

Definitive Interconnection  
System Impact Study for  
Generation Interconnection  
Requests

(DISIS-2012-002-5)  
Group 3 Restudy

July 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05/16/2013	SPP	Account for Withdrawn Projects, Report Re-Posted (DISIS-2012-002-1)
08/05/2013	SPP	Account for Withdrawn Projects, Report Re-Posted (DISIS-2012-002-2)
01/23/2014	SPP	Account for Withdrawn Projects, Report Re-Posted (DISIS-2012-002-3)
06/11/2014	SPP	Account for Withdrawn Projects, Report Re-Posted (DISIS-2012-002-4)
07/29/2014	SPP	Account for Withdrawn Projects, Report Re-Posted (DISIS-2012-002-5)

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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. Only those requests within DISIS group 3 are included within this restudy. The results for the previous restudy are still valid for the remaining groups included within this DISIS-2012-002 study. This System Impact Study analyzes the interconnecting of multiple generation interconnection requests associated with new generation totaling approximately 180.0 MW of new generation which would be located within the transmission systems of Sunflower Electric Power Corporation/Mid-Kansas Electric Power LLC (SUNC)/(MKEC). 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, 180.0 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.

The total estimated minimum cost for interconnecting the DISIS-2012-002 interconnection customers is \$35,000,000. These costs are shown in Appendix E and F. Interconnection Service to

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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.

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. Only those requests within DISIS group 3 are included within this restudy. The results for the previous restudy are still valid for the remaining groups included within this DISIS-2012-001 restudy. This System Impact Study analyzes the interconnecting of multiple generation interconnection requests associated with new generation totaling 180.0 MW of new generation which would be located within the transmission systems of Sunflower Electric Power Corporation/Mid-Kansas Electric Power LLC (SUNC)/(MKEC). 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). This Affected System Request is located in Group 6 and was not re-evaluated for this study.

### Previously Queued Interconnection Requests

The previous queued requests included in this study are listed in Appendix C. 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 stability analysis was not re-performed for this restudy.

## 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 9/30