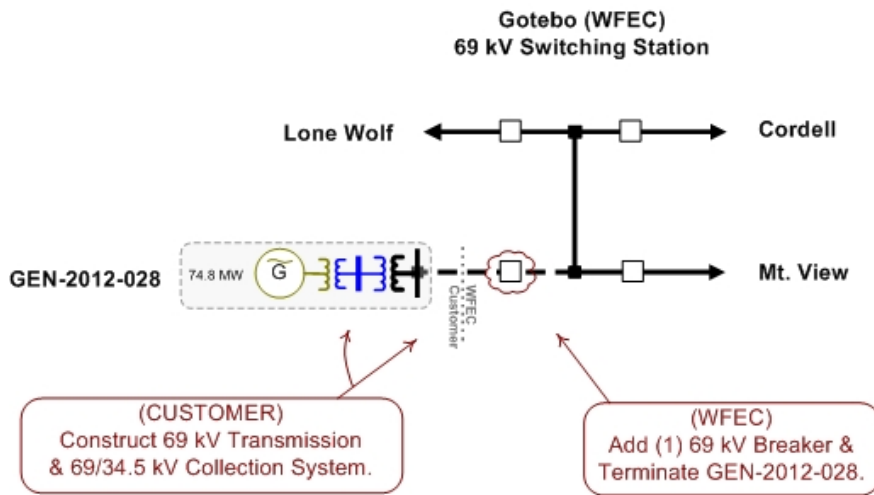
**GEN-2012-026**

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

**GEN-2012-027**

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

**GEN-2012-028**



**GEN-2012-031**

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

**GEN-2012-032**

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

**GEN-2012-033**

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

**GEN-2012-034**

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

**GEN-2012-035**

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

**GEN-2012-036**

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

**GEN-2012-037**

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

**GEN-2012-040**

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

**GEN-2012-041**

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



## **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.

# Appendix E. Cost Allocation Per Request

(Including Previously Allocated Network Upgrades\*)

Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
<b>ASGI-2012-002</b>			
ASGI-2012-002 Interconnection Cost See One-Line Diagram.	Current Study	\$0.00	\$0.00
Nichols - Harrington Mid 230kV CKT 1 Per GEN-2008-051 LOIS: Rebuild approximately 1 mile of 230kV @ 1825 amps	In-Service		\$869,251.00
Nichols - Harrington West 230kV CKT 1 Per GEN-2008-051 LOIS: Rebuild approximately 1 mile of 230kV @ 1825 amps	In-Service		\$869,251.00
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
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
Power System Stabilizers (PSS) Install Power System Stabilizers @ Tolk(Units: 1,2) and Jones (Units: 1,2,3,4)	Previously Allocated		\$300,000.00
Thistle - Wichita 345KV Dbl CKT Priority Project: Thistle - Wichita Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$426,504,292.00
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
	<b>Current Study Total</b>	<b>\$0.00</b>	

\* 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
<b>GEN-2012-016</b>			
GEN-2012-016 Interconnection Cost See One-Line Diagram.	Current Study	\$16,844,894.00	\$16,844,894.00
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
Matthewson - Cimarron 345kV CKT 2 Build second 345kV circuit from Matthewson - Cimarron @ 3000 amps	Previously Allocated		\$42,903,753.00
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 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
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
	<b>Current Study Total</b>	<b>\$16,844,894.00</b>	

<b>GEN-2012-018</b>			
Dixon County - Rasmussen 230kV CKT 1 Build approximately 40 miles of new 230kV	Current Study	\$40,000,000.00	\$40,000,000.00
GEN-2012-018 Interconnection Cost See One-Line Diagram.	Current Study	\$3,000,000.00	\$3,000,000.00
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
	<b>Current Study Total</b>	<b>\$43,000,000.00</b>	

\* 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
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**GEN-2012-020**

GEN-2012-020 Interconnection Cost See One-Line Diagram.	Current Study	\$1,760,377.00	\$1,760,377.00
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
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
Power System Stabilizers (PSS) Install Power System Stabilizers @ Tolk(Units: 1,2) and Jones (Units: 1,2,3,4)	Previously Allocated		\$300,000.00
Thistle - Wichita 345KV Dbl CKT Priority Project: Thistle - Wichita Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$426,504,292.00
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
	<b>Current Study Total</b>	<b>\$1,760,377.00</b>	

**GEN-2012-021**

GEN-2012-021 Interconnection Cost See One-Line Diagram.	Current Study	\$0.00	\$0.00
Nashua 345/161/13.8KV Autotransformer CKT 1 Balanced Portfolio: Nashua/161/13.8 Autotransformer 345kV CKT 1 (Total Project E&C Cost Shown).	Previously Allocated		\$4,230,000.00
	<b>Current Study Total</b>	<b>\$0.00</b>	

\* 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-2012-023

GEN-2012-023 Interconnection Cost See One-Line Diagram.	Current Study	\$26,583.00	\$26,583.00
Matthewson - Cimarron 345kV CKT 2 Build second 345kV circuit from Matthewson - Cimarron @ 3000 amps	Previously Allocated		\$42,903,753.00
	<b>Current Study Total</b>	<b>\$26,583.00</b>	

### GEN-2012-024

GEN-2012-024 Interconnection Cost See One-Line Diagram.	Current Study	\$5,000,000.00	\$5,000,000.00
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
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 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
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

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

<b>Interconnection Request and Upgrades</b>	<b>Upgrade Type</b>	<b>Allocated Cost</b>	<b>Upgrade Cost</b>
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 - 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
	<b>Current Study Total</b>	<b>\$5,000,000.00</b>	

### **GEN-2012-026**

GEN-2012-026 Interconnection Cost See One-Line Diagram.	Current Study	\$7,892,160.00	\$7,892,160.00
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
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
Dobson - Gano 115kV CKT 1 Replace Terminal Equipment	Previously Allocated		\$82,481.09
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

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

<b>Interconnection Request and Upgrades</b>	<b>Upgrade Type</b>	<b>Allocated Cost</b>	<b>Upgrade Cost</b>
Matthewson - Cimarron 345kV CKT 2 Build second 345kV circuit from Matthewson - Cimarron @ 3000 amps	Previously Allocated		\$42,903,753.00
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 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 - Wichita 345KV Dbl CKT Priority Project: Thistle - Wichita Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$426,504,292.00
	<b>Current Study Total</b>		<b>\$7,892,160.00</b>

### **GEN-2012-027**

Fairfax 138/69kV CKT 1 Per AECL Affected System Study for DISIS-2012-002	Current Study	\$2,200,000.00	\$2,200,000.00
GEN-2012-027 Interconnection Cost See One-Line Diagram.	Current Study	\$1,779,284.00	\$1,779,284.00
Remington - Fairfax 138KV CKT 1 Increase conductor clearance	Current Study	\$400,000.00	\$400,000.00
	<b>Current Study Total</b>		<b>\$4,379,284.00</b>

### **GEN-2012-028**

GEN-2012-028 Interconnection Cost See One-Line Diagram.	Current Study	\$947,972.00	\$947,972.00
Lake Creek- Lone Wolf 69kV CKT 1 Reset CT.	Current Study	\$197,972.00	\$197,972.00
	<b>Current Study Total</b>		<b>\$1,145,944.00</b>

### **GEN-2012-031**

GEN-2012-031 Interconnection Cost See One-Line Diagram.	Current Study	\$40,000.00	\$40,000.00
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\* Withdrawal of higher queued projects will cause a restudy and may result in higher costs

<b>Interconnection Request and Upgrades</b>	<b>Upgrade Type</b>	<b>Allocated Cost</b>	<b>Upgrade Cost</b>
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
Matthewson - Cimarron 345kV CKT 2 Build second 345kV circuit from Matthewson - Cimarron @ 3000 amps	Previously Allocated		\$42,903,753.00
Thistle - Woodward 345KV Dbl CKT Priority Project: Thistle - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$207,782,000.00
	<b>Current Study Total</b>	\$40,000.00	
<b>GEN-2012-032</b>			
GEN-2012-032 Interconnection Cost See One-Line Diagram.	Current Study	\$8,654,353.00	\$8,654,353.00
	<b>Current Study Total</b>	\$8,654,353.00	
<b>GEN-2012-033</b>			
GEN-2012-033 Interconnection Cost See One-Line Diagram.	Current Study	\$3,033,890.00	\$3,033,890.00
	<b>Current Study Total</b>	\$3,033,890.00	
<b>GEN-2012-034</b>			
Amoco Wasson - Oxy Tap 230kV CKT 1 Replace line traps at both terminals	Current Study	\$66,666.67	\$200,000.00
GEN-2012-034 Interconnection Cost See One-Line Diagram.	Current Study	\$0.00	\$0.00
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

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



<b>Interconnection Request and Upgrades</b>	<b>Upgrade Type</b>	<b>Allocated Cost</b>	<b>Upgrade Cost</b>
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
Mustang - Yoakum 230kV CKT 1 Replace line traps at both terminals	Previously Allocated		\$200,000.00
Power System Stabilizers (PSS) Install Power System Stabilizers @ Tolk(Units: 1,2) and Jones (Units: 1,2,3,4)	Previously Allocated		\$300,000.00
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
	<b>Current Study Total</b>	<b>\$66,666.67</b>	

### GEN-2012-035

Amoco Wasson - Oxy Tap 230kV CKT 1 Replace line traps at both terminals	Current Study	\$66,666.67	\$200,000.00
GEN-2012-035 Interconnection Cost See One-Line Diagram.	Current Study	\$0.00	\$0.00
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
Mustang - Yoakum 230kV CKT 1 Replace line traps at both terminals	Previously Allocated		\$200,000.00
Power System Stabilizers (PSS) Install Power System Stabilizers @ Tolk(Units: 1,2) and Jones (Units: 1,2,3,4)	Previously Allocated		\$300,000.00
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

\* 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	\$66,666.67	
<b>GEN-2012-036</b>			
Amoco Wasson - Oxy Tap 230kV CKT 1 Replace line traps at both terminals	Current Study	\$66,666.67	\$200,000.00
GEN-2012-036 Interconnection Cost See One-Line Diagram.	Current Study	\$0.00	\$0.00
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
Mustang - Yoakum 230kV CKT 1 Replace line traps at both terminals	Previously Allocated		\$200,000.00
Power System Stabilizers (PSS) Install Power System Stabilizers @ Tolk(Units: 1,2) and Jones (Units: 1,2,3,4)	Previously Allocated		\$300,000.00
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
	<b>Current Study Total</b>	<b>\$66,666.67</b>	

<b>GEN-2012-037</b>			
GEN-2012-037 Interconnection Cost See One-Line Diagram.	Current Study	\$5,767,038.00	\$5,767,038.00
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

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

<b>Interconnection Request and Upgrades</b>	<b>Upgrade Type</b>	<b>Allocated Cost</b>	<b>Upgrade Cost</b>
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
Power System Stabilizers (PSS) Install Power System Stabilizers @ Tolk(Units: 1,2) and Jones (Units: 1,2,3,4)	Previously Allocated		\$300,000.00
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
	<b>Current Study Total</b>	<b>\$5,767,038.00</b>	

#### **GEN-2012-040**

Arkansas City - Paris 69kV CKT 1 NRIS only required upgrade: Rebuild approximately 1.7 miles of 69kV.	Current Study	\$1,700,000.00	\$1,700,000.00
City of Winfield - Rainbow 69kV CKT 1 NRIS only required upgrade: Rebuild approximately 4 miles of 69kV.	Current Study	\$4,000,000.00	\$4,000,000.00
Creswell - Oak 69kV CKT 1 NRIS only required upgrade: Rebuild approximately 5.2 miles of 69kV.	Current Study	\$5,200,000.00	\$5,200,000.00
Creswell - Paris 69kV CKT 1 NRIS only required upgrade: Rebuild approximately 5.7 miles of 69kV.	Current Study	\$5,700,000.00	\$5,700,000.00
Creswell 138/69/13.2kV Transformer CKT 1 NRIS only required upgrade: Build new 138/69/13.2kV transformer at Creswell circuit #1.	Current Study	\$3,500,000.00	\$3,500,000.00
Creswell 138/69/13.2kV Transformer CKT 2 NRIS only required upgrade: Build new 138/69/13.2kV transformer at Creswell circuit #2.	Current Study	\$3,500,000.00	\$3,500,000.00
GEN-2012-040 Interconnection Cost See One-Line Diagram.	Current Study	\$3,524,000.00	\$3,524,000.00
Oak - Rainbow 69kV CKT 1 NRIS only required upgrade: Rebuild approximately 5.1 miles of 69kV.	Current Study	\$5,100,000.00	\$5,100,000.00
	<b>Current Study Total</b>	<b>\$32,224,000.00</b>	

#### **GEN-2012-041**

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

<b>Interconnection Request and Upgrades</b>	<b>Upgrade Type</b>	<b>Allocated Cost</b>	<b>Upgrade Cost</b>
GEN-2012-041 Interconnection Cost See One-Line Diagram.	Current Study	\$10,793,361.00	\$10,793,361.00
	<b>Current Study Total</b>	\$10,793,361.00	
<b>TOTAL CURRENT STUDY COSTS:</b>		<b>\$140,761,884.01</b>	

\* 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

<b>Amoco Wasson - Oxy Tap 230kV CKT 1</b>		<b>\$200,000.00</b>
Replace line traps at both terminals		
	GEN-2012-034	\$66,666.67
	GEN-2012-035	\$66,666.67
	GEN-2012-036	\$66,666.67
	<b>Total Allocated Costs</b>	<b>\$200,000.00</b>
<b>Arkansas City - Paris 69kV CKT 1</b>		<b>\$1,700,000.00</b>
NRIS only required upgrade: Rebuild approximately 1.7 miles of 69kV.		
	GEN-2012-040	\$1,700,000.00
	<b>Total Allocated Costs</b>	<b>\$1,700,000.00</b>
<b>ASGI-2012-002 Interconnection Cost</b>		<b>\$0.00</b>
See One-Line Diagram.		
	ASGI-2012-002	\$0.00
	<b>Total Allocated Costs</b>	<b>\$0.00</b>
<b>City of Winfield - Rainbow 69kV CKT 1</b>		<b>\$4,000,000.00</b>
NRIS only required upgrade: Rebuild approximately 4 miles of 69kV.		
	GEN-2012-040	\$4,000,000.00
	<b>Total Allocated Costs</b>	<b>\$4,000,000.00</b>
<b>Creswell - Oak 69kV CKT 1</b>		<b>\$5,200,000.00</b>
NRIS only required upgrade: Rebuild approximately 5.2 miles of 69kV.		
	GEN-2012-040	\$5,200,000.00
	<b>Total Allocated Costs</b>	<b>\$5,200,000.00</b>
<b>Creswell - Paris 69kV CKT 1</b>		<b>\$5,700,000.00</b>
NRIS only required upgrade: Rebuild approximately 5.7 miles of 69kV.		
	GEN-2012-040	\$5,700,000.00
	<b>Total Allocated Costs</b>	<b>\$5,700,000.00</b>
<b>Creswell 138/69/13.2kV Transformer CKT 1</b>		<b>\$3,500,000.00</b>
NRIS only required upgrade: Build new 138/69/13.2kV transformer at Creswell circuit #1.		
	GEN-2012-040	\$3,500,000.00
	<b>Total Allocated Costs</b>	<b>\$3,500,000.00</b>

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

<b>Creswell 138/69/13.2kV Transformer CKT 2</b>		<b>\$3,500,000.00</b>
NRIS only required upgrade: Build new 138/69/13.2kV transformer at Creswell circuit #2.		
	GEN-2012-040	\$3,500,000.00
	<b>Total Allocated Costs</b>	<b>\$3,500,000.00</b>
<b>Dixon County - Rasmussen 230kV CKT 1</b>		<b>\$40,000,000.00</b>
Build approximately 40 miles of new 230kV		
	GEN-2012-018	\$40,000,000.00
	<b>Total Allocated Costs</b>	<b>\$40,000,000.00</b>
<b>Fairfax 138/69kV CKT 1</b>		<b>\$2,200,000.00</b>
Per AECI Affected System Study for DISIS-2012-002		
	GEN-2012-027	\$2,200,000.00
	<b>Total Allocated Costs</b>	<b>\$2,200,000.00</b>
<b>GEN-2012-016 Interconnection Cost</b>		<b>\$16,844,894.00</b>
See One-Line Diagram.		
	GEN-2012-016	\$16,844,894.00
	<b>Total Allocated Costs</b>	<b>\$16,844,894.00</b>
<b>GEN-2012-018 Interconnection Cost</b>		<b>\$3,000,000.00</b>
See One-Line Diagram.		
	GEN-2012-018	\$3,000,000.00
	<b>Total Allocated Costs</b>	<b>\$3,000,000.00</b>
<b>GEN-2012-020 Interconnection Cost</b>		<b>\$1,760,377.00</b>
See One-Line Diagram.		
	GEN-2012-020	\$1,760,377.00
	<b>Total Allocated Costs</b>	<b>\$1,760,377.00</b>
<b>GEN-2012-021 Interconnection Cost</b>		<b>\$0.00</b>
See One-Line Diagram.		
	GEN-2012-021	\$0.00
	<b>Total Allocated Costs</b>	<b>\$0.00</b>
<b>GEN-2012-023 Interconnection Cost</b>		<b>\$26,583.00</b>
See One-Line Diagram.		
	GEN-2012-023	\$26,583.00
	<b>Total Allocated Costs</b>	<b>\$26,583.00</b>

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

<b>GEN-2012-024 Interconnection Cost</b>		<b>\$5,000,000.00</b>
See One-Line Diagram.		
	GEN-2012-024	\$5,000,000.00
	<b>Total Allocated Costs</b>	<b>\$5,000,000.00</b>
<b>GEN-2012-026 Interconnection Cost</b>		<b>\$7,892,160.00</b>
See One-Line Diagram.		
	GEN-2012-026	\$7,892,160.00
	<b>Total Allocated Costs</b>	<b>\$7,892,160.00</b>
<b>GEN-2012-027 Interconnection Cost</b>		<b>\$1,779,284.00</b>
See One-Line Diagram.		
	GEN-2012-027	\$1,779,284.00
	<b>Total Allocated Costs</b>	<b>\$1,779,284.00</b>
<b>GEN-2012-028 Interconnection Cost</b>		<b>\$947,972.00</b>
See One-Line Diagram.		
	GEN-2012-028	\$947,972.00
	<b>Total Allocated Costs</b>	<b>\$947,972.00</b>
<b>GEN-2012-031 Interconnection Cost</b>		<b>\$40,000.00</b>
See One-Line Diagram.		
	GEN-2012-031	\$40,000.00
	<b>Total Allocated Costs</b>	<b>\$40,000.00</b>
<b>GEN-2012-032 Interconnection Cost</b>		<b>\$8,654,353.00</b>
See One-Line Diagram.		
	GEN-2012-032	\$8,654,353.00
	<b>Total Allocated Costs</b>	<b>\$8,654,353.00</b>
<b>GEN-2012-033 Interconnection Cost</b>		<b>\$3,033,890.00</b>
See One-Line Diagram.		
	GEN-2012-033	\$3,033,890.00
	<b>Total Allocated Costs</b>	<b>\$3,033,890.00</b>
<b>GEN-2012-034 Interconnection Cost</b>		<b>\$0.00</b>
See One-Line Diagram.		
	GEN-2012-034	\$0.00
	<b>Total Allocated Costs</b>	<b>\$0.00</b>

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



<b>GEN-2012-035 Interconnection Cost</b>		<b>\$0.00</b>
See One-Line Diagram.		
	GEN-2012-035	\$0.00
	<b>Total Allocated Costs</b>	<b>\$0.00</b>
<b>GEN-2012-036 Interconnection Cost</b>		<b>\$0.00</b>
See One-Line Diagram.		
	GEN-2012-036	\$0.00
	<b>Total Allocated Costs</b>	<b>\$0.00</b>
<b>GEN-2012-037 Interconnection Cost</b>		<b>\$5,767,038.00</b>
See One-Line Diagram.		
	GEN-2012-037	\$5,767,038.00
	<b>Total Allocated Costs</b>	<b>\$5,767,038.00</b>
<b>GEN-2012-040 Interconnection Cost</b>		<b>\$3,524,000.00</b>
See One-Line Diagram.		
	GEN-2012-040	\$3,524,000.00
	<b>Total Allocated Costs</b>	<b>\$3,524,000.00</b>
<b>GEN-2012-041 Interconnection Cost</b>		<b>\$10,793,361.00</b>
See One-Line Diagram.		
	GEN-2012-041	\$10,793,361.00
	<b>Total Allocated Costs</b>	<b>\$10,793,361.00</b>
<b>Lake Creek- Lone Wolf 69kV CKT 1</b>		<b>\$197,972.00</b>
Reset CT.		
	GEN-2012-028	\$197,972.00
	<b>Total Allocated Costs</b>	<b>\$197,972.00</b>
<b>Oak - Rainbow 69kV CKT 1</b>		<b>\$5,100,000.00</b>
NRIS only required upgrade: Rebuild approximately 5.1 miles of 69kV.		
	GEN-2012-040	\$5,100,000.00
	<b>Total Allocated Costs</b>	<b>\$5,100,000.00</b>
<b>Remington - Fairfax 138KV CKT 1</b>		<b>\$400,000.00</b>
Increase conductor clearance		
	GEN-2012-027	\$400,000.00
	<b>Total Allocated Costs</b>	<b>\$400,000.00</b>

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

## **G: Power Flow Analysis (Constraints For Mitigation)**

See next page.

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB		TC%LOADING		CONTINGENCY
							(MVA)	TDF	(% MVA)		
FDNS	00G12_018	0	24SP	G12_018	FROM->TO	G10-51T 230.00 - HOSKINS 230KV CKT 1	320	1	165.6882	G10-51T 230.00 - TWIN CHURCH 230KV CKT 1	
FDNS	09G12_018	0	14G	G12_018	FROM->TO	G10-51T 230.00 - HOSKINS 230KV CKT 1	320	1	165.5346	G10-51T 230.00 - TWIN CHURCH 230KV CKT 1	
FDNS	00G12_018	0	19SP	G12_018	FROM->TO	G10-51T 230.00 - HOSKINS 230KV CKT 1	320	1	165.3744	G10-51T 230.00 - TWIN CHURCH 230KV CKT 1	
FDNS	00G12_018	0	14SP	G12_018	FROM->TO	G10-51T 230.00 - HOSKINS 230KV CKT 1	320	1	165.3699	G10-51T 230.00 - TWIN CHURCH 230KV CKT 1	
FDNS	00G12_018	0	14WP	G12_018	FROM->TO	G10-51T 230.00 - HOSKINS 230KV CKT 1	320	1	164.7829	G10-51T 230.00 - TWIN CHURCH 230KV CKT 1	
FDNS	00G12_018	0	19WP	G12_018	FROM->TO	G10-51T 230.00 - HOSKINS 230KV CKT 1	320	1	164.7531	G10-51T 230.00 - TWIN CHURCH 230KV CKT 1	
FDNS	9	0	14G	G12_018	FROM->TO	G10-51T 230.00 - HOSKINS 230KV CKT 1	320	1	130.4236	G10-51T 230.00 - TWIN CHURCH 230KV CKT 1	
FDNS	09G12_018	0	14G	G12_018	FROM->TO	G10-51T 230.00 - HOSKINS 230KV CKT 1	320	0.78102	106.0489	SIoux CITY - TWIN CHURCH 230KV CKT 1	
FDNS	00G12_018	0	14SP	G12_018	FROM->TO	G10-51T 230.00 - HOSKINS 230KV CKT 1	320	0.78098	102.8505	SIoux CITY - TWIN CHURCH 230KV CKT 1	
FDNS	00G12_018	0	19SP	G12_018	FROM->TO	G10-51T 230.00 - HOSKINS 230KV CKT 1	320	0.78225	102.7041	SIoux CITY - TWIN CHURCH 230KV CKT 1	
FDNS	00G12_018	0	24SP	G12_018	FROM->TO	G10-51T 230.00 - HOSKINS 230KV CKT 1	320	0.48038	101.899	HOSKINS - RAUN 345KV CKT 1	
FDNS	00G12_018	0	24SP	G12_018	FROM->TO	G10-51T 230.00 - HOSKINS 230KV CKT 1	320	0.78225	101.3837	SIoux CITY - TWIN CHURCH 230KV CKT 1	
FDNS	00G12_018	0	14WP	G12_018	FROM->TO	G10-51T 230.00 - HOSKINS 230KV CKT 1	320	0.78101	100.5429	SIoux CITY - TWIN CHURCH 230KV CKT 1	
FDNS	00G12_018	0	19WP	G12_018	FROM->TO	G10-51T 230.00 - HOSKINS 230KV CKT 1	320	0.78225	100.1854	SIoux CITY - TWIN CHURCH 230KV CKT 1	
FDNS	00G12_018	0	19SP	G12_018	FROM->TO	G10-51T 230.00 - HOSKINS 230KV CKT 1	320	0.4805	100.0665	HOSKINS - RAUN 345KV CKT 1	
FDNS	00G12_018	0	24SP	G12_018	FROM->TO	G10-51T 230.00 - TWIN CHURCH 230KV CKT 1	320	1	166.0609	G10-51T 230.00 - HOSKINS 230KV CKT 1	
FDNS	00G12_018	0	19SP	G12_018	FROM->TO	G10-51T 230.00 - TWIN CHURCH 230KV CKT 1	320	1	165.9931	G10-51T 230.00 - HOSKINS 230KV CKT 1	
FDNS	00G12_018	0	14SP	G12_018	FROM->TO	G10-51T 230.00 - TWIN CHURCH 230KV CKT 1	320	1	165.6594	G10-51T 230.00 - HOSKINS 230KV CKT 1	
FDNS	00G12_018	0	19WP	G12_018	FROM->TO	G10-51T 230.00 - TWIN CHURCH 230KV CKT 1	320	1	165.4595	G10-51T 230.00 - HOSKINS 230KV CKT 1	
FDNS	00G12_018	0	14WP	G12_018	FROM->TO	G10-51T 230.00 - TWIN CHURCH 230KV CKT 1	320	1	165.3057	G10-51T 230.00 - HOSKINS 230KV CKT 1	
FDNS	09G12_018	0	14G	G12_018	FROM->TO	G10-51T 230.00 - TWIN CHURCH 230KV CKT 1	320	1	165.124	G10-51T 230.00 - HOSKINS 230KV CKT 1	
FDNS	9	0	14G	G12_018	FROM->TO	G10-51T 230.00 - TWIN CHURCH 230KV CKT 1	320	1	130.1943	G10-51T 230.00 - HOSKINS 230KV CKT 1	
FDNS	00G12_018	0	14WP	G12_018	FROM->TO	G10-51T 230.00 - TWIN CHURCH 230KV CKT 1	320	0.46862	101.8079	RAUN - SIoux CITY 345KV CKT 1	
FDNS	09G12_018	0	14G	G12_018	FROM->TO	G10-51T 230.00 - TWIN CHURCH 230KV CKT 1	320	0.62322	101.2828	HOSKINS (HOSKINS T2) 345/230/13.8KV TRANSFORMER CKT 1	
FDNS	00G12_018	0	14SP	G12_018	FROM->TO	HOSKINS (HOSKINS T1) 230/115/13.8KV TRANSFORMER CKT 1	187	0.27522	104.4975	G10-51T 230.00 - TWIN CHURCH 230KV CKT 1	
FDNS	00G12_018	0	14SP	G12_018	FROM->TO	HOSKINS (HOSKINS T1) 230/115/13.8KV TRANSFORMER CKT 1	187	0.27522	102.3982	G10-51T 230.00 - TWIN CHURCH 230KV CKT 1	
FNSL-Blown up	03ALL	0	14G	G12_018	-	Non-converged Contingency	1793	0.03552	-	CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 1	
FNSL-Blown up	03ALL	0	14G	G12_018	-	Non-converged Contingency	1793	0.03552	-	CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 2	
FDNS	09G12_018	0	14G	G12_018	TO->FROM	SIoux CITY - TWIN CHURCH 230KV CKT 1	320	0.80651	110.7479	G10-51T 230.00 - HOSKINS 230KV CKT 1	
FDNS	00G12_018	0	14WP	G12_018	TO->FROM	SIoux CITY - TWIN CHURCH 230KV CKT 1	320	0.80666	103.0058	G10-51T 230.00 - HOSKINS 230KV CKT 1	
FDNS	00G12_018	0	19WP	G12_018	TO->FROM	SIoux CITY - TWIN CHURCH 230KV CKT 1	320	0.80736	101.0144	G10-51T 230.00 - HOSKINS 230KV CKT 1	
FDNS	00G12_018	3	24SP	G12_018	FROM->TO	G10-51T 230.00 - HOSKINS 230KV CKT 1	320	0.53409	101.9593	G10-51T 230.00 - TWIN CHURCH 230KV CKT 1	
FDNS	00G12_018	3	19SP	G12_018	FROM->TO	G10-51T 230.00 - HOSKINS 230KV CKT 1	320	0.53412	101.906	G10-51T 230.00 - TWIN CHURCH 230KV CKT 1	
FNSL-Blown up	03ALL	0	14G	G12_024	-	Non-converged Contingency	1793	0.2771	-	CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 1	
FNSL-Blown up	03ALL	0	14G	G12_024	-	Non-converged Contingency	1793	0.2771	-	CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 2	
FDNS	00G12_028	0	24SP	G12_028	TO->FROM	LAKE CREEK - LONEWOLF 69KV CKT 1	48	0.26995	132.173	ELK CITY (ELKCTY-4) 138/69/13.8KV TRANSFORMER CKT 1	
FDNS	00G12_028	0	19SP	G12_028	TO->FROM	LAKE CREEK - LONEWOLF 69KV CKT 1	48	0.26991	125.8797	ELK CITY (ELKCTY-4) 138/69/13.8KV TRANSFORMER CKT 1	
FDNS	00G12_028	0	14SP	G12_028	TO->FROM	LAKE CREEK - LONEWOLF 69KV CKT 1	48	0.27172	119.8549	ELK CITY (ELKCTY-4) 138/69/13.8KV TRANSFORMER CKT 1	
FDNS	00G12_028	0	19WP	G12_028	TO->FROM	LAKE CREEK - LONEWOLF 69KV CKT 1	48	0.26989	111.7328	ELK CITY (ELKCTY-4) 138/69/13.8KV TRANSFORMER CKT 1	
FDNS	00G12_028	0	14SP	G12_028	TO->FROM	LAKE CREEK - LONEWOLF 69KV CKT 1	48	0.6235	106.0701	GOTEBO - MOUNTAIN VIEW 69KV CKT 1	
FDNS	0	0	24SP	G12_028	TO->FROM	LAKE CREEK - LONEWOLF 69KV CKT 1	48	0.26995	105.3995	ELK CITY (ELKCTY-4) 138/69/13.8KV TRANSFORMER CKT 1	
FDNS	00G12_028	0	24SP	G12_028	TO->FROM	LAKE CREEK - LONEWOLF 69KV CKT 1	48	0.46856	103.8319	CORDELL - GOTEBO 69KV CKT 1	
FDNS	00G12_028	0	14WP	G12_028	TO->FROM	LAKE CREEK - LONEWOLF 69KV CKT 1	48	0.62355	103.528	GOTEBO - MOUNTAIN VIEW 69KV CKT 1	
FDNS	00G12_028	0	19WP	G12_028	TO->FROM	LAKE CREEK - LONEWOLF 69KV CKT 1	48	0.61911	102.9201	GOTEBO - MOUNTAIN VIEW 69KV CKT 1	
FDNS	00G12_028	0	14WP	G12_028	TO->FROM	LAKE CREEK - LONEWOLF 69KV CKT 1	48	0.27185	102.794	ELK CITY (ELKCTY-4) 138/69/13.8KV TRANSFORMER CKT 1	
FDNS	00G12_028	0	24SP	G12_028	TO->FROM	LAKE CREEK - LONEWOLF 69KV CKT 1	48	0.61906	101.8035	GOTEBO - MOUNTAIN VIEW 69KV CKT 1	
FDNS	00G12_028	0	19SP	G12_028	TO->FROM	LAKE CREEK - LONEWOLF 69KV CKT 1	48	0.61913	101.7243	GOTEBO - MOUNTAIN VIEW 69KV CKT 1	
FDNS	00G12_028	0	19SP	G12_028	TO->FROM	LAKE CREEK - LONEWOLF 69KV CKT 1	48	0.46857	100	CORDELL - GOTEBO 69KV CKT 1	
FDNS	00G12_028	0	14SP	G12_028	TO->FROM	LAKE CREEK - LONEWOLF 69KV CKT 1	48	0.46604	99.5	CORDELL - GOTEBO 69KV CKT 1	
FDNS	0	0A	24SP	G12_028	TO->FROM	LAKE CREEK - LONEWOLF 69KV CKT 1	48	0.26995	105.1279	ELK CITY (ELKCTY-4) 138/69/13.8KV TRANSFORMER CKT 1	
FDNS	0	0B	24SP	G12_028	TO->FROM	LAKE CREEK - LONEWOLF 69KV CKT 1	48	0.26995	105.4097	ELK CITY (ELKCTY-4) 138/69/13.8KV TRANSFORMER CKT 1	
FDNS	0	0A	19SP	G12_034	FROM->TO	AMOCO WASSON SWITCHING STATION - OXYBRU_TP 6230.00 230KV CKT 1	351	0.67009	100.9325	MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	
FDNS	00G12_034	0A	19SP	G12_034	FROM->TO	AMOCO WASSON SWITCHING STATION - OXYBRU_TP 6230.00 230KV CKT 1	351	0.67009	100.9325	MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	
FDNS	0	0A	19SP	G12_035	FROM->TO	AMOCO WASSON SWITCHING STATION - OXYBRU_TP 6230.00 230KV CKT 1	351	0.67009	100.9325	MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	
FDNS	00G12_035	0A	19SP	G12_035	FROM->TO	AMOCO WASSON SWITCHING STATION - OXYBRU_TP 6230.00 230KV CKT 1	351	0.67009	100.9325	MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	
FDNS	0	0A	19SP	G12_036	FROM->TO	AMOCO WASSON SWITCHING STATION - OXYBRU_TP 6230.00 230KV CKT 1	351	0.67009	100.9325	MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	
FDNS	00G12_036	0A	19SP	G12_036	FROM->TO	AMOCO WASSON SWITCHING STATION - OXYBRU_TP 6230.00 230KV CKT 1	351	0.67009	100.9325	MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1	
FDNS	00NR	0	24SP	G12_040	TO->FROM	ARKANSAS CITY - PARIS 69KV CKT 1	72	0.04025	109.0056	CRESWELL - OAK 69KV CKT 1	
FDNS	00NR	0	19SP	G12_040	TO->FROM	ARKANSAS CITY - PARIS 69KV CKT 1	72	0.04026	104.338	CRESWELL - OAK 69KV CKT 1	
FDNS	00NR	0	24SP	G12_040	TO->FROM	CITY OF WINFIELD - RAINBOW 69KV CKT 1	43	0.04541	107.0533	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1	
FDNS	00NR	0	19SP	G12_040	TO->FROM	CITY OF WINFIELD - RAINBOW 69KV CKT 1	43	0.04542	102.4771	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1	
FDNS	08NR	0	14G	G12_040	TO->FROM	CITY OF WINFIELD - RAINBOW 69KV CKT 1	43	0.04544	99.5	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1	
FDNS	00NR	0	24SP	G12_040	FROM->TO	CRESWELL - OAK 69KV CKT 1	108	0.05005	102.8503	CRESWELL - PARIS 69KV CKT 1	
FDNS	00NR	0	24SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09955	111.4406	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	0	24SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09955	107.7049	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	0	19SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09958	105.6527	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	0	19SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09958	102.5359	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB		TC%LOADING		CONTINGENCY
							(MVA)	TDF	(% MVA)		
FDNS	00NR	0	14SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.0986	101.2938	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	0	24SP	G12_040	FROM->TO	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09942	111.3105	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	0	24SP	G12_040	FROM->TO	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09942	107.6211	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	0	19SP	G12_040	FROM->TO	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09945	105.5434	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	0	19SP	G12_040	FROM->TO	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09945	102.4608	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	0	14SP	G12_040	FROM->TO	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09847	101.1808	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	0	24SP	G12_040	FROM->TO	OAK - RAINBOW 69KV CKT 1	43	0.04541	111.4618	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1	
FDNS	00NR	0	19SP	G12_040	FROM->TO	OAK - RAINBOW 69KV CKT 1	43	0.04542	107.1215	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1	
FDNS	08NR	0	14G	G12_040	FROM->TO	OAK - RAINBOW 69KV CKT 1	43	0.04544	103.2009	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1	
FDNS	00NR	2	24SP	G12_040	TO->FROM	ARKANSAS CITY - PARIS 69KV CKT 1	72	0.04025	109.0056	CRESWELL - OAK 69KV CKT 1	
FDNS	00NR	2	19SP	G12_040	TO->FROM	ARKANSAS CITY - PARIS 69KV CKT 1	72	0.04026	104.338	CRESWELL - OAK 69KV CKT 1	
FDNS	00NR	2	24SP	G12_040	TO->FROM	CITY OF WINFIELD - RAINBOW 69KV CKT 1	43	0.04541	107.0533	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1	
FDNS	00NR	2	19SP	G12_040	TO->FROM	CITY OF WINFIELD - RAINBOW 69KV CKT 1	43	0.04542	102.4771	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1	
FDNS	08NR	2	14G	G12_040	TO->FROM	CITY OF WINFIELD - RAINBOW 69KV CKT 1	43	0.04544	99.5	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1	
FDNS	00NR	2	24SP	G12_040	FROM->TO	CRESWELL - OAK 69KV CKT 1	108	0.05005	102.8503	CRESWELL - PARIS 69KV CKT 1	
FDNS	00NR	2	24SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09955	111.4406	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	2	24SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09955	107.7049	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	2	19SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09958	105.6527	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	2	19SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09958	102.5359	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	2	14SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.0986	101.2938	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	2	24SP	G12_040	FROM->TO	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09942	111.3105	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	2	24SP	G12_040	FROM->TO	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09942	107.6211	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	2	19SP	G12_040	FROM->TO	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09945	105.5434	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	2	19SP	G12_040	FROM->TO	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09945	102.4608	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	2	14SP	G12_040	FROM->TO	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09847	101.1808	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	2	24SP	G12_040	FROM->TO	OAK - RAINBOW 69KV CKT 1	43	0.04541	111.4618	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1	
FDNS	00NR	2	19SP	G12_040	FROM->TO	OAK - RAINBOW 69KV CKT 1	43	0.04542	107.1215	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1	
FDNS	08NR	2	14G	G12_040	FROM->TO	OAK - RAINBOW 69KV CKT 1	43	0.04544	103.2009	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1	
FDNS	00NR	3	24SP	G12_040	TO->FROM	ARKANSAS CITY - PARIS 69KV CKT 1	72	0.04027	108.7257	CRESWELL - OAK 69KV CKT 1	
FDNS	00NR	3	19SP	G12_040	TO->FROM	ARKANSAS CITY - PARIS 69KV CKT 1	72	0.04028	104.0575	CRESWELL - OAK 69KV CKT 1	
FDNS	00NR	3	24SP	G12_040	TO->FROM	CITY OF WINFIELD - RAINBOW 69KV CKT 1	43	0.04543	106.908	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1	
FDNS	00NR	3	19SP	G12_040	TO->FROM	CITY OF WINFIELD - RAINBOW 69KV CKT 1	43	0.04544	102.0095	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1	
FDNS	00NR	3	24SP	G12_040	FROM->TO	CRESWELL - OAK 69KV CKT 1	108	0.05007	102.613	CRESWELL - PARIS 69KV CKT 1	
FDNS	00NR	3	24SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.0996	111.1028	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	3	24SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.0996	107.3805	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	3	19SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09962	105.2673	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	3	19SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09962	102.1647	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	3	14SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09865	100.8705	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	3	24SP	G12_040	FROM->TO	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09947	110.4222	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	3	24SP	G12_040	FROM->TO	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09947	106.9088	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	3	19SP	G12_040	FROM->TO	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.0995	105.1589	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	3	19SP	G12_040	FROM->TO	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.0995	102.0887	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	3	14SP	G12_040	FROM->TO	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09852	100.7585	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	3	24SP	G12_040	FROM->TO	OAK - RAINBOW 69KV CKT 1	43	0.04543	111.3089	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1	
FDNS	00NR	3	19SP	G12_040	FROM->TO	OAK - RAINBOW 69KV CKT 1	43	0.04544	106.6522	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1	
FDNS	08NR	3	14G	G12_040	FROM->TO	OAK - RAINBOW 69KV CKT 1	43	0.04546	102.9021	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1	
FDNS	00NR	4	24SP	G12_040	FROM->TO	CRESWELL - PARIS 69KV CKT 1	100	0.04305	100.4388	CRESWELL - OAK 69KV CKT 1	

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

Available upon request

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	3	0	14G	ASGI_12_002	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.041	137.6213	DBL-WICH-THI
FDNS	3	0	14G	ASGI_12_002	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.03011	110.412	DBL-BVR-WWRD
FDNS	3	0	14G	ASGI_12_002	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.03133	182.9825	DBL-WICH-THI
FDNS	01ALL	0	14G	ASGI_12_002	TO->FROM	FLATRDG3 - THISTLE4 138.00 138KV CKT 1	286	0.03541	102.0663	DBL-WICH-THI
FDNS	01ALL	0	14G	ASGI_12_002	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.05742	165.2236	DBL-IRON-CLR
FDNS	1	0	14G	ASGI_12_002	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.0576	132.0437	DBL-WWRD-G12
FDNS	01ALL	0	14G	ASGI_12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05742	257.049	DBL-TGA-MATT
FDNS	1	0	14G	ASGI_12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0576	205.8352	DBL-TGA-MATT
FDNS	06ALL	0	14G	ASGI_12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05731	108.5395	DBL-WWRD-G12
FDNS	00ASGI_12_002	0	14SP	ASGI_12_002	FROM->TO	GRAPEVINE INTERCHANGE (PENN 0257751) 230/115/13.2KV TRANSFORMER CKT 1	112	0.03055	103.5213	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNS	0	0	14SP	ASGI_12_002	FROM->TO	GRAPEVINE INTERCHANGE (PENN 0257751) 230/115/13.2KV TRANSFORMER CKT 1	112	0.03056	102.5137	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNS	00ASGI_12_002	0	14SP	ASGI_12_002	FROM->TO	GRAPEVINE INTERCHANGE (PENN 0257751) 230/115/13.2KV TRANSFORMER CKT 1	112	0.03055	100.2065	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNS	00ASGI_12_002	0	14WP	ASGI_12_002	FROM->TO	GRAPEVINE INTERCHANGE (PENN 0257751) 230/115/13.2KV TRANSFORMER CKT 1	112	0.03006	99.6	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNS	3	0	14G	ASGI_12_002	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.03133	193.2999	DBL-WICH-THI
FDNS	03ALL	0	14G	ASGI_12_002	FROM->TO	MULGREN7 345.00 (MULLERGRENT1) 345/230/13.8KV TRANSFORMER CKT 1	600	0.04024	104.8345	G12-011T 345.00 - POST ROCK 345KV CKT 1
FDNS	03ALL	0	14G	ASGI_12_002	FROM->TO	MULGREN7 345.00 (MULLERGRENT1) 345/230/13.8KV TRANSFORMER CKT 1	600	0.04024	104.389	G12-011T 345.00 - POST ROCK 345KV CKT 1
FDNS	03ALL	0	14G	ASGI_12_002	FROM->TO	MULLERGREN - SOUTH HAYS 230KV CKT 1	297	0.03095	125.6811	G12-011T 345.00 - POST ROCK 345KV CKT 1
FDNS	03ALL	0	14G	ASGI_12_002	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	318.7	0.03865	119.8748	G11-17T 345.00 - SPEARVILLE 345KV CKT 1
FNSL-Blown up	01ALL	0	14G	ASGI_12_002	-	Non-converged Contingency	0	0.1457	-	DBL-TGA-MATT
FNSL-Blown up	03ALL	0	14G	ASGI_12_002	-	Non-converged Contingency	0	0.20231	-	DBL-WICH-THI
FDNS	06ALL	0	14G	ASGI_12_002	TO->FROM	PLANT X STATION - TOLK STATION EAST 230KV CKT 2	502	0.34913	102.1116	PLANT X STATION - TOLK STATION WEST 230KV CKT 1
FDNS	06ALL	0	14G	ASGI_12_002	TO->FROM	PLANT X STATION - TOLK STATION WEST 230KV CKT 1	502	0.35199	102.8559	PLANT X STATION - TOLK STATION EAST 230KV CKT 2
FDNS	06ALL	0	14G	ASGI_12_002	FROM->TO	SPSSPPTIESB	620	0.43565	102.8214	BASE CASE
FDNS	06ALL	0	14G	ASGI_12_002	FROM->TO	SPSSPPTIESC1	620	0.43565	102.8214	BASE CASE
FDNS	06ALL	0	14G	ASGI_12_002	FROM->TO	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	560	0.37394	99.8	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	03ALL	2	14G	ASGI_12_002	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	318.7	0.04093	153.7816	G11-17T 345.00 - SPEARVILLE 345KV CKT 1
FDNS	3	2	14G	ASGI_12_002	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	318.7	0.04162	123.4433	G11-17T 345.00 - SPEARVILLE 345KV CKT 1
FDNS	01ALL	3	14G	ASGI_12_002	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.05688	164.0878	DBL-WWRD-G12
FDNS	1	3	14G	ASGI_12_002	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.05707	130.9056	DBL-WWRD-G12
FDNS	01ALL	3	14G	ASGI_12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05688	255.0727	DBL-WWRD-G12
FDNS	1	3	14G	ASGI_12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05707	203.8113	DBL-WWRD-G12
FDNS	06ALL	3	14G	ASGI_12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05678	106.5714	DBL-WWRD-G12
FDNS	00ASGI_12_002	3	14SP	ASGI_12_002	FROM->TO	GRAPEVINE INTERCHANGE (PENN 0257751) 230/115/13.2KV TRANSFORMER CKT 1	112	0.03041	103.2333	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNS	00ASGI_12_002	3	14SP	ASGI_12_002	FROM->TO	GRAPEVINE INTERCHANGE (PENN 0257751) 230/115/13.2KV TRANSFORMER CKT 1	112	0.03041	99.9	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FNSL-Blown up	01ALL	3	14G	ASGI_12_002	-	Non-converged Contingency	0	0.14348	-	DBL-TGA-MATT
FDNS	06ALL	3	14G	ASGI_12_002	TO->FROM	PLANT X STATION - TOLK STATION EAST 230KV CKT 2	502	0.34931	102.3374	PLANT X STATION - TOLK STATION WEST 230KV CKT 1
FDNS	06ALL	3	14G	ASGI_12_002	TO->FROM	PLANT X STATION - TOLK STATION WEST 230KV CKT 1	502	0.35217	103.0833	PLANT X STATION - TOLK STATION EAST 230KV CKT 2
FDNS	06ALL	3	14G	ASGI_12_002	FROM->TO	SPSSPPTIESB	620	0.4355	102.8952	BASE CASE
FDNS	06ALL	3	14G	ASGI_12_002	FROM->TO	SPSSPPTIESC1	620	0.4355	102.8952	BASE CASE
FDNS	09ALL	0	14G	G12_018	FROM->TO	G10-51T 230.00 - HOSKINS 230KV CKT 1	320	1	165.6978	G10-51T 230.00 - TWIN CHURCH 230KV CKT 1
FDNS	09ALL	0	14G	G12_018	FROM->TO	G10-51T 230.00 - HOSKINS 230KV CKT 1	320	0.78102	106.3241	SIOUX CITY - TWIN CHURCH 230KV CKT 1
FDNS	09ALL	0	14G	G12_018	FROM->TO	G10-51T 230.00 - TWIN CHURCH 230KV CKT 1	320	1	165.186	G10-51T 230.00 - HOSKINS 230KV CKT 1
FDNS	09ALL	0	14G	G12_018	FROM->TO	G10-51T 230.00 - TWIN CHURCH 230KV CKT 1	320	0.62322	102.3077	HOSKINS (HOSKINS T2) 345/230/13.8KV TRANSFORMER CKT 1
FDNS	00G12_018	0	14SP	G12_018	FROM->TO	HOSKINS (HOSKINS T1) 230/115/13.8KV TRANSFORMER CKT 1	187	0.10029	107.8931	HOSKINS (HOSKN T4) 345/115/13.8KV TRANSFORMER CKT 1
FDNS	00G12_018	0	14SP	G12_018	FROM->TO	HOSKINS (HOSKINS T1) 230/115/13.8KV TRANSFORMER CKT 1	187	0.10029	107.336	HOSKINS (HOSKN T4) 345/115/13.8KV TRANSFORMER CKT 1
FDNS	00G12_018	0	24SP	G12_018	FROM->TO	HOSKINS (HOSKINS T1) 230/115/13.8KV TRANSFORMER CKT 1	187	0.26822	99.6	G10-51T 230.00 - TWIN CHURCH 230KV CKT 1
FNSL-Blown up	3	0	14G	G12_018	-	Non-converged Contingency	0	0.07227	-	DBL-THIS-CLR
FNSL-Blown up	01ALL	0	14G	G12_018	-	Non-converged Contingency	0	0.03594	-	DBL-TGA-MATT
FNSL-Blown up	03ALL	0	14G	G12_018	-	Non-converged Contingency	0	0.07104	-	DBL-IRON-CLR
FNSL-Blown up	03ALL	0	14G	G12_018	-	Non-converged Contingency	0	0.07104	-	DBL-THIS-CLR
FDNS	09ALL	0	14G	G12_018	TO->FROM	SIOUX CITY - TWIN CHURCH 230KV CKT 1	320	0.80651	111.8577	G10-51T 230.00 - HOSKINS 230KV CKT 1
FDNS	06ALL	0	14G	G12_018	FROM->TO	TUCXFR345230	300	0.03137	102.6	BASE CASE
FDNS	00G12_018	2	24SP	G12_018	FROM->TO	G10-51T 230.00 - HOSKINS 230KV CKT 1	320	0.53408	100	G10-51T 230.00 - TWIN CHURCH 230KV CKT 1
FDNS	00G12_018	2	19SP	G12_018	FROM->TO	G10-51T 230.00 - HOSKINS 230KV CKT 1	320	0.5341	99.9	G10-51T 230.00 - TWIN CHURCH 230KV CKT 1
FDNS	00G12_018	2	14SP	G12_018	FROM->TO	HOSKINS (HOSKINS T1) 230/115/13.8KV TRANSFORMER CKT 1	187	0.06928	103.2087	HOSKINS (HOSKN T4) 345/115/13.8KV TRANSFORMER CKT 1
FDNS	00G12_018	2	14SP	G12_018	FROM->TO	HOSKINS (HOSKINS T1) 230/115/13.8KV TRANSFORMER CKT 1	187	0.06928	102.6752	HOSKINS (HOSKN T4) 345/115/13.8KV TRANSFORMER CKT 1
FNSL-Blown up	03ALL	2	14G	G12_018	-	Non-converged Contingency	0	0.06673	-	DBL-THIS-CLR
FDNS	00G12_018	3	14SP	G12_018	FROM->TO	HOSKINS (HOSKINS T1) 230/115/13.8KV TRANSFORMER CKT 1	187	0.06931	102.9903	HOSKINS (HOSKN T4) 345/115/13.8KV TRANSFORMER CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00G12_018	3	14SP	G12_018	FROM->TO	HOSKINS (HOSKINS T1) 230/115/13.8KV TRANSFORMER CKT 1	187	0.06931	102.4265	HOSKINS (HOSKN T4) 345/115/13.8KV TRANSFORMER CKT 1
FNSL-Blown up	01ALL	3	14G	G12_018	-	Non-converged Contingency	0	0.0343	-	DBL-TGA-MATT
FDNS	06ALL	3	14G	G12_018	FROM->TO	TUCXFR345230	300	0.03161	101.9	BASE CASE
FDNS	00G12_020	0	14SP	G12_020	TO->FROM	BAILEY COUNTY REC-EARTH INTERCHANGE - PLANT X STATION 115KV CKT 1	160	0.03444	117.3462	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	0	0	14SP	G12_020	TO->FROM	BAILEY COUNTY REC-EARTH INTERCHANGE - PLANT X STATION 115KV CKT 1	160	0.03451	106.369	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	3	0	14G	G12_020	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.03711	137.6213	DBL-WICH-THI
FDNS	3	0	14G	G12_020	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.03006	182.9825	DBL-WICH-THI
FDNS	01ALL	0	14G	G12_020	TO->FROM	FLATRDG3 - THISTLE4 138.00 138KV CKT 1	286	0.03415	102.0663	DBL-WICH-THI
FDNS	01ALL	0	14G	G12_020	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.0597	165.2236	DBL-THIS-CLR
FDNS	1	0	14G	G12_020	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.05989	132.0437	DBL-WWRD-G12
FDNS	01ALL	0	14G	G12_020	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0597	257.049	DBL-TGA-MATT
FDNS	1	0	14G	G12_020	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05989	205.8352	DBL-TGA-MATT
FDNS	06ALL	0	14G	G12_020	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05959	108.5395	DBL-WWRD-G12
FDNS	00G12_020	0	14SP	G12_020	TO->FROM	HALE CO INTERCHANGE - TUCO INTERCHANGE 115KV CKT 1	96	0.04519	107.3682	SWISHER COUNTY INTERCHANGE (GE M101686) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_020	0	14SP	G12_020	TO->FROM	HALE CO INTERCHANGE - TUCO INTERCHANGE 115KV CKT 1	96	0.04519	107.3544	KRESS INTERCHANGE - SWISHER COUNTY INTERCHANGE 115KV CKT 1
FDNS	00G12_020	0	14SP	G12_020	TO->FROM	HALE CO INTERCHANGE - TUCO INTERCHANGE 115KV CKT 1	96	0.07126	106.4146	SWISHER COUNTY INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1
FDNS	3	0	14G	G12_020	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.03006	193.2999	DBL-WICH-THI
FDNS	03ALL	0	14G	G12_020	FROM->TO	MULGREN7 345.00 (MULLERGRENT1) 345/230/13.8KV TRANSFORMER CKT 1	600	0.03641	104.8345	G12-011T 345.00 - POST ROCK 345KV CKT 1
FDNS	03ALL	0	14G	G12_020	FROM->TO	MULGREN7 345.00 (MULLERGRENT1) 345/230/13.8KV TRANSFORMER CKT 1	600	0.03641	104.389	G12-011T 345.00 - POST ROCK 345KV CKT 1
FDNS	03ALL	0	14G	G12_020	TO->FROM	MULLERGREEN - SPEARVILLE 230KV CKT 1	318.7	0.03504	119.8748	G11-17T 345.00 - SPEARVILLE 345KV CKT 1
FNSL-Blown up	01ALL	0	14G	G12_020	-	Non-converged Contingency	0	0.13394	-	DBL-TGA-MATT
FNSL-Blown up	03ALL	0	14G	G12_020	-	Non-converged Contingency	0	0.19501	-	DBL-WICH-THI
FNSL-Blown up	03ALL	0	14G	G12_020	-	Non-converged Contingency	0	0.19495	-	DBL-WICH-THI
FDNS	06ALL	0	14G	G12_020	TO->FROM	PLANT X STATION - TOLK STATION EAST 230KV CKT 2	502	0.08283	102.1116	PLANT X STATION - TOLK STATION WEST 230KV CKT 1
FDNS	06ALL	0	14G	G12_020	TO->FROM	PLANT X STATION - TOLK STATION WEST 230KV CKT 1	502	0.0833	102.8559	PLANT X STATION - TOLK STATION EAST 230KV CKT 2
FDNS	06ALL	0	14G	G12_020	FROM->TO	SPSSPPTIESB	620	0.43402	102.8214	BASE CASE
FDNS	06ALL	0	14G	G12_020	FROM->TO	SPSSPPTIESC1	620	0.43402	102.8214	BASE CASE
FDNS	00G12_020	0	14SP	G12_020	FROM->TO	SWISHER COUNTY INTERCHANGE (GE M101686) 230/115/13.2KV TRANSFORMER CKT 1	150	0.05666	112.016	AMARILLO SOUTH INTERCHANGE - G07-48T 230.00 230KV CKT 1
FDNS	00G12_020	0	14SP	G12_020	FROM->TO	SWISHER COUNTY INTERCHANGE (GE M101686) 230/115/13.2KV TRANSFORMER CKT 1	150	0.05666	104.9845	AMARILLO SOUTH INTERCHANGE - G07-48T 230.00 230KV CKT 1
FDNS	00G12_020	0	14SP	G12_020	FROM->TO	SWISHER COUNTY INTERCHANGE (GE M101686) 230/115/13.2KV TRANSFORMER CKT 1	150	0.05666	104.0471	G07-48T 230.00 - SWISHER COUNTY INTERCHANGE 230KV CKT 1
FDNS	00G12_020	0	14SP	G12_020	FROM->TO	SWISHER COUNTY INTERCHANGE (GE M101686) 230/115/13.2KV TRANSFORMER CKT 1	150	0.03119	102.1285	HALE CO INTERCHANGE - KRESS INTERCHANGE 115KV CKT 1
FDNS	00G12_020	0	24SP	G12_020	FROM->TO	TUCO INTERCHANGE (GE M102345) 230/115/13.2KV TRANSFORMER CKT 1	252	0.05887	112.3306	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00G12_020	0	24SP	G12_020	FROM->TO	TUCO INTERCHANGE (GE M102345) 230/115/13.2KV TRANSFORMER CKT 1	252	0.05887	109.3683	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	0	0	24SP	G12_020	FROM->TO	TUCO INTERCHANGE (GE M102345) 230/115/13.2KV TRANSFORMER CKT 1	252	0.0588	104.1894	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	0	0	24SP	G12_020	FROM->TO	TUCO INTERCHANGE (GE M102345) 230/115/13.2KV TRANSFORMER CKT 1	252	0.0588	101.3786	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	06ALL	0	14G	G12_020	FROM->TO	TUCO INTERCHANGE (GE M1022338) 345/230/13.2KV TRANSFORMER CKT 1	560	0.4996	99.8	TUCO INTERCHANGE (SIEM 8743066) 345/230/13.2KV TRANSFORMER CKT 2
FDNS	03ALL	2	14G	G12_020	TO->FROM	MULLERGREEN - SPEARVILLE 230KV CKT 1	318.7	0.03658	153.7816	G11-17T 345.00 - SPEARVILLE 345KV CKT 1
FDNS	3	2	14G	G12_020	TO->FROM	MULLERGREEN - SPEARVILLE 230KV CKT 1	318.7	0.03728	123.4433	G11-17T 345.00 - SPEARVILLE 345KV CKT 1
FDNS	00G12_020	3	14SP	G12_020	TO->FROM	BAILEY COUNTY REC-EARTH INTERCHANGE - PLANT X STATION 115KV CKT 1	160	0.03449	117.4489	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	01ALL	3	14G	G12_020	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.05925	164.0878	DBL-WWRD-G12
FDNS	1	3	14G	G12_020	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.05943	130.9056	DBL-WWRD-G12
FDNS	01ALL	3	14G	G12_020	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05925	255.0727	DBL-WWRD-G12
FDNS	1	3	14G	G12_020	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05943	203.8113	DBL-WWRD-G12
FDNS	06ALL	3	14G	G12_020	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05914	106.5714	DBL-WWRD-G12
FDNS	00G12_020	3	14SP	G12_020	TO->FROM	HALE CO INTERCHANGE - TUCO INTERCHANGE 115KV CKT 1	96	0.04524	107.5278	SWISHER COUNTY INTERCHANGE (GE M101686) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_020	3	14SP	G12_020	TO->FROM	HALE CO INTERCHANGE - TUCO INTERCHANGE 115KV CKT 1	96	0.04524	107.5139	KRESS INTERCHANGE - SWISHER COUNTY INTERCHANGE 115KV CKT 1
FDNS	00G12_020	3	14SP	G12_020	TO->FROM	HALE CO INTERCHANGE - TUCO INTERCHANGE 115KV CKT 1	96	0.07134	106.6893	SWISHER COUNTY INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1
FNSL-Blown up	01ALL	3	14G	G12_020	-	Non-converged Contingency	0	0.13208	-	DBL-TGA-MATT
FDNS	06ALL	3	14G	G12_020	TO->FROM	PLANT X STATION - TOLK STATION EAST 230KV CKT 2	502	0.08298	102.3374	PLANT X STATION - TOLK STATION WEST 230KV CKT 1
FDNS	06ALL	3	14G	G12_020	TO->FROM	PLANT X STATION - TOLK STATION WEST 230KV CKT 1	502	0.08346	103.0833	PLANT X STATION - TOLK STATION EAST 230KV CKT 2
FDNS	06ALL	3	14G	G12_020	FROM->TO	SPSSPPTIESB	620	0.4339	102.8952	BASE CASE
FDNS	06ALL	3	14G	G12_020	FROM->TO	SPSSPPTIESC1	620	0.4339	102.8952	BASE CASE
FDNS	00G12_020	3	14SP	G12_020	FROM->TO	SWISHER COUNTY INTERCHANGE (GE M101686) 230/115/13.2KV TRANSFORMER CKT 1	150	0.05672	112.1525	AMARILLO SOUTH INTERCHANGE - G07-48T 230.00 230KV CKT 1
FDNS	00G12_020	3	14SP	G12_020	FROM->TO	SWISHER COUNTY INTERCHANGE (GE M101686) 230/115/13.2KV TRANSFORMER CKT 1	150	0.05672	105.1105	AMARILLO SOUTH INTERCHANGE - G07-48T 230.00 230KV CKT 1
FDNS	00G12_020	3	14SP	G12_020	FROM->TO	SWISHER COUNTY INTERCHANGE (GE M101686) 230/115/13.2KV TRANSFORMER CKT 1	150	0.05672	104.1741	G07-48T 230.00 - SWISHER COUNTY INTERCHANGE 230KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00G12_020	3	14SP	G12_020	FROM->TO	SWISHER COUNTY INTERCHANGE (GE M101686) 230/115/13.2KV TRANSFORMER CKT 1	150	0.03123	102.2037	HALE CO INTERCHANGE - KRESS INTERCHANGE 115KV CKT 1
FDNS	00G12_020	3	24SP	G12_020	FROM->TO	TUCO INTERCHANGE (GE M102345) 230/115/13.2KV TRANSFORMER CKT 1	252	0.05893	112.3632	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00G12_020	3	24SP	G12_020	FROM->TO	TUCO INTERCHANGE (GE M102345) 230/115/13.2KV TRANSFORMER CKT 1	252	0.05893	109.4003	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	03ALL	0	14G	G12_023	TO->FROM	CHISHOLM - MAIZEE 4 138.00 138KV CKT 1	287	0.0557	102.1815	BENTON - WICHITA 345KV CKT 1
FDNS	00G12_023	0	19WP	G12_023	FROM->TO	CLEARWATER - GILL ENERGY CENTER WEST 138KV CKT 1	191	0.09906	99.8	GILL ENERGY CENTER WEST - VIOLA 4 138.00 138KV CKT 1
FDNS	00G12_023	0	24SP	G12_023	FROM->TO	GILL ENERGY CENTER EAST (GEC3 GSU) 138/69/14.4KV TRANSFORMER CKT 1	137.5	0.03652	137.627	GILL ENERGY CENTER SOUTH - GILL ENERGY CENTER WEST 138KV CKT Z1
FDNS	00G12_023	0	19SP	G12_023	FROM->TO	GILL ENERGY CENTER EAST (GEC3 GSU) 138/69/14.4KV TRANSFORMER CKT 1	137.5	0.03663	135.7331	GILL ENERGY CENTER SOUTH - GILL ENERGY CENTER WEST 138KV CKT Z1
FDNS	0	0	24SP	G12_023	FROM->TO	GILL ENERGY CENTER EAST (GEC3 GSU) 138/69/14.4KV TRANSFORMER CKT 1	137.5	0.03652	121.0554	GILL ENERGY CENTER SOUTH - GILL ENERGY CENTER WEST 138KV CKT Z1
FDNS	0	0	19SP	G12_023	FROM->TO	GILL ENERGY CENTER EAST (GEC3 GSU) 138/69/14.4KV TRANSFORMER CKT 1	137.5	0.03661	119.173	GILL ENERGY CENTER SOUTH - GILL ENERGY CENTER WEST 138KV CKT Z1
FDNS	06ALL	0	14G	G12_023	FROM->TO	TUCXFR345230	300	0.0355	102.6	BASE CASE
FDNS	00G12_023	0	14WP	G12_023	FROM->TO	WICHITA (WICHT12X) 345/138/13.8KV TRANSFORMER CKT 1	430	0.04789	102.1623	WICHITA (WICHT11X) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	03ALL	2	14G	G12_023	TO->FROM	CHISHOLM - MAIZEE 4 138.00 138KV CKT 1	287	0.05466	112.2713	BENTON - WICHITA 345KV CKT 1
FDNS	00G12_023	3	24SP	G12_023	FROM->TO	GILL ENERGY CENTER EAST (GEC3 GSU) 138/69/14.4KV TRANSFORMER CKT 1	137.5	0.03654	137.6266	GILL ENERGY CENTER SOUTH - GILL ENERGY CENTER WEST 138KV CKT Z1
FDNS	00G12_023	3	19SP	G12_023	FROM->TO	GILL ENERGY CENTER EAST (GEC3 GSU) 138/69/14.4KV TRANSFORMER CKT 1	137.5	0.03664	135.7236	GILL ENERGY CENTER SOUTH - GILL ENERGY CENTER WEST 138KV CKT Z1
FDNS	06ALL	3	14G	G12_023	FROM->TO	TUCXFR345230	300	0.03515	101.9	BASE CASE
FDNS	00G12_023	3	14WP	G12_023	FROM->TO	WICHITA (WICHT12X) 345/138/13.8KV TRANSFORMER CKT 1	430	0.04752	102.5115	WICHITA (WICHT11X) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CHISHOLM - MAIZEE 4 138.00 138KV CKT 1	287	0.04042	102.1815	BENTON - WICHITA 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06573	150.3456	SMOKYHLE 230.00 - SUMMIT 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.066	143.3029	AXTELL - POST ROCK 345KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0803	142.4976	DBL-WICH-THI
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06573	142.2835	KNOLL 230 - SMOKYHLE 230.00 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05733	139.4987	DBL-BVR-WWRD
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.08041	137.6213	DBL-WICH-THI
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06319	137.4148	THISTLE7 345.00 - WICHITA 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06319	137.4148	THISTLE7 345.00 - WICHITA 345KV CKT 2
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06152	137.2555	G12-011T 345.00 - POST ROCK 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06201	135.795	DBL-TGA-MATT
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06095	134.7363	BEAVER CO 345.00 - BUCKNER7 345.00 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06201	133.8675	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06201	133.8256	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06111	133.8072	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06	133.3541	ST JOHN - ST JOHN 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05963	132.7111	SPP-MKEC-06
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05963	132.6813	SEWARD - ST JOHN 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06152	132.3498	G11-17T 345.00 - G12-011T 345.00 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0593	132.0189	MINGO - RED WILLOW 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06	130.5316	HUNTSVILLE - ST JOHN 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06	130.3017	MIDW-CATB05
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05836	130.278	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05836	130.2479	SPP-SWPS-05
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	130.1714	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06	130.01	HUNTSVILLE - HUTCHINSON ENERGY CENTER 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05864	129.6866	AXTELL - PAULINE 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.058	129.5954	GRAND ISLAND - SWEETWATER 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	129.5098	GEN532652 1-JEFFREY ENERGY CENTER UNIT 2
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	129.5094	GEN532653 1-JEFFREY ENERGY CENTER UNIT 3
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05005	129.3432	CLARKCOUNTY7345.00 - IRONWOOD7 345.00 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	129.2575	GEN532651 1-JEFFREY ENERGY CENTER UNIT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05819	129.2445	GREAT BEND TAP - SEWARD 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05819	129.2373	GREAT BEND TAP - MULLERGREN 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05005	129.1543	CLARKCOUNTY7345.00 - SPEARVILLE 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05778	128.9065	MINGO - SETAB 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05839	128.8038	MOORE - PAULINE 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06926	128.6931	BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05715	128.6549	LAWTON EASTSIDE - OKLAUNION 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05803	128.5456	ELLSWTP3 115.00 - MULLERGREN 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05698	128.1944	BEAVER CO 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05698	128.1944	BEAVER CO 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05803	128.1156	SPP-MKEC-02
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05248	127.7028	SPEARVILLE (SPEARVL) 345/230/13.8KV TRANSFORMER CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06036	127.639	MULLERGREN - SOUTH HAYS 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05803	127.4788	ELLSWTP3 115.00 - RUSSELL 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05743	127.328	GREENSBURG - SSTARTP3 115.00 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05808	127.2576	SPP-MKEC-08
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05785	127.2435	ELM CREEK - NORTHWEST MANHATTAN 230KV CKT 1



SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05785	127.1995	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05743	127.0442	SPP-MKEC-09B
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05743	127.0354	GREENSBURG - SUN CITY 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05686	126.9959	GEN530690 1-PRWINDG1 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05686	126.9723	GEN542962 2-IATAN UNIT #2
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05948	126.9651	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05702	126.9001	STEGALL - STEGALL TY 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05702	126.8826	STEGALL - STEGALL TRANSFORMER 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05702	126.879	STEGALL TY 345/230KV TRANSFORMER CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05702	126.8727	NEB01WAPAB3
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05702	126.8643	TRF-STEGALL
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05743	126.8631	MEDICINE LODGE - SUN CITY 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05785	126.8468	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05781	126.8356	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05781	126.8356	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 2
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05686	126.7803	GEN542955 1-LACYGNE UNIT #1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05686	126.7769	GEN542956 2-LACYGNE UNIT #2
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05741	126.7654	GRAND ISLAND - MCCOOL 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05785	126.7422	SPP-SWPS-04
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05686	126.5907	GEN542957 1-IATAN UNIT #1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05803	126.5814	RUSSELL - WALDO 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05762	126.5698	FLATRDG3 - HARPER 138KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05788	126.5227	GERALD GENTLEMAN STATION - RED WILLOW 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05743	126.5182	BARBER 3 115.00 - MEDICINE LODGE 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05836	126.4517	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05852	126.3806	POSTROCK6 230.00 - SOUTH HAYS 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05686	126.3693	GEN532663 1-LAWRENCE ENERGY CENTER UNIT 5
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05686	126.3449	GEN532722 1-EVANS ENERGY CENTER UNIT 2
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05741	126.334	MCCOOL - MOORE 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05803	126.2652	COVERT 3 115.00 - WALDO 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05715	126.264	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05712	126.2612	SPP-SWPS-01
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05803	126.2439	COVERT 3 115.00 - SMITH CENTER 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05743	126.2354	HEIZER 6 230.00 - MULLERGREEN 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05743	126.2291	HEIZER 6 230.00 (HEIZER T1) 230/115/12.5KV TRANSFORMER CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05744	126.2245	MULLERGREEN (MULGREN6) 230/115/13.8KV TRANSFORMER CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05686	126.2208	GEN542951 5-HAWTHORN UNIT #5
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05762	126.1619	HARPER - MILAN TAP 138KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05691	126.1138	ELK CITY 230KV - SWEETWATER 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05691	126.1134	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05691	126.1067	SPP-SWPS-03
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05703	126.0996	NUNDRWD - WAYSIDE 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05715	126.0905	SPP-AEPW-32
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05704	126.0618	G10-056T 345.00 - ST JOE 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05762	125.9888	SPP-MKEC-03B
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05762	125.9854	CLEARWATER - MILAN TAP 138KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.06624	125.8606	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05686	124.8568	BASE CASE
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05686	124.8568	NC1_GEN-NEBRASKA CITY 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.0569	123.8529	MANNING TAP - SCOTT CITY 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05523	123.8146	RENO COUNTY - WICHITA 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05686	123.733	GEN560235 1-G08-92 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05749	123.6957	CIRCLE - HUTCHINSON ENERGY CENTER 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05621	123.6842	POST ROCK (POSTROCK T1) 345/230/13.8KV TRANSFORMER CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05621	123.6374	WR-DOUBLE17
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05585	123.6352	BENTON - WICHITA 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05686	123.6297	GEN527902 1-HOBBS PLANT #2 (CT)
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05686	123.621	GEN527901 1-HOBBS PLANT #1 (CT)
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.0559	123.6029	HUNTERS7 345.00 - WOODRING 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05652	123.5986	CIRCLE - RICE 6 230.00 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05686	123.5758	GEN526334 1-JONES_4 116.500
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05579	123.5217	CIRCLE - RENO COUNTY 115KV CKT 2
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05686	123.5142	GEN526332 1-JONES GEN #2 21 KV
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05652	123.4946	LYONS - RICE CO 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREEN 230KV CKT 1	318.7	0.05686	123.4922	GEN560140 1-G09-08 0.7000

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	123.4613	GEN659111 2-LELAND OLDS UNIT2
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05644	123.3737	MOUNDRIDGE (MOUND10X) 138/115/13.8KV TRANSFORMER CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	123.372	GEN659103 1-ANTELOPE VALLEY UNIT1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	123.372	GEN659107 2-ANTELOPE VALLEY UNIT2
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05644	123.3695	WR-B3-9
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05528	123.2909	MORRIS COUNTY - UNIONRG6 230.00 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05677	123.2305	SPP-WR-335A
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05221	123.1856	EAST MCPHERSON - SUMMIT 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	123.107	EASTDC - WELSH 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0557	123.0344	RENFROW7 345.00 - VIOLA 7 345.00 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	123.024	GEN527903 1-HOBBS PLANT #3 (ST)
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	122.9628	GEN531459 2-S2 GENERATOR
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05669	122.8735	EAST MCPHERSON (EMCPHR1X) 230/115/13.8KV TRANSFORMER CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05528	122.8029	SUMMIT - UNIONRG6 230.00 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05652	122.8002	RICE 6 230.00 (RICE T1) 230/115/12.47KV TRANSFORMER CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	122.6711	GEN539762 1-SSWIND 1 34.500
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	122.6702	GEN560522 1-G05-12-2 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	122.669	GEN539670 4-JUDDSON LARGE GENERATOR
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05602	122.6282	SWISSVALE - WEST GARDNER 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	122.5349	GEN539785 1-ENSGW 1 0.5750
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	122.5161	GEN560696 1-G11-008-4 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	122.4072	GEN523971 1-HARRINGTON GEN #1 24 KV
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	122.4071	GEN523972 1-HARRINGTON GEN #2 24 KV
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	122.4001	GEN523973 1-HARRINGTON GEN #3 24 KV
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05593	122.3248	WR-B3-8
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05589	122.282	MOUNDRIDGE - RENO COUNTY 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05652	122.2009	MIDW-CATB06
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	122.1981	GEN560267 1-G10-15-1 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	122.1367	GEN560268 1-G10-15-2 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	122.0189	GEN539767 1-GRAY COUNTY WIND FARM
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	121.874	GEN560695 1-G11-008-3 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	121.7053	GEN560694 1-G11-008-2 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	121.575	GEN525561 1-TOLK GEN #1 24 KV
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	121.4996	GEN525562 1-TOLK GEN #2 24 KV
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	121.4895	GEN640011 2-GERALD GENTLEMAN STATION UNIT 2
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	121.401	GEN640010 1-GERALD GENTLEMAN STATION UNIT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	121.3185	GEN560238 1-G10-09 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	121.0959	GEN562298 1-G12-024 0.6500
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06633	120.6885	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	120.6291	GEN560693 1-G11-008-1 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	120.5835	GEN560329 1-G10-45 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	120.5694	GEN531503 1-CIMRRN 1 34.500
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	120.3343	GEN539807 1-G05-12 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	120.2896	GEN539677 3-A. M. MULLERGREN GENERATOR
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	120.265	GEN542902 1-GPW_G1 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05605	120.1937	HOYT - STRANGER CREEK 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	120.0798	GEN560514 1-G04_014 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	119.9819	GEN523117 1-BUFF_DUNES210.6900
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.07444	119.7445	CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.07444	119.7445	CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 2
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	119.5602	GEN560659 1-G07-38 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	119.5312	GEN560432 1-G08-124 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	119.5129	GEN562035 1-G11_016_3 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	119.3594	GEN560549 1-G06-06 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	119.1254	GEN562123 1-G12_011_3 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	119.0514	GEN560714 1-G10_061_3 0.6900
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06651	118.8189	AXTELL - POST ROCK 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	118.7597	GEN659118 1-LARAMIE RIVER UNIT1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06624	117.9986	KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.056	117.8989	HOYT - JEFFREY ENERGY CENTER 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	117.8834	GEN531447 1-HOLCUMB GENERATOR
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05593	117.4951	WRTOD400
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05783	115.2551	DBL-BVR-WWRD
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05686	115.2432	GEN562032 1-G11_017_3 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05123	114.9414	MULLERGREN - SPEARVILLE 230KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06368	114.7722	THISTLE7 345.00 - WICHITA 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB		TC%LOADING		CONTINGENCY
							(MVA)	TDF	(% MVA)		
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06368	114.7722	THISTLE7 345.00 - WICHITA 345KV CKT 2	
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.07452	114.0451	CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 1	
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.07452	114.0451	CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 2	
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06666	113.7089	AXTELL - POST ROCK 345KV CKT 1	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06246	113.5023	DBL-TGA-MATT	
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05085	113.3258	CIRCLE - EAST MCPHERSON 230KV CKT 1	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06199	112.9087	G12-011T 345.00 - POST ROCK 345KV CKT 1	
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06633	112.8875	KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06158	112.0115	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06047	111.7776	ST JOHN - ST JOHN 115KV CKT 1	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06246	111.6035	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06246	111.496	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06141	111.4683	BEAVER CO 345.00 - BUCKNER7 345.00 345KV CKT 1	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06008	111.3	SPP-MKEC-06	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06008	111.2718	SEWARD - ST JOHN 115KV CKT 1	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06199	110.5341	G11-17T 345.00 - G12-011T 345.00 345KV CKT 1	
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05792	110.412	DBL-BVR-WWRD	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	109.966	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1	
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06376	109.939	THISTLE7 345.00 - WICHITA 345KV CKT 1	
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06376	109.939	THISTLE7 345.00 - WICHITA 345KV CKT 2	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	109.6674	GEN532652 1-JEFFREY ENERGY CENTER UNIT 2	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	109.6668	GEN532653 1-JEFFREY ENERGY CENTER UNIT 3	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	109.4041	GEN532651 1-JEFFREY ENERGY CENTER UNIT 1	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06047	109.1843	HUNTSVILLE - ST JOHN 115KV CKT 1	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06047	108.9546	MIDW-CATB05	
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06254	108.7216	DBL-TGA-MATT	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05845	108.7057	GRAND ISLAND - SWEETWATER 345KV CKT 1	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06047	108.6821	HUNTSVILLE - HUTCHINSON ENERGY CENTER 115KV CKT 1	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0598	108.6609	MINGO - RED WILLOW 345KV CKT 1	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05909	108.6324	AXTELL - PAULINE 345KV CKT 1	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05863	108.4726	GREAT BEND TAP - SEWARD 115KV CKT 1	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05863	108.4449	GREAT BEND TAP - MULLERGREN 115KV CKT 1	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05882	108.281	SPP-SWPS-05	
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.03378	108.2444	G11-17T 345.00 - SPEARVILLE 345KV CKT 1	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05882	108.2035	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05885	107.887	MOORE - PAULINE 345KV CKT 1	
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06206	107.8323	G12-011T 345.00 - POST ROCK 345KV CKT 1	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05847	107.8295	ELLSWTP3 115.00 - MULLERGREN 115KV CKT 1	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05051	107.8032	CLARKCOUNTY7345.00 - IRONWOOD7 345.00 345KV CKT 1	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0576	107.7715	LAWTON EASTSIDE - OKLAUNION 345KV CKT 1	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05051	107.6626	CLARKCOUNTY7345.00 - SPEARVILLE 345KV CKT 1	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05847	107.5714	SPP-MKEC-02	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05743	107.3621	BEAVER CO 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05743	107.3621	BEAVER CO 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06961	107.3523	BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1	
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06165	107.2211	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1	
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06055	107.1103	ST JOHN - ST JOHN 115KV CKT 1	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05824	107.0604	MINGO - SETAB 345KV CKT 1	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	106.9388	GEN530690 1-PRWINDG1 0.6900	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05847	106.9318	ELLSWTP3 115.00 - RUSSELL 115KV CKT 1	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	106.9071	GEN542962 2-IATAN UNIT #2	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06083	106.8716	MULLERGREN - SOUTH HAYS 230KV CKT 1	
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06254	106.7838	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	106.7004	GEN542955 1-LACYGNE UNIT #1	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	106.6965	GEN542956 2-LACYGNE UNIT #2	
FNLS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0583	106.6801	ELM CREEK - NORTHWEST MANHATTAN 230KV CKT 1	
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06254	106.6638	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05853	106.6381	SPP-MKEC-08	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05787	106.6208	GREENSBURG - SSTARTP3 115.00 115KV CKT 1	
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06016	106.5934	SPP-MKEC-06	
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06149	106.5908	BEAVER CO 345.00 - BUCKNER7 345.00 345KV CKT 1	
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06016	106.5629	SEWARD - ST JOHN 115KV CKT 1	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	106.5159	GEN542957 1-IATAN UNIT #1	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05293	106.447	SPEARVILLE (SPEARVL) 345/230/13.8KV TRANSFORMER CKT 1	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05787	106.395	SPP-MKEC-09B	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05787	106.3444	GREENSBURG - SUN CITY 115KV CKT 1	

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB	TDF	TC%LOADING		CONTINGENCY
							(MVA)		(% MVA)		
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05807	106.2886		FLATRDG3 - HARPER 138KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05825	106.2715		MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05825	106.2715		MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 2
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05785	106.2715		GRAND ISLAND - MCCOOL 345KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	106.2506		GEN532663 1-LAWRENCE ENERGY CENTER UNIT 5
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	106.2275		GEN532722 1-EVANS ENERGY CENTER UNIT 2
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05787	106.2156		MEDICINE LODGE - SUN CITY 115KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05828	106.1999		POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05987	106.1939		BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	106.1244		GEN542951 5-HAWTHORN UNIT #5
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05847	106.0892		RUSSELL - WALDO 115KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05807	105.9904		HARPER - MILAN TAP 138KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05787	105.9823		BARBER 3 115.00 - MEDICINE LODGE 115KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05391	105.9715		JEFFREY ENERGY CENTER - SUMMIT 345KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05898	105.9496		POSTROCK6 230.00 - SOUTH HAYS 230KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05787	105.924		MULLERGREN (MULGREN6) 230/115/13.8KV TRANSFORMER CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05786	105.923		HEIZER 6 230.00 - MULLERGREN 230KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05786	105.9037		HEIZER 6 230.00 (HEIZER T1) 230/115/12.5KV TRANSFORMER CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05828	105.8759		Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05785	105.8344		MCCOOL - MOORE 345KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	105.8189		GEN541151 3-SIBLEY GENERATING UNIT #3
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05807	105.8181		SPP-MKEC-03B
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05807	105.8142		CLEARWATER - MILAN TAP 138KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05748	105.7959		G10-056T 345.00 - ST JOE 345KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05847	105.786		COVERT 3 115.00 - WALDO 115KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06206	105.5899		G11-17T 345.00 - G12-011T 345.00 345KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05737	105.5214		GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05737	105.2195		GEN532652 1-JEFFREY ENERGY CENTER UNIT 2
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05737	105.2189		GEN532653 1-JEFFREY ENERGY CENTER UNIT 3
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05737	104.9502		GEN532651 1-JEFFREY ENERGY CENTER UNIT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	104.7266		BASE CASE
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	104.7266		NC1_GEN-NEBRASKA CITY 1
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06055	104.4311		HUNTSVILLE - ST_JOHN 115KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06055	104.2177		MIDW-CATB05
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05852	104.0799		GRAND ISLAND - SWEETWATER 345KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05917	104.0026		AXTELL - PAULINE 345KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06055	103.9316		HUNTSVILLE - HUTCHINSON ENERGY CENTER 115KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0587	103.835		GREAT BEND TAP - SEWARD 115KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05988	103.8226		MINGO - RED WILLOW 345KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0587	103.8217		GREAT BEND TAP - MULLERGREN 115KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05622	103.7526		CIRCLE - RENO COUNTY 115KV CKT 2
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	103.708		GEN645012 2-NEBRASKA CITY 2
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05664	103.6621		POST ROCK (POSTROCK T1) 345/230/13.8KV TRANSFORMER CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	103.6513		GEN560235 1-G08-92 0.6900
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0557	103.6035		MORRIS COUNTY - UNIONRG6 230.00 230KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05058	103.59		CLARKCOUNTY7345.00 - IRONWOOD7 345.00 345KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05628	103.5732		BENTON - WICHITA 345KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0589	103.5667		SPP-SWPS-05
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0589	103.4973		FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05696	103.4748		LYONS - RICE_CO 115KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05058	103.4496		CLARKCOUNTY7345.00 - SPEARVILLE 345KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05696	103.447		CIRCLE - RICE 6 230.00 230KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	103.4402		GEN526332 1-JONES GEN #2 21 KV
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	103.4278		GEN560140 1-G09-08 0.7000
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05688	103.4157		WR-B3-9
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05688	103.4152		MOUNDRIDGE (MOUND10X) 138/115/13.8KV TRANSFORMER CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05892	103.2858		MOORE - PAULINE 345KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05855	103.2573		ELLSWTP3 115.00 - MULLERGREN 115KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	103.2521		GEN659111 2-LELAND OLDS UNIT2
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05721	103.2337		SPP-WR-335A
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05767	103.1954		LAWTON EASTSIDE - OKLAUNION 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.04762	103.1771		CIRCLE (CIRCLE1X) 230/115/13.8KV TRANSFORMER CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	103.1655		GEN659103 1-ANTELOPE VALLEY UNIT1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	103.1655		GEN659107 2-ANTELOPE VALLEY UNIT2
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	103.1476		GEN539762 1-SSWIND 1 34.500

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB	TC%LOADING		CONTINGENCY
							(MVA)	TDF	(% MVA)	
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	103.1442	GEN560522 1-G05-12-2 0.6900
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0557	103.1264	SUMMIT - UNIONRG6 230.00 230KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05614	103.0737	RENFROW7 345.00 - VIOLA 7 345.00 345KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	103.0388	EASTDC - WELSH 345KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	103.0351	GEN527903 1-HOBBS PLANT #3 (ST)
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	103.0268	GEN539785 1-ENSNWV 1 0.5750
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	103.0164	GEN531459 2-S2 GENERATOR
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05855	103.0053	SPP-MKEC-02
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05713	102.8546	EAST MCPHERSON (EMCPHR1X) 230/115/13.8KV TRANSFORMER CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	102.7834	GEN560267 1-G10-15-1 0.6900
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05751	102.7813	BEAVER CO 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05751	102.7813	BEAVER CO 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	102.7587	GEN560268 1-G10-15-2 0.6900
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	102.6772	GEN539767 1-GRAY COUNTY WIND FARM
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05696	102.673	RICE 6 230.00 (RICE T1) 230/115/12.47KV TRANSFORMER CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05645	102.6262	SWISSVALE - WEST GARDNER 345KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	102.6152	GEN560696 1-G11-008-4 0.6900
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05737	102.5071	GEN530690 1-PRWINDG1 0.6900
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05636	102.4833	WR-B3-8
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05633	102.4615	MOUNDRIDGE - RENO COUNTY 115KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	102.4331	GEN539670 4-JUDSON LARGE GENERATOR
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05737	102.4133	GEN542962 2-IATAN UNIT #2
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	102.3854	GEN523971 1-HARRINGTON GEN #1 24 KV
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	102.3853	GEN523972 1-HARRINGTON GEN #2 24 KV
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	102.3785	GEN523973 1-HARRINGTON GEN #3 24 KV
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05831	102.3705	MINGO - SETAB 345KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05855	102.3656	ELLSWTP3 115.00 - RUSSELL 115KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06965	102.2164	BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05737	102.1981	GEN542955 1-LACYGNE UNIT #1
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06091	102.195	MULLERGREN - SOUTH HAYS 230KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05737	102.1941	GEN542956 2-LACYGNE UNIT #2
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05696	102.1784	MIDW-CATB06
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.053	102.166	SPEARVILLE (SPEARVL) 345/230/13.8KV TRANSFORMER CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	102.142	GEN560238 1-G10-09 0.6900
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05838	102.1308	ELM CREEK - NORTHWEST MANHATTAN 230KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0586	102.099	SPP-MKEC-08
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	102.0227	GEN560695 1-G11-008-3 0.6900
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05737	102.0162	GEN542957 1-IATAN UNIT #1
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05795	102.0068	GREENSBURG - SSTARTP3 115.00 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.04489	101.9741	G11-17T 345.00 - MULGREN7 345.00 345KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	101.8668	GEN560694 1-G11-008-2 0.6900
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05795	101.8322	SPP-MKEC-09B
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.04489	101.8221	MULGREN7 345.00 (MULLERGREN1) 345/230/13.8KV TRANSFORMER CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05795	101.7749	GREENSBURG - SUN CITY 115KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05814	101.7559	FLATRDG3 - HARPER 138KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05832	101.7546	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05832	101.7546	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 2
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05737	101.7431	GEN532663 1-LAWRENCE ENERGY CENTER UNIT 5
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05737	101.7328	GEN532722 1-EVANS ENERGY CENTER UNIT 2
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05793	101.7109	GRAND ISLAND - MCCOOL 345KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	101.6559	GEN525561 1-TOLK GEN #1 24 KV
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05397	101.6489	JEFFREY ENERGY CENTER - SUMMIT 345KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05795	101.6362	MEDICINE LODGE - SUN CITY 115KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05737	101.6213	GEN542951 5-HAWTHORN UNIT #5
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	101.6188	GEN560329 1-G10-45 0.6900
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	101.6187	GEN531503 1-CIMRRN 1 34.500
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05835	101.6101	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05993	101.5395	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05855	101.5103	RUSSELL - WALDO 115KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	101.4634	GEN525562 1-TOLK GEN #2 24 KV
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05814	101.4562	HARPER - MILAN TAP 138KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	101.43	GEN539807 1-G05-12 0.6900
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05795	101.412	BARBER 3 115.00 - MEDICINE LODGE 115KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05793	101.3747	HEIZER 6 230.00 - MULLERGREN 230KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05793	101.3746	HEIZER 6 230.00 (HEIZER T1) 230/115/12.5KV TRANSFORMER CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY	
FDNS		3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05794	101.3697	MULLERGREN (MULGREN6) 230/115/13.8KV TRANSFORMER CKT 1
FDNS	03G12_024		0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	101.3509	GEN542902 1-GPW_G1 0.6900
FDNS	03G12_024		0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	101.3163	GEN640011 2-GERALD GENTLEMAN STATION UNIT 2
FDNS		3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05905	101.3154	POSTROCK6 230.00 - SOUTH HAYS 230KV CKT 1
FDNS		3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05737	101.3088	GEN541151 3-SIBLEY GENERATING UNIT #3
FDNS	03G12_024		0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	101.2991	GEN562298 1-G12-024 0.6500
FDNS		3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05755	101.2804	G10-056T 345.00 - ST JOE 345KV CKT 1
FDNS		3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05792	101.2794	MCCOOL - MOORE 345KV CKT 1
FDNS	03G12_024		0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	101.2794	GEN640010 1-GERALD GENTLEMAN STATION UNIT 1
FDNS		3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05814	101.2734	SPP-MKEC-03B
FDNS		3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05814	101.2681	CLEARWATER - MILAN TAP 138KV CKT 1
FDNS	03G12_024		0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	101.2345	GEN560514 1-G04_014 0.6900
FDNS	03G12_024		0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	101.1976	GEN523117 1-BUFF_DUNES210.6900
FDNS	03G12_024		0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	100.8762	GEN560693 1-G11-008-1 0.6900
FDNS	03G12_024		0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	100.8365	GEN560659 1-G07-38 0.6900
FDNS	03G12_024		0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	100.8115	GEN560432 1-G08-124 0.6900
FDNS	03G12_024		0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	100.782	GEN562035 1-G11_016_3 0.6900
FDNS	03G12_024		0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	100.6778	GEN560549 1-G06-06 0.6900
FDNS	03G12_024		0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	100.4107	GEN562123 1-G12_011_3 0.6900
FDNS	03G12_024		0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	100.3994	GEN560714 1-G10_061_3 0.6900
FDNS	03G12_024		0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0573	100.2617	GEN539677 3-A. M. MULLERGREN GENERATOR
FDNS		3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05737	100.2064	BASE CASE
FDNS		3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05737	100.2064	NC1_GEN-NEBRASKA CITY 1
FDNS	03G12_024		0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05648	100.1864	HOYT - STRANGER CREEK 345KV CKT 1
FDNS	03G12_024		0	14G	G12_024	FROM->TO	CLEARWATER - GILL ENERGY CENTER WEST 138KV CKT 1	191	0.03742	102.2053	DBL-WICH-THI
FDNS	01ALL		0	14G	G12_024	FROM->TO	CLEARWATER - GILL ENERGY CENTER WEST 138KV CKT 1	191	0.05541	100.9736	DBL-WICH-THI
FDNS	03G12_024		0	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.03742	189.6935	DBL-WICH-THI
FDNS	01ALL		0	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.05541	187.4658	DBL-WICH-THI
FDNS		3	0	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.03748	182.9825	DBL-WICH-THI
FDNS		1	0	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.0555	165.8076	DBL-THIS-CLR
FDNS	06ALL		0	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.05526	135.8832	DBL-WICH-THI
FDNS		6	0	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.05539	127.0937	DBL-WICH-THI
FDNS	07ALL		0	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.05566	122.8194	DBL-WICH-THI
FDNS		7	0	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.05562	119.054	DBL-WICH-THI
FDNS	00G12_024		0	14WP	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.05501	118.7075	DBL-WICH-THI
FDNS	00G12_024		0	19WP	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.05712	111.815	DBL-WICH-THI
FDNS	01ALL		0	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.03064	110.5703	THISTLE7 345.00 - WICHITA 345KV CKT 1
FDNS	01ALL		0	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.03064	110.5703	THISTLE7 345.00 - WICHITA 345KV CKT 2
FDNS	09ALL		0	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.05556	106.2012	DBL-WICH-THI
FDNS		9	0	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.0556	105.1073	DBL-WICH-THI
FDNS	01ALL		0	14G	G12_024	TO->FROM	FLATRDG3 - THISTLE4 138.00 138KV CKT 1	286	0.06161	102.0663	DBL-WICH-THI
FDNS	03ALL		0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04269	124.0058	G12-016 TAP 345.00 - MORELND 345.00 345KV CKT 1
FDNS	03ALL		0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04269	123.881	MORELND 345.00 (MRLNDAUTO) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	01ALL		0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03276	103.3278	G12-016 TAP 345.00 - MORELND 345.00 345KV CKT 1
FDNS	01ALL		0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03276	103.2084	MORELND 345.00 (MRLNDAUTO) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	03G12_024		0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04278	100.9448	G12-016 TAP 345.00 - MORELND 345.00 345KV CKT 1
FDNS	03G12_024		0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04278	100.8821	MORELND 345.00 (MRLNDAUTO) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	03G12_024		0	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.03742	200.0988	DBL-WICH-THI
FDNS	01ALL		0	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.05541	197.8542	DBL-WICH-THI
FDNS		3	0	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.03748	193.2999	DBL-WICH-THI
FDNS		1	0	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.0555	176.3096	DBL-WICH-THI
FDNS	06ALL		0	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.05526	146.4333	DBL-THIS-CLR
FDNS		6	0	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.05539	137.6343	DBL-WICH-THI
FDNS	07ALL		0	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.05566	133.3765	DBL-WICH-THI
FDNS		7	0	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.05562	129.6126	DBL-WICH-THI
FDNS	00G12_024		0	14WP	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.05501	128.9259	DBL-WICH-THI
FDNS	00G12_024		0	19WP	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.05712	123.2185	DBL-WICH-THI
FDNS	01ALL		0	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.03064	120.7982	THISTLE7 345.00 - WICHITA 345KV CKT 1
FDNS	01ALL		0	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.03064	120.7982	THISTLE7 345.00 - WICHITA 345KV CKT 2
FDNS	09ALL		0	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.05556	116.7307	DBL-WICH-THI
FDNS		9	0	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.0556	115.6417	DBL-WICH-THI
FDNS		1	0	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.03067	109.5785	THISTLE7 345.00 - WICHITA 345KV CKT 1
FDNS		1	0	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.03067	109.5785	THISTLE7 345.00 - WICHITA 345KV CKT 2
FDNS	00G12_024		0	14SP	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.056	107.4727	DBL-WICH-THI
FDNS	03ALL		0	14G	G12_024	TO->FROM	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1	398	0.06565	105.8396	AXTELL - POST ROCK 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	03ALL	0	14G	G12_024	FROM->TO	MULGRE7 345.00 (MULLERGRENT1) 345/230/13.8KV TRANSFORMER CKT 1	600	0.10849	104.8345	G12-011T 345.00 - POST ROCK 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	MULGRE7 345.00 (MULLERGRENT1) 345/230/13.8KV TRANSFORMER CKT 1	600	0.10849	104.389	G12-011T 345.00 - POST ROCK 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	MULLERGREN - SOUTH HAYS 230KV CKT 1	297	0.07011	125.6811	G12-011T 345.00 - POST ROCK 345KV CKT 1
FDNS	03G12_024	0	14G	G12_024	FROM->TO	MULLERGREN - SOUTH HAYS 230KV CKT 1	297	0.07064	99.5	G12-011T 345.00 - POST ROCK 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	318.7	0.10198	119.8748	G11-17T 345.00 - SPEARVILLE 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	318.7	0.05991	114.3877	G11-17T 345.00 - MULGRE7 345.00 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	318.7	0.05991	114.1152	MULGRE7 345.00 (MULLERGRENT1) 345/230/13.8KV TRANSFORMER CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	318.7	0.10262	102.6074	G11-17T 345.00 - SPEARVILLE 345KV CKT 1
FNSL-Blown up	3	0	14G	G12_024	-	Non-converged Contingency	0	0.55547	-	DBL-THIS-CLR
FNSL-Blown up	01ALL	0	14G	G12_024	-	Non-converged Contingency	0	0.1431	-	DBL-TGA-MATT
FNSL-Blown up	03ALL	0	14G	G12_024	-	Non-converged Contingency	0	0.5542	-	DBL-THIS-CLR
FNSL-Blown up	03ALL	0	14G	G12_024	-	Non-converged Contingency	0	0.23148	-	DBL-WICH-THI
FNSL-Blown up	03G12_024	0	14G	G12_024	-	Non-converged Contingency	0	0.55533	-	DBL-THIS-CLR
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.05444	131.1278	AXTELL - POST ROCK 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04968	125.2673	CIRCLE - MULLERGREN 230KV CKT 1
FDNS	03G12_024	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.05503	113.9393	DBL-WICH-THI
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03962	112.9412	DBL-BVR-WWRD
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04353	111.3263	THISTLE7 345.00 - WICHITA 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04353	111.3263	THISTLE7 345.00 - WICHITA 345KV CKT 2
FDNS	03G12_024	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.05487	110.3867	AXTELL - POST ROCK 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04285	110.3789	DBL-TGA-MATT
FDNS	3	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.05511	109.985	DBL-WICH-THI
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04211	109.6249	BEAVER CO 345.00 - BUCKNER7 345.00 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04285	109.2719	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04285	109.228	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04181	109.1523	AXTELL - PAULINE 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	108.2573	GEN532652 1-JEFFREY ENERGY CENTER UNIT 2
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	108.2567	GEN532653 1-JEFFREY ENERGY CENTER UNIT 3
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.0407	108.2522	GRAND ISLAND - SWEETWATER 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	108.0173	GEN532651 1-JEFFREY ENERGY CENTER UNIT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.0414	107.8072	MOORE - PAULINE 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	107.2937	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04198	107.1219	CIRCLE - EAST MCPHERSON 230KV CKT 1
FDNS	3	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.05495	107.0178	AXTELL - POST ROCK 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04043	106.6881	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04043	106.6855	SPP-SWPS-05
FDNS	03G12_024	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.05007	106.2032	CIRCLE - MULLERGREN 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03986	105.6691	MINGO - RED WILLOW 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03472	105.6514	CLARKCOUNTY7345.00 - IRONWOOD7 345.00 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03472	105.522	CLARKCOUNTY7345.00 - SPEARVILLE 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03949	105.3903	LAWTON EASTSIDE - OKLAUNION 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04031	105.1653	ST JOHN - ST JOHN 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04029	105.0404	ELM CREEK - NORTHWEST MANHATTAN 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03938	105.0147	BEAVER CO 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03938	105.0147	BEAVER CO 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04016	104.983	SPP-MKEC-06
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04658	104.9706	BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04016	104.9706	SEWARD - ST JOHN 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	104.8484	GEN542962 2-IATAN UNIT #2
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03996	104.8117	GRAND ISLAND - MCCOOL 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04039	104.6799	PHILLIPSBURG - SMITH CENTER 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03988	104.6545	KNOLL - SALINE RIVER 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03946	104.6438	STEGALL - STEGALL TY 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03946	104.6298	STEGALL - STEGALL TRANSFORMER 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03946	104.6263	STEGALL TY 345/230KV TRANSFORMER CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03946	104.6208	NEB01WAPAB3
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03946	104.6122	TRF-STEGALL
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	104.5225	GEN542955 1-LACYGNE UNIT #1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	104.5182	GEN542956 2-LACYGNE UNIT #2
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	104.4329	GEN542957 1-IATAN UNIT #1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03988	104.4216	PLAINVILLE - SALINE RIVER 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	104.3563	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03999	104.3012	

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03996	104.2961	MCCOOL - MOORE 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03968	104.2811	GREENSBURG - SSTARTP3 115.00 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04031	104.219	HUNTSVILLE - ST_JOHN 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04031	104.1857	MIDW-CATB05
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03999	104.1102	SPP-MKEC-08
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03968	104.0934	SPP-MKEC-09B
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03968	104.0743	GREENSBURG - SUN CITY 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03951	104.0627	G10-056T 345.00 - ST JOE 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04062	104.0612	EMPORIA ENERGY CENTER - WICHITA 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04031	104.042	HUNTSVILLE - HUTCHINSON ENERGY CENTER 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03999	104.0376	Hitcland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03995	104.0181	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03995	104.0181	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 2
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	104.0101	GEN542951 5-HAWTHORN UNIT #5
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03988	103.977	PHILLIPSBURG - PLAINVILLE 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.0397	103.9688	GREAT BEND TAP - SEWARD 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.0397	103.9637	GREAT BEND TAP - MULLERGREN 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03968	103.9563	MEDICINE LODGE - SUN CITY 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03999	103.9545	SPP-SWPS-04
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03951	103.8485	COOPER - G10-056T 345.00 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03947	103.826	NUNDRWD - WAYSIDE 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04043	103.7517	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	103.6996	GEN541151 3-SIBLEY GENERATING UNIT #3
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03965	103.6631	BEACH STATION - G10-48T 115.00 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03957	103.4479	KNOLL 230 (KNOLL T1) 230/115/11.49KV TRANSFORMER CKT 1
FDNS	3	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.05014	103.0078	CIRCLE - MULLERGREN 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03872	102.5526	MINGO - SETAB 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	102.5293	BASE CASE
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	102.5293	NC1_GEN-NEBRASKA CITY 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03431	102.1273	SUMMIT (SUMMITIX) 345/230/14.4KV TRANSFORMER CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.0391	101.7172	NORTHVIEW - SUMMIT 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	101.5325	GEN640009 1-COOPER NUCLEAR STATION
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03833	101.478	WR-DOUBLE18
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03935	101.4438	COLBY - MINGO 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03862	101.3635	MULLERGREN - SPEARVILLE 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	101.3548	EASTOWN7 345.00 - IATAN 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	101.3236	GEN645011 1-NEBRASKA CITY 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03854	101.319	RENFWOW7 345.00 - VIOLA 7 345.00 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03833	101.3069	WR-DOUBLE16
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03833	101.2904	SPP-WR-305B
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	101.2692	GEN645001 1-FORT CALHOUN 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	101.2522	GEN527903 1-HOBBS PLANT #3 (ST)
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	101.2035	GEN641089 2-ENERGY CENTER 2
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	101.1489	GEN531459 2-S2 GENERATOR
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	101.1182	GEN539762 1-SSWIND 1 34.500
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	101.1083	GEN539670 4-JUDSON LARGE GENERATOR
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	101.0257	GEN560522 1-G05-12-2 0.6900
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	101.0247	GEN645012 2-NEBRASKA CITY 2
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	100.97	GEN539785 1-ENSNVGW 1 0.5750
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03756	100.9682	POSTROCK6 230.00 - SOUTH HAYS 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	100.9123	GEN560696 1-G11-008-4 0.6900
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03944	100.8967	EMPORIA ENERGY CENTER - MORRIS COUNTY 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03833	100.8146	WR-DOUBLE17
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	100.8079	GEN539677 3-A. M. MULLERGREN GENERATOR
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	100.8025	GEN523971 1-HARRINGTON GEN #1 24 KV
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	100.8024	GEN523972 1-HARRINGTON GEN #2 24 KV
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	100.7975	GEN523973 1-HARRINGTON GEN #3 24 KV
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	100.7001	GEN560267 1-G10-15-1 0.6900
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	100.664	GEN539767 1-GRAY COUNTY WIND FARM
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	100.6579	GEN560268 1-G10-15-2 0.6900
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	100.5901	GEN560140 1-G09-08 0.7000
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	100.5417	GEN659111 2-LELAND OLDS UNIT2
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	100.4695	GEN560695 1-G11-008-3 0.6900
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	100.417	GEN659103 1-ANTELOPE VALLEY UNIT1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	100.417	GEN659107 2-ANTELOPE VALLEY UNIT2
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	100.3532	GEN560694 1-G11-008-2 0.6900



SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY	
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	100.2534	GEN560235 1-G08-92 0.6900	
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	100.2443	GEN525561 1-TOLK GEN #1 24 KV	
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03595	100.2093	MULLERGREN - SOUTH HAYS 230KV CKT 1	
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	100.192	GEN525562 1-TOLK GEN #2 24 KV	
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	100	GEN560238 1-G10-09 0.6900	
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	99.9	GEN562298 1-G12-024 0.6500	
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03634	99.9	MORRIS COUNTY - UNIONRG6 230.00 230KV CKT 1	
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	99.7	GEN542902 1-GPW_G1 0.6900	
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	99.6	GEN560514 1-G04_014 0.6900	
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	99.6	GEN560693 1-G11-008-1 0.6900	
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03819	99.6	SWISSVALE - WEST GARDNER 345KV CKT 1	
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	99.5	GEN531503 1-CIMRRN 1 34.500	
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03929	99.5	GEN560329 1-G10-45 0.6900	
FDNS	03ALL	2	14G	G12_024	TO->FROM	CHISHOLM - MAIZEE 4 138.00 138KV CKT 1	287	0.04307	112.2713	BENTON - WICHITA 345KV CKT 1	
FDNS	03G12_024	2	14G	G12_024	TO->FROM	CHISHOLM - MAIZEE 4 138.00 138KV CKT 1	287	0.04328	100.6462	BENTON - WICHITA 345KV CKT 1	
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05696	126.8803	MULGREN7 345.00 - RENO COUNTY 345KV CKT 1	
FDNS	03G12_024	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05735	106.4386	MULGREN7 345.00 - RENO COUNTY 345KV CKT 1	
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.04518	104.5569	DBL-WICH-THI	
FDNS	03ALL	3	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05741	102.2366	MULGREN7 345.00 - RENO COUNTY 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	FROM->TO	CLEARWATER - GILL ENERGY CENTER WEST 138KV CKT 1	191	0.0308	106.4829	DBL-WICH-THI	
FDNS	03ALL	2	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.0308	197.074	DBL-WICH-THI	
FDNS	03G12_024	2	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.03105	169.8723	DBL-WICH-THI	
FDNS	03ALL	3	2	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.03109	164.6246	DBL-WICH-THI
FDNS	07ALL	2	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.05566	122.8194	DBL-WICH-THI	
FDNS	03ALL	7	2	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.05562	119.054	DBL-WICH-THI
FDNS	09ALL	2	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.05556	106.1167	DBL-WICH-THI	
FDNS	03ALL	9	2	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.0556	105.0304	DBL-WICH-THI
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04136	123.6157	G12-016 TAP 345.00 - MORELND 345.00 345KV CKT 1	
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04136	123.5287	MORELND 345.00 (MRLNDAUTO) 345/138/13.8KV TRANSFORMER CKT 1	
FDNS	03G12_024	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04143	102.1988	G12-016 TAP 345.00 - MORELND 345.00 345KV CKT 1	
FDNS	03G12_024	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04143	102.1454	MORELND 345.00 (MRLNDAUTO) 345/138/13.8KV TRANSFORMER CKT 1	
FDNS	03ALL	2	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.0308	207.4792	DBL-WICH-THI	
FDNS	03G12_024	2	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.03105	180.2715	DBL-WICH-THI	
FDNS	03ALL	3	2	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.03109	175.0538	DBL-WICH-THI
FDNS	07ALL	2	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.05566	133.3765	DBL-WICH-THI	
FDNS	03ALL	7	2	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.05562	129.6125	DBL-WICH-THI
FDNS	09ALL	2	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.05556	116.6464	DBL-WICH-THI	
FDNS	03ALL	9	2	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.0556	115.565	DBL-WICH-THI
FDNS	03ALL	2	14G	G12_024	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	318.7	0.11082	153.7816	G11-17T 345.00 - SPEARVILLE 345KV CKT 1	
FDNS	03ALL	2	14G	G12_024	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	318.7	0.07417	143.8918	G11-17T 345.00 - MULGREN7 345.00 345KV CKT 1	
FDNS	03G12_024	2	14G	G12_024	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	318.7	0.11143	130.0266	G11-17T 345.00 - SPEARVILLE 345KV CKT 1	
FDNS	03ALL	3	2	14G	G12_024	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	318.7	0.11151	123.4433	G11-17T 345.00 - SPEARVILLE 345KV CKT 1
FDNS	03G12_024	2	14G	G12_024	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	318.7	0.07456	120.438	G11-17T 345.00 - MULGREN7 345.00 345KV CKT 1	
FDNS	03ALL	3	2	14G	G12_024	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	318.7	0.07461	116.0441	G11-17T 345.00 - MULGREN7 345.00 345KV CKT 1
FDNS	03G12_024	2	14G	G12_024	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	318.7	0.09635	115.7388	DBL-THIS-CLR	
FDNS	03ALL	2	14G	G12_024	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	318.7	0.0594	115.0741	DBL-WICH-THI	
FDNS	03ALL	2	14G	G12_024	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	318.7	0.05893	113.0617	G12-011T 345.00 - POST ROCK 345KV CKT 1	
FDNS	03ALL	3	2	14G	G12_024	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	318.7	0.09639	108.9542	DBL-THIS-CLR
FDNS	03ALL	2	14G	G12_024	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	318.7	0.05893	105.7165	G11-17T 345.00 - G12-011T 345.00 345KV CKT 1	
FDNS	03ALL	2	14G	G12_024	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	318.7	0.06029	102.002	CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 1	
FDNS	03ALL	2	14G	G12_024	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	318.7	0.06029	102.002	CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 2	
FDNS	03ALL	2	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.0406	104.0811	AXTELL - POST ROCK 345KV CKT 1	
FDNS	03ALL	2	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03936	104.0697	MULGREN7 345.00 - RENO COUNTY 345KV CKT 1	
FDNS	03ALL	2	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03736	101.419	DBL-WICH-THI	
FDNS	01ALL	3	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.04697	165.4474	DBL-WICH-THI	
FDNS	01ALL	1	3	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.04704	146.3378	DBL-WICH-THI
FDNS	06ALL	3	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.04684	118.7157	DBL-WICH-THI	
FDNS	06ALL	6	3	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.04696	110.9653	DBL-WICH-THI
FDNS	07ALL	3	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.04719	107.6462	DBL-WICH-THI	
FDNS	07ALL	7	3	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.04716	104.296	DBL-WICH-THI
FDNS	01ALL	3	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03126	101.0412	G12-016 TAP 345.00 - MORELND 345.00 345KV CKT 1	
FDNS	01ALL	3	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03126	100.9329	MORELND 345.00 (MRLNDAUTO) 345/138/13.8KV TRANSFORMER CKT 1	
FDNS	01ALL	3	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.04697	175.8461	DBL-WICH-THI	
FDNS	01ALL	1	3	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.04704	156.8076	DBL-WICH-THI
FDNS	06ALL	3	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.04684	129.2497	DBL-WICH-THI	
FDNS	06ALL	6	3	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.04696	121.5091	DBL-WICH-THI

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY		
FDNS		07ALL	3	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.04719	118.2008	DBL-WICH-THI	
FDNS			7	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.04716	114.8529	DBL-WICH-THI	
FDNS		09ALL	3	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.04711	102.2073	DBL-WICH-THI	
FDNS			9	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.04714	101.5606	DBL-WICH-THI	
FNSL-Blown up		01ALL	3	14G	G12_024	-	Non-converged Contingency	0	0.13676	-	DBL-TGA-MATT	
FDNS		08ALL	0	14G	G12_027	FROM->TO	4REMINGTON 138.00 - FAIRFAX 138KV CKT 1	174	0.48184	101.36	SHIDLER - WEST PAWHUSKA 138KV CKT 1	
FDNS			0	14G	G12_027	FROM->TO	4REMINGTON 138.00 - FAIRFAX 138KV CKT 1	174	0.48184	100.9752	PAWHUSKA TAP - WEST PAWHUSKA 138KV CKT 1	
FDNS		00G12_027	0	24SP	G12_027	FROM->TO	FAIRFAX 138/69KV TRANSFORMER CKT 1	56	0.11313	113.6683	FAIRFAX - FAXTAP4 138.00 138KV CKT 1	
FDNS		00G12_027	0	19SP	G12_027	FROM->TO	FAIRFAX 138/69KV TRANSFORMER CKT 1	56	0.11314	110.553	FAIRFAX - FAXTAP4 138.00 138KV CKT 1	
FDNS		00G12_027	0	14SP	G12_027	FROM->TO	FAIRFAX 138/69KV TRANSFORMER CKT 1	56	0.1131	109.3424	FAIRFAX - FAXTAP4 138.00 138KV CKT 1	
FDNS		00G12_027	0	24SP	G12_027	FROM->TO	FAIRFAX 138/69KV TRANSFORMER CKT 1	56	0.05138	107.6441	CLEVELAND - OSAGE 69KV CKT 1	
FDNS		00G12_027	0	24SP	G12_027	FROM->TO	FAIRFAX 138/69KV TRANSFORMER CKT 1	56	0.04909	103.7752	4SFORKK 138.00 - 4SFORKKTP 138.00 138KV CKT 1	
FDNS		00G12_027	0	24SP	G12_027	FROM->TO	FAIRFAX 138/69KV TRANSFORMER CKT 1	56	0.04909	103.7598	4SFORKK 138.00 138/69KV TRANSFORMER CKT 1	
FDNS		00G12_027	0	19SP	G12_027	FROM->TO	FAIRFAX 138/69KV TRANSFORMER CKT 1	56	0.05138	103.0837	CLEVELAND - OSAGE 69KV CKT 1	
FDNS		00G12_027	0	24SP	G12_027	FROM->TO	FAIRFAX 138/69KV TRANSFORMER CKT 1	56	0.08433	102.9439	FAIRFAX TAP - WEBB CITY TAP 138KV CKT 1	
FDNS		00G12_027	0	24SP	G12_027	FROM->TO	FAIRFAX 138/69KV TRANSFORMER CKT 1	56	0.08433	102.9355	FAIRFAX TAP - SHIDLER 138KV CKT 1	
FDNS		00G12_027	0	24SP	G12_027	FROM->TO	FAIRFAX 138/69KV TRANSFORMER CKT 1	56	0.04907	102.538	CLEVELAND DIST - OSAGE 69KV CKT 1	
FDNS		00G12_027	0	24SP	G12_027	FROM->TO	FAIRFAX 138/69KV TRANSFORMER CKT 1	56	0.03491	101.5762	SOUTH FORK - TALLANT 69KV CKT 1	
FDNS		08ALL	0	14G	G12_027	FROM->TO	FAIRFAX 138/69KV TRANSFORMER CKT 1	56	0.10808	100.671	FAIRFAX - FAXTAP4 138.00 138KV CKT 1	
FDNS		00G12_027	0	19SP	G12_027	FROM->TO	FAIRFAX 138/69KV TRANSFORMER CKT 1	56	0.04909	100.5339	4SFORKK 138.00 - 4SFORKKTP 138.00 138KV CKT 1	
FDNS		00G12_027	0	19SP	G12_027	FROM->TO	FAIRFAX 138/69KV TRANSFORMER CKT 1	56	0.04909	100.5214	4SFORKK 138.00 138/69KV TRANSFORMER CKT 1	
FDNS		00G12_027	0	14SP	G12_027	FROM->TO	FAIRFAX 138/69KV TRANSFORMER CKT 1	56	0.0515	100.4701	CLEVELAND - OSAGE 69KV CKT 1	
FDNS		00G12_027	0	19SP	G12_027	FROM->TO	FAIRFAX 138/69KV TRANSFORMER CKT 1	56	0.08434	99.7	FAIRFAX TAP - SHIDLER 138KV CKT 1	
FDNS		00G12_027	0	19SP	G12_027	FROM->TO	FAIRFAX 138/69KV TRANSFORMER CKT 1	56	0.08434	99.7	FAIRFAX TAP - WEBB CITY TAP 138KV CKT 1	
FDNS		06ALL	0	14G	G12_027	FROM->TO	LAWEASOKLUNI	425	0.0414	140.1	DBL-THIS-CLR	
FDNS			6	0	14G	G12_027	FROM->TO	LAWEASOKLUNI	425	0.04053	121.2	BASE CASE
FDNS		00G12_027	0	19WP	G12_027	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	375	0.03178	102.642	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1	
FDNS			0	19WP	G12_027	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	375	0.03173	101.7182	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1	
FDNS		06ALL	0	14G	G12_027	FROM->TO	TUCXFR345230	300	0.0398	102.6	BASE CASE	
FDNS		06ALL	3	14G	G12_027	FROM->TO	LAWEASOKLUNI	425	0.04113	139.2	BASE CASE	
FDNS			6	3	14G	G12_027	FROM->TO	LAWEASOKLUNI	425	0.04027	120.3	BASE CASE
FDNS		00G12_027	3	19WP	G12_027	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	375	0.03176	102.6788	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1	
FDNS		06ALL	3	14G	G12_027	FROM->TO	TUCXFR345230	300	0.03966	101.9	BASE CASE	
FDNS		01ALL	0	14G	G12_028	FROM->TO	CANTON - OKEENE 69KV CKT 1	48	0.04701	104.1149	CEDARDALE - MOORELAND 138KV CKT 1	
FDNS		01ALL	0	14G	G12_028	FROM->TO	CANTON - OKEENE 69KV CKT 1	48	0.04701	102.7278	CEDARDALE - OKEENE 138KV CKT 1	
FDNS		01ALL	0	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.04701	135.2877	CEDARDALE - MOORELAND 138KV CKT 1	
FDNS		01ALL	0	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.04701	133.4552	CEDARDALE - OKEENE 138KV CKT 1	
FDNS			1	0	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.04822	122.1997	DBL-TGA-MATT
FDNS			1	0	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.04697	118.3616	CEDARDALE - MOORELAND 138KV CKT 1
FDNS			1	0	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.04697	116.7837	CEDARDALE - OKEENE 138KV CKT 1
FDNS		01ALL	0	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.04975	116.5201	DEWEY - SOUTHARD 138KV CKT 1	
FDNS		01ALL	0	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.04912	115.278	DBL-G1216-TH	
FDNS		01ALL	0	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.04869	114.3395	DBL-WICH-THI	
FDNS		01ALL	0	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.04975	114.1902	ROMAN NOSE - SOUTHARD 138KV CKT 1	
FDNS		03ALL	0	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.04599	113.3075	CEDARDALE - MOORELAND 138KV CKT 1	
FDNS		01ALL	0	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.04975	113.1353	EL RENO - ROMAN NOSE 138KV CKT 1	
FDNS		03ALL	0	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.04599	111.8372	CEDARDALE - OKEENE 138KV CKT 1	
FDNS		01ALL	0	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.03486	111.0491	OKEENE (OKEENE) 138/69/13.8KV TRANSFORMER CKT 1	
FDNS		01ALL	0	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.04814	110.6478	BASE CASE	
FDNS		01ALL	0	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.04827	106.2292	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1	
FDNS		01ALL	0	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.04827	102.7799	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1	
FDNS		01ALL	0	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.0484	102.7307	KNOBHILL - MOORELAND 138KV CKT 1	
FDNS		01ALL	0	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.04816	102.5526	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1	
FDNS		01ALL	0	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.04816	102.5526	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 2	
FDNS			1	0	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.04972	101.4776	DEWEY - SOUTHARD 138KV CKT 1
FDNS			3	0	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.04602	100.4196	CEDARDALE - MOORELAND 138KV CKT 1
FDNS		03ALL	0	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.04723	100.0719	DBL-TGA-MATT	
FDNS		00G12_028	0	24SP	G12_028	FROM->TO	GOTEBO - LONEWOLF 69KV CKT 1	65	0.26995	99.6	ELK CITY (ELKCTY-4) 138/69/13.8KV TRANSFORMER CKT 1	
FDNS		07ALL	0	14G	G12_028	FROM->TO	GRAPEVINE INTERCHANGE (PENN 0257751) 230/115/13.2KV TRANSFORMER CKT 1	112	0.04313	111.4219	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1	
FDNS		07ALL	0	14G	G12_028	FROM->TO	GRAPEVINE INTERCHANGE (PENN 0257751) 230/115/13.2KV TRANSFORMER CKT 1	112	0.04313	108.4491	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1	
FDNS		06ALL	0	14G	G12_028	FROM->TO	LAWEASOKLUNI	425	0.04934	140.1	DBL-WICH-THI	
FDNS			6	0	14G	G12_028	FROM->TO	LAWEASOKLUNI	425	0.04847	121.2	BASE CASE
FNSL-Blown up		03ALL	0	14G	G12_028	-	Non-converged Contingency	0	0.10631	-	DBL-WICH-THI	
FDNS		06ALL	0	14G	G12_028	FROM->TO	TUCXFR345230	300	0.03308	102.6	BASE CASE	

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	03ALL	2	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.04599	114.5256	CEDARDALE - MOORELAND 138KV CKT 1
FDNS	03ALL	2	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.04599	112.6961	CEDARDALE - OKEENE 138KV CKT 1
FDNS	3	2	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.04601	101.3121	CEDARDALE - MOORELAND 138KV CKT 1
FDNS	03ALL	2	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.04826	100.4532	DBL-WICH-THI
FDNS	03ALL	2	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.04722	100.4375	DBL-TGA-MATT
FDNS	3	2	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.04601	99.6	CEDARDALE - OKEENE 138KV CKT 1
FDNS	00G12_028	2	24SP	G12_028	FROM->TO	GOTEBO - LONEWOLF 69KV CKT 1	65	0.26995	99.6	ELK CITY (ELKCTY-4) 138/69/13.8KV TRANSFORMER CKT 1
FDNS	07ALL	2	14G	G12_028	FROM->TO	GRAPEVINE INTERCHANGE (PENN 0257751) 230/115/13.2KV TRANSFORMER CKT 1	112	0.04313	111.4219	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNS	07ALL	2	14G	G12_028	FROM->TO	GRAPEVINE INTERCHANGE (PENN 0257751) 230/115/13.2KV TRANSFORMER CKT 1	112	0.04313	108.4491	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNS	01ALL	3	14G	G12_028	FROM->TO	CANTON - OKEENE 69KV CKT 1	48	0.04699	102.7371	CEDARDALE - MOORELAND 138KV CKT 1
FDNS	01ALL	3	14G	G12_028	FROM->TO	CANTON - OKEENE 69KV CKT 1	48	0.04699	101.4265	CEDARDALE - OKEENE 138KV CKT 1
FDNS	01ALL	3	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.04699	133.5121	CEDARDALE - MOORELAND 138KV CKT 1
FDNS	01ALL	3	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.04699	132.0156	CEDARDALE - OKEENE 138KV CKT 1
FDNS	1	3	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.0482	120.0132	DBL-TGA-MATT
FDNS	1	3	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.04695	116.9757	CEDARDALE - MOORELAND 138KV CKT 1
FDNS	01ALL	3	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.04974	115.3609	DEWEY - SOUTHARD 138KV CKT 1
FDNS	1	3	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.04695	115.2573	CEDARDALE - OKEENE 138KV CKT 1
FDNS	01ALL	3	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.0491	114.1758	DBL-G1216-TH
FDNS	01ALL	3	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.04974	112.993	ROMAN NOSE - SOUTHARD 138KV CKT 1
FDNS	01ALL	3	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.04974	111.9241	EL RENO - ROMAN NOSE 138KV CKT 1
FDNS	01ALL	3	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.03485	110.0434	OKEENE (OKEENE) 138/69/13.8KV TRANSFORMER CKT 1
FDNS	01ALL	3	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.04813	109.4412	BASE CASE
FDNS	01ALL	3	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.0486	109.2502	DBL-WICH-THI
FDNS	01ALL	3	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.04825	104.4346	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	01ALL	3	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.04838	100.7584	KNOBHILL - MOORELAND 138KV CKT 1
FDNS	1	3	14G	G12_028	TO->FROM	CANTON - TALOGA 69KV CKT 1	39	0.0497	100.3915	DEWEY - SOUTHARD 138KV CKT 1
FDNS	00G12_028	3	24SP	G12_028	FROM->TO	GOTEBO - LONEWOLF 69KV CKT 1	65	0.26995	99.6	ELK CITY (ELKCTY-4) 138/69/13.8KV TRANSFORMER CKT 1
FDNS	07ALL	3	14G	G12_028	FROM->TO	GRAPEVINE INTERCHANGE (PENN 0257751) 230/115/13.2KV TRANSFORMER CKT 1	112	0.04317	112.2497	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNS	07ALL	3	14G	G12_028	FROM->TO	GRAPEVINE INTERCHANGE (PENN 0257751) 230/115/13.2KV TRANSFORMER CKT 1	112	0.04317	109.2641	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNS	06ALL	3	14G	G12_028	FROM->TO	LAWEASOKLUNI	425	0.04948	139.2	BASE CASE
FDNS	6	3	14G	G12_028	FROM->TO	LAWEASOKLUNI	425	0.04862	120.3	BASE CASE
FDNS	06ALL	3	14G	G12_028	FROM->TO	TUCXFR345230	300	0.03316	101.9	BASE CASE
FDNS	06ALL	0	14G	G12_031	FROM->TO	LAWEASOKLUNI	425	0.05547	140.1	DBL-THIS-CLR
FDNS	6	0	14G	G12_031	FROM->TO	LAWEASOKLUNI	425	0.0546	121.2	BASE CASE
FNSL-Blown up	03ALL	0	14G	G12_031	-	Non-converged Contingency	0	0.03202	-	DBL-WICH-THI
FDNS	06ALL	0	14G	G12_031	FROM->TO	TUCXFR345230	300	0.04425	102.6	BASE CASE
FDNS	06ALL	3	14G	G12_031	FROM->TO	LAWEASOKLUNI	425	0.0554	139.2	BASE CASE
FDNS	6	3	14G	G12_031	FROM->TO	LAWEASOKLUNI	425	0.05454	120.3	BASE CASE
FDNS	06ALL	3	14G	G12_031	FROM->TO	TUCXFR345230	300	0.04422	101.9	BASE CASE
FDNS	06ALL	0	14G	G12_032	FROM->TO	LAWEASOKLUNI	425	0.03319	140.1	DBL-THIS-CLR
FDNS	6	0	14G	G12_032	FROM->TO	LAWEASOKLUNI	425	0.03232	121.2	BASE CASE
FDNS	06ALL	0	14G	G12_032	FROM->TO	TUCXFR345230	300	0.03743	102.6	BASE CASE
FDNS	06ALL	3	14G	G12_032	FROM->TO	LAWEASOKLUNI	425	0.03271	139.2	BASE CASE
FDNS	6	3	14G	G12_032	FROM->TO	LAWEASOKLUNI	425	0.03185	120.3	BASE CASE
FDNS	06ALL	3	14G	G12_032	FROM->TO	TUCXFR345230	300	0.03718	101.9	BASE CASE
FDNS	08ALL	0	14G	G12_033	FROM->TO	4REMINGTON 138.00 - FAIRFAX 138KV CKT 1	174	0.03432	101.36	SHIDLER - WEST PAWHUSKA 138KV CKT 1
FDNS	08ALL	0	14G	G12_033	FROM->TO	4REMINGTON 138.00 - FAIRFAX 138KV CKT 1	174	0.03432	100.9752	PAWHUSKA TAP - WEST PAWHUSKA 138KV CKT 1
FDNS	06ALL	0	14G	G12_033	FROM->TO	LAWEASOKLUNI	425	0.03527	140.1	DBL-WICH-THI
FDNS	6	0	14G	G12_033	FROM->TO	LAWEASOKLUNI	425	0.0344	121.2	BASE CASE
FDNS	06ALL	0	14G	G12_033	FROM->TO	TUCXFR345230	300	0.03911	102.6	BASE CASE
FDNS	06ALL	3	14G	G12_033	FROM->TO	LAWEASOKLUNI	425	0.03509	139.2	BASE CASE
FDNS	6	3	14G	G12_033	FROM->TO	LAWEASOKLUNI	425	0.03423	120.3	BASE CASE
FDNS	06ALL	3	14G	G12_033	FROM->TO	TUCXFR345230	300	0.03901	101.9	BASE CASE
FDNS	0	0	14SP	G12_034	TO->FROM	BAILEY COUNTY REC-EARTH INTERCHANGE - PLANT X STATION 115KV CKT 1	160	0.05622	106.369	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	00G12_034	0	14SP	G12_034	TO->FROM	BAILEY COUNTY REC-EARTH INTERCHANGE - PLANT X STATION 115KV CKT 1	160	0.05622	106.1229	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	0	0	14SP	G12_034	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.0305	100.3263	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_034	0	14SP	G12_034	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.0305	100.2788	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0	0	24SP	G12_034	FROM->TO	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1	150	0.05717	99.8	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00G12_034	0	24SP	G12_034	FROM->TO	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1	150	0.05717	99.8	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00G12_034	0	24SP	G12_034	FROM->TO	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2	150	0.05926	103.4079	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0	0	24SP	G12_034	FROM->TO	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2	150	0.05926	103.4071	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_034	0	24SP	G12_034	FROM->TO	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2	150	0.05926	100.5396	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0	0	24SP	G12_034	FROM->TO	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2	150	0.05926	100.5388	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0	0	19SP	G12_034	FROM->TO	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2	150	0.05923	99.5	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_034	3	14SP	G12_034	TO->FROM	BAILEY COUNTY REC-EARTH INTERCHANGE - PLANT X STATION 115KV CKT 1	160	0.05628	106.2078	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	00G12_034	3	14SP	G12_034	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03049	100.271	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_034	3	24SP	G12_034	FROM->TO	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1	150	0.05717	99.8	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00G12_034	3	24SP	G12_034	FROM->TO	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2	150	0.05926	103.4055	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_034	3	24SP	G12_034	FROM->TO	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2	150	0.05926	100.5372	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_034	0A	14SP	G12_034	TO->FROM	BAILEY COUNTY REC-EARTH INTERCHANGE - PLANT X STATION 115KV CKT 1	160	0.05651	100.2996	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	00G12_034	0A	24SP	G12_034	TO->FROM	DENVER CITY INTERCHANGE N. - MUSTANG STATION N. 115KV CKT 1	309	0.09405	99.6	DENVER CITY INTERCHANGE S. - MUSTANG STATION N. 115KV CKT 2
FDNS	00G12_034	0A	14SP	G12_034	TO->FROM	DENVER CITY INTERCHANGE N. - MUSTANG STATION N. 115KV CKT 1	309	0.09273	99.5	DENVER CITY INTERCHANGE S. - MUSTANG STATION N. 115KV CKT 2
FDNS	00G12_034	0A	14SP	G12_034	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.0305	100.3407	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_034	0A	24SP	G12_034	TO->FROM	PCA INTERCHANGE - REDDY 3115.00 115KV CKT 1	160	0.0385	102.0594	CUNNINGHAM STATION - POTASH JUNCTION INTERCHANGE 230KV CKT 1
FDNS	00G12_034	0A	14SP	G12_034	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03755	101.2131	LAMB COUNTY INTERCHANGE - TOLK STATION WEST 230KV CKT 1
FDNS	00G12_034	0A	14SP	G12_034	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03755	101.2021	LAMB COUNTY INTERCHANGE (WH ALM20172) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_034	0A	14SP	G12_034	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03755	101.2021	SPP-SWPS-K37
FDNS	00G12_034	0A	14SP	G12_034	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03755	99.7	LAMB COUNTY INTERCHANGE - TOLK STATION WEST 230KV CKT 1
FDNS	00G12_034	0A	14SP	G12_034	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03755	99.7	LAMB COUNTY INTERCHANGE (WH ALM20172) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_034	0A	14SP	G12_034	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03755	99.7	SPP-SWPS-K37
FDNS	00G12_034	0A	24SP	G12_034	FROM->TO	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1	150	0.05719	99.8	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00G12_034	0A	24SP	G12_034	FROM->TO	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2	150	0.05928	103.4371	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_034	0A	24SP	G12_034	FROM->TO	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2	150	0.05928	100.5585	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0	0	14SP	G12_035	TO->FROM	BAILEY COUNTY REC-EARTH INTERCHANGE - PLANT X STATION 115KV CKT 1	160	0.05622	106.369	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	00G12_035	0	14SP	G12_035	TO->FROM	BAILEY COUNTY REC-EARTH INTERCHANGE - PLANT X STATION 115KV CKT 1	160	0.05622	106.1229	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	0	0	14SP	G12_035	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.0305	100.3263	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_035	0	14SP	G12_035	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.0305	100.2788	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0	0	24SP	G12_035	FROM->TO	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1	150	0.05717	99.8	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00G12_035	0	24SP	G12_035	FROM->TO	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1	150	0.05717	99.8	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00G12_035	0	24SP	G12_035	FROM->TO	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2	150	0.05926	103.4079	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0	0	24SP	G12_035	FROM->TO	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2	150	0.05926	103.4071	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_035	0	24SP	G12_035	FROM->TO	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2	150	0.05926	100.5396	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0	0	24SP	G12_035	FROM->TO	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2	150	0.05926	100.5388	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0	0	19SP	G12_035	FROM->TO	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2	150	0.05923	99.5	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_035	3	14SP	G12_035	TO->FROM	BAILEY COUNTY REC-EARTH INTERCHANGE - PLANT X STATION 115KV CKT 1	160	0.05628	106.2078	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	00G12_035	3	14SP	G12_035	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03049	100.271	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_035	3	24SP	G12_035	FROM->TO	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1	150	0.05717	99.8	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00G12_035	3	24SP	G12_035	FROM->TO	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2	150	0.05926	103.4055	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_035	3	24SP	G12_035	FROM->TO	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2	150	0.05926	100.5372	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_035	0A	14SP	G12_035	TO->FROM	BAILEY COUNTY REC-EARTH INTERCHANGE - PLANT X STATION 115KV CKT 1	160	0.05651	100.2996	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	00G12_035	0A	24SP	G12_035	TO->FROM	DENVER CITY INTERCHANGE N. - MUSTANG STATION N. 115KV CKT 1	309	0.09405	99.6	DENVER CITY INTERCHANGE S. - MUSTANG STATION N. 115KV CKT 2
FDNS	00G12_035	0A	14SP	G12_035	TO->FROM	DENVER CITY INTERCHANGE N. - MUSTANG STATION N. 115KV CKT 1	309	0.09273	99.5	DENVER CITY INTERCHANGE S. - MUSTANG STATION N. 115KV CKT 2
FDNS	00G12_035	0A	14SP	G12_035	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.0305	100.3407	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_035	0A	24SP	G12_035	TO->FROM	PCA INTERCHANGE - REDDY 3115.00 115KV CKT 1	160	0.0385	102.0594	CUNNINGHAM STATION - POTASH JUNCTION INTERCHANGE 230KV CKT 1
FDNS	00G12_035	0A	14SP	G12_035	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03755	101.2131	LAMB COUNTY INTERCHANGE - TOLK STATION WEST 230KV CKT 1
FDNS	00G12_035	0A	14SP	G12_035	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03755	101.2021	LAMB COUNTY INTERCHANGE (WH ALM20172) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_035	0A	14SP	G12_035	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03755	101.2021	SPP-SWPS-K37
FDNS	00G12_035	0A	14SP	G12_035	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03755	99.7	LAMB COUNTY INTERCHANGE - TOLK STATION WEST 230KV CKT 1
FDNS	00G12_035	0A	14SP	G12_035	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03755	99.7	LAMB COUNTY INTERCHANGE (WH ALM20172) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_035	0A	14SP	G12_035	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03755	99.7	SPP-SWPS-K37
FDNS	00G12_035	0A	24SP	G12_035	FROM->TO	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1	150	0.05719	99.8	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00G12_035	0A	24SP	G12_035	FROM->TO	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2	150	0.05928	103.4371	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_035	0A	24SP	G12_035	FROM->TO	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2	150	0.05928	100.5585	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0	0	14SP	G12_036	TO->FROM	BAILEY COUNTY REC-EARTH INTERCHANGE - PLANT X STATION 115KV CKT 1	160	0.05622	106.369	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	00G12_036	0	14SP	G12_036	TO->FROM	BAILEY COUNTY REC-EARTH INTERCHANGE - PLANT X STATION 115KV CKT 1	160	0.05622	106.1229	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	0	0	14SP	G12_036	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.0305	100.3263	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_036	0	14SP	G12_036	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.0305	100.2788	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0	0	24SP	G12_036	FROM->TO	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1	150	0.05717	99.8	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00G12_036	0	24SP	G12_036	FROM->TO	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1	150	0.05717	99.8	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00G12_036	0	24SP	G12_036	FROM->TO	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2	150	0.05926	103.4079	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0	0	24SP	G12_036	FROM->TO	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2	150	0.05926	103.4071	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_036	0	24SP	G12_036	FROM->TO	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2	150	0.05926	100.5396	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0	0	24SP	G12_036	FROM->TO	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2	150	0.05926	100.5388	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0	0	19SP	G12_036	FROM->TO	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2	150	0.05923	99.5	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_036	3	14SP	G12_036	TO->FROM	BAILEY COUNTY REC-EARTH INTERCHANGE - PLANT X STATION 115KV CKT 1	160	0.05628	106.2078	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	00G12_036	3	14SP	G12_036	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03049	100.271	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_036	3	24SP	G12_036	FROM->TO	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1	150	0.05717	99.8	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00G12_036	3	24SP	G12_036	FROM->TO	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2	150	0.05926	103.4055	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_036	3	24SP	G12_036	FROM->TO	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2	150	0.05926	100.5372	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_036	0A	14SP	G12_036	TO->FROM	BAILEY COUNTY REC-EARTH INTERCHANGE - PLANT X STATION 115KV CKT 1	160	0.05651	100.2996	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	00G12_036	0A	24SP	G12_036	TO->FROM	DENVER CITY INTERCHANGE N. - MUSTANG STATION N. 115KV CKT 1	309	0.09405	99.6	DENVER CITY INTERCHANGE S. - MUSTANG STATION N. 115KV CKT 2
FDNS	00G12_036	0A	14SP	G12_036	TO->FROM	DENVER CITY INTERCHANGE N. - MUSTANG STATION N. 115KV CKT 1	309	0.09273	99.5	DENVER CITY INTERCHANGE S. - MUSTANG STATION N. 115KV CKT 2
FDNS	00G12_036	0A	14SP	G12_036	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.0305	100.3407	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_036	0A	24SP	G12_036	TO->FROM	PCA INTERCHANGE - REDDY 3115.00 115KV CKT 1	160	0.0385	102.0594	CUNNINGHAM STATION - POTASH JUNCTION INTERCHANGE 230KV CKT 1
FDNS	00G12_036	0A	14SP	G12_036	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03755	101.2131	LAMB COUNTY INTERCHANGE - TOLK STATION WEST 230KV CKT 1
FDNS	00G12_036	0A	14SP	G12_036	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03755	101.2021	LAMB COUNTY INTERCHANGE (WH ALM20172) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_036	0A	14SP	G12_036	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03755	101.2021	SPP-SWPS-K37
FDNS	00G12_036	0A	14SP	G12_036	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03755	99.7	LAMB COUNTY INTERCHANGE - TOLK STATION WEST 230KV CKT 1
FDNS	00G12_036	0A	14SP	G12_036	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03755	99.7	LAMB COUNTY INTERCHANGE (WH ALM20172) 230/115/13.2KV TRANSFORMER CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00G12_036	0A	14SP	G12_036	FROM->TO	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03755	99.7	SPP-SWPS-K37
FDNS	00G12_036	0A	24SP	G12_036	FROM->TO	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1	150	0.05719	99.8	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00G12_036	0A	24SP	G12_036	FROM->TO	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2	150	0.05928	103.4371	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_036	0A	24SP	G12_036	FROM->TO	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2	150	0.05928	100.5585	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0	0	24SP	G12_037	FROM->TO	TUCO INTERCHANGE (GE M102345) 230/115/13.2KV TRANSFORMER CKT 1	252	0.05265	104.1894	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00G12_037	0	24SP	G12_037	FROM->TO	TUCO INTERCHANGE (GE M102345) 230/115/13.2KV TRANSFORMER CKT 1	252	0.05265	104.1887	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	0	0	24SP	G12_037	FROM->TO	TUCO INTERCHANGE (GE M102345) 230/115/13.2KV TRANSFORMER CKT 1	252	0.05265	101.3786	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00G12_037	0	24SP	G12_037	FROM->TO	TUCO INTERCHANGE (GE M102345) 230/115/13.2KV TRANSFORMER CKT 1	252	0.05265	101.3779	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00G12_037	3	24SP	G12_037	FROM->TO	TUCO INTERCHANGE (GE M102345) 230/115/13.2KV TRANSFORMER CKT 1	252	0.0527	104.2057	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	00G12_037	3	24SP	G12_037	FROM->TO	TUCO INTERCHANGE (GE M102345) 230/115/13.2KV TRANSFORMER CKT 1	252	0.0527	101.3947	TUCO INTERCHANGE (ENRCO 136401) 230/115/13.2KV TRANSFORMER CKT 2
FDNS	08ALL	0	14G	G12_040	FROM->TO	4REMINGTON 138.00 - FAIRFAX 138KV CKT 1	174	0.07568	101.36	SHIDLER - WEST PAWHUSKA 138KV CKT 1
FDNS	08ALL	0	14G	G12_040	FROM->TO	4REMINGTON 138.00 - FAIRFAX 138KV CKT 1	174	0.07568	100.9752	PAWHUSKA TAP - WEST PAWHUSKA 138KV CKT 1
FDNS	00G12_040	0	24SP	G12_040	TO->FROM	ARKANSAS CITY - PARIS 69KV CKT 1	72	0.04079	109.3141	CRESWELL - OAK 69KV CKT 1
FDNS	00G12_040	0	19SP	G12_040	TO->FROM	ARKANSAS CITY - PARIS 69KV CKT 1	72	0.04077	105.8712	CRESWELL - OAK 69KV CKT 1
FDNS	0	0	24SP	G12_040	TO->FROM	ARKANSAS CITY - PARIS 69KV CKT 1	72	0.04079	105.8098	CRESWELL - OAK 69KV CKT 1
FDNS	0	0	19SP	G12_040	TO->FROM	ARKANSAS CITY - PARIS 69KV CKT 1	72	0.04077	102.0933	CRESWELL - OAK 69KV CKT 1
FDNS	00G12_040	0	24SP	G12_040	TO->FROM	CITY OF WINFIELD - RAINBOW 69KV CKT 1	43	0.04601	107.7788	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1
FDNS	00G12_040	0	19SP	G12_040	TO->FROM	CITY OF WINFIELD - RAINBOW 69KV CKT 1	43	0.04599	104.5257	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1
FDNS	08ALL	0	14G	G12_040	TO->FROM	CITY OF WINFIELD - RAINBOW 69KV CKT 1	43	0.04592	104.2009	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1
FDNS	0	0	24SP	G12_040	TO->FROM	CITY OF WINFIELD - RAINBOW 69KV CKT 1	43	0.04601	101.7759	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1
FDNS	08G12_040	0	14G	G12_040	TO->FROM	CITY OF WINFIELD - RAINBOW 69KV CKT 1	43	0.04592	99.6	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1
FDNS	00G12_040	0	24SP	G12_040	FROM->TO	CRESWELL - OAK 69KV CKT 1	108	0.05071	103.0942	CRESWELL - PARIS 69KV CKT 1
FDNS	0	0	24SP	G12_040	FROM->TO	CRESWELL - OAK 69KV CKT 1	108	0.05071	100.4541	CRESWELL - PARIS 69KV CKT 1
FDNS	00G12_040	0	19SP	G12_040	FROM->TO	CRESWELL - OAK 69KV CKT 1	108	0.05069	99.8	CRESWELL - PARIS 69KV CKT 1
FDNS	00G12_040	0	24SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10095	111.8615	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	00G12_040	0	24SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10095	111.8615	WR-B3-28
FDNS	00NR	0	24SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09955	111.4406	WR-B3-28
FDNS	00G12_040	0	24SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10095	108.3515	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	00G12_040	0	24SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10095	108.3515	WR-B3-28
FDNS	00G12_040	0	19SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10092	107.891	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	00G12_040	0	19SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10092	107.891	WR-B3-28
FDNS	00NR	0	24SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09955	107.7049	WR-B3-28
FDNS	0	0	24SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10095	107.0643	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	0	0	24SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10095	107.0643	WR-B3-28
FDNS	00NR	0	19SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09958	105.6527	WR-B3-28
FDNS	00G12_040	0	19SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10092	104.8183	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	00G12_040	0	19SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10092	104.8183	WR-B3-28
FDNS	0	0	24SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10095	103.2594	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	0	0	24SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10095	103.2594	WR-B3-28
FDNS	00NR	0	19SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09958	102.5359	WR-B3-28
FDNS	0	0	19SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10093	102.3981	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	0	0	19SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10093	102.3981	WR-B3-28
FDNS	00G12_040	0	14SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10016	102.1105	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	00G12_040	0	14SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10016	102.1105	WR-B3-28
FDNS	00NR	0	14SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.0986	101.2938	WR-B3-28
FDNS	08ALL	0	14G	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09996	101.2404	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	08ALL	0	14G	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09996	101.2404	WR-B3-28
FDNS	00G12_040	0	14SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10016	100.2	WR-B3-28
FDNS	00G12_040	0	14SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10016	99.9	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	08ALL	0	14G	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09996	99.9	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	08ALL	0	14G	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09996	99.9	WR-B3-28
FDNS	00G12_040	0	24SP	G12_040	FROM->TO	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10082	111.7272	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	00G12_040	0	24SP	G12_040	FROM->TO	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10082	108.2629	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	00G12_040	0	19SP	G12_040	FROM->TO	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10079	107.7738	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	0	0	24SP	G12_040	FROM->TO	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10082	106.9274	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	00G12_040	0	19SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10079	104.7413	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	0	0	24SP	G12_040	FROM->TO	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10082	103.1398	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	0	0	19SP	G12_040	FROM->TO	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10079	102.2853	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	00G12_040	0	14SP	G12_040	FROM->TO	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10004	101.9945	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	08ALL	0	14G	G12_040	FROM->TO	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09983	101.0919	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	00G12_040	0	14SP	G12_040	FROM->TO	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10004	99.9	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	08ALL	0	14G	G12_040	FROM->TO	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09983	99.8	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	14G	G12_040	FROM->TO	LAWEASOKLUNI	425	0.03319	140.1	DBL-WICH-THI

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	6	0	14G	G12_040	FROM->TO	LAWEASOKLUNI	425	0.03232	121.2	BASE CASE
FDNS	00G12_040	0	24SP	G12_040	FROM->TO	OAK - RAINBOW 69KV CKT 1	43	0.04601	112.178	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1
FDNS	00G12_040	0	19SP	G12_040	FROM->TO	OAK - RAINBOW 69KV CKT 1	43	0.04599	109.1605	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1
FDNS	08ALL	0	14G	G12_040	FROM->TO	OAK - RAINBOW 69KV CKT 1	43	0.04592	107.4391	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1
FDNS	0	0	24SP	G12_040	FROM->TO	OAK - RAINBOW 69KV CKT 1	43	0.04601	106.2079	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1
FDNS	08G12_040	0	14G	G12_040	FROM->TO	OAK - RAINBOW 69KV CKT 1	43	0.04592	103.2114	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1
FDNS	0	0	19SP	G12_040	FROM->TO	OAK - RAINBOW 69KV CKT 1	43	0.04599	102.9191	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1
FDNS	8	0	14G	G12_040	FROM->TO	OAK - RAINBOW 69KV CKT 1	43	0.04592	101.6859	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1
FDNS	06ALL	0	14G	G12_040	FROM->TO	TUCXFR345230	300	0.03759	102.6	BASE CASE
FDNS	08ALL	2	14G	G12_040	TO->FROM	CITY OF WINFIELD - RAINBOW 69KV CKT 1	43	0.04592	104.2009	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1
FDNS	08G12_040	2	14G	G12_040	TO->FROM	CITY OF WINFIELD - RAINBOW 69KV CKT 1	43	0.04592	99.6	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1
FDNS	00NR	2	24SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09955	111.4406	WR-B3-28
FDNS	00NR	2	24SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09955	111.4406	WR-B3-28
FDNS	00NR	2	24SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09955	107.7049	WR-B3-28
FDNS	00NR	2	24SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09955	107.7049	WR-B3-28
FDNS	00NR	2	19SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09958	105.6527	WR-B3-28
FDNS	00NR	2	19SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09958	105.6527	WR-B3-28
FDNS	00NR	2	19SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09958	105.6527	WR-B3-28
FDNS	00NR	2	19SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09958	102.5359	WR-B3-28
FDNS	00NR	2	19SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09958	102.5359	WR-B3-28
FDNS	00NR	2	14SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.0986	101.2938	WR-B3-28
FDNS	00NR	2	14SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.0986	101.2938	WR-B3-28
FDNS	08ALL	2	14G	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09996	101.2404	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	08ALL	2	14G	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09996	101.2404	WR-B3-28
FDNS	08ALL	2	14G	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09996	99.9	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	08ALL	2	14G	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09996	99.9	WR-B3-28
FDNS	08ALL	2	14G	G12_040	FROM->TO	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09983	101.0919	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	08ALL	2	14G	G12_040	FROM->TO	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09983	99.8	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	08ALL	2	14G	G12_040	FROM->TO	OAK - RAINBOW 69KV CKT 1	43	0.04592	107.4391	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1
FDNS	08G12_040	2	14G	G12_040	FROM->TO	OAK - RAINBOW 69KV CKT 1	43	0.04592	103.2114	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1
FDNS	8	2	14G	G12_040	FROM->TO	OAK - RAINBOW 69KV CKT 1	43	0.04592	101.6859	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1
FDNS	00G12_040	3	24SP	G12_040	TO->FROM	ARKANSAS CITY - PARIS 69KV CKT 1	72	0.0408	109.2136	CRESWELL - OAK 69KV CKT 1
FDNS	00G12_040	3	19SP	G12_040	TO->FROM	ARKANSAS CITY - PARIS 69KV CKT 1	72	0.04078	105.7372	CRESWELL - OAK 69KV CKT 1
FDNS	00G12_040	3	24SP	G12_040	TO->FROM	CITY OF WINFIELD - RAINBOW 69KV CKT 1	43	0.04603	107.6485	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1
FDNS	00G12_040	3	19SP	G12_040	TO->FROM	CITY OF WINFIELD - RAINBOW 69KV CKT 1	43	0.04601	104.3154	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1
FDNS	08ALL	3	14G	G12_040	TO->FROM	CITY OF WINFIELD - RAINBOW 69KV CKT 1	43	0.04594	103.9219	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1
FDNS	00G12_040	3	24SP	G12_040	FROM->TO	CRESWELL - OAK 69KV CKT 1	108	0.05073	103.1831	CRESWELL - PARIS 69KV CKT 1
FDNS	00G12_040	3	19SP	G12_040	FROM->TO	CRESWELL - OAK 69KV CKT 1	108	0.05071	99.7	CRESWELL - PARIS 69KV CKT 1
FDNS	00G12_040	3	24SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10099	111.789	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	00G12_040	3	24SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10099	111.789	WR-B3-28
FDNS	00NR	3	24SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.0996	111.1028	WR-B3-28
FDNS	00G12_040	3	24SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10099	108.287	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	00G12_040	3	24SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10099	108.287	WR-B3-28
FDNS	00G12_040	3	19SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10096	107.7351	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	00G12_040	3	19SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10096	107.7351	WR-B3-28
FDNS	00NR	3	24SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.0996	107.3805	WR-B3-28
FDNS	00NR	3	19SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09962	105.2673	WR-B3-28
FDNS	00G12_040	3	19SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10096	104.6736	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	00G12_040	3	19SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10096	104.6736	WR-B3-28
FDNS	00NR	3	19SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09962	102.1647	WR-B3-28
FDNS	00G12_040	3	14SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10021	101.949	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	00G12_040	3	14SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10021	101.949	WR-B3-28
FDNS	08ALL	3	14G	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.1	101.018	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	08ALL	3	14G	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.1	101.018	WR-B3-28
FDNS	00NR	3	14SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09865	100.8705	WR-B3-28
FDNS	00G12_040	3	14SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10021	100.1	WR-B3-28
FDNS	00G12_040	3	14SP	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10021	99.8	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	08ALL	3	14G	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.1	99.7	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	08ALL	3	14G	G12_040	FROM->TO	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.1	99.7	WR-B3-28
FDNS	00G12_040	3	24SP	G12_040	FROM->TO	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10086	111.6549	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	00G12_040	3	24SP	G12_040	FROM->TO	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10086	108.1988	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	00G12_040	3	19SP	G12_040	FROM->TO	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10083	107.6182	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	00G12_040	3	19SP	G12_040	FROM->TO	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10083	104.5966	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	00G12_040	3	14SP	G12_040	FROM->TO	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10008	101.8333	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	08ALL	3	14G	G12_040	FROM->TO	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09987	100.8703	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	00G12_040	3	14SP	G12_040	FROM->TO	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.10008	99.7	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	08ALL	3	14G	G12_040	FROM->TO	CRESWELL (CRESWL2X) 138/69/13.2KV TRANSFORMER CKT 1	110	0.09987	99.6	CRESWELL (CRESWL1X) 138/69/13.2KV TRANSFORMER CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	06ALL	3	14G	G12_040	FROM->TO	LAWEASOKLUNI	425	0.03276	139.2	BASE CASE
FDNS	6	3	14G	G12_040	FROM->TO	LAWEASOKLUNI	425	0.03189	120.3	BASE CASE
FDNS	00G12_040	3	24SP	G12_040	FROM->TO	OAK - RAINBOW 69KV CKT 1	43	0.04603	112.0455	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1
FDNS	00G12_040	3	19SP	G12_040	FROM->TO	OAK - RAINBOW 69KV CKT 1	43	0.04601	108.9481	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1
FDNS	08ALL	3	14G	G12_040	FROM->TO	OAK - RAINBOW 69KV CKT 1	43	0.04594	107.1572	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1
FDNS	08G12_040	3	14G	G12_040	FROM->TO	OAK - RAINBOW 69KV CKT 1	43	0.04594	102.9126	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1
FDNS	8	3	14G	G12_040	FROM->TO	OAK - RAINBOW 69KV CKT 1	43	0.04594	101.3867	OAK - STROTHER FIELD (CITY OF WINFIELD) 69KV CKT 1
FDNS	06ALL	3	14G	G12_040	FROM->TO	TUCXFR345230	300	0.03736	101.9	BASE CASE



## **I: Power Flow Analysis (Category “C” Contingencies)**

Available on Request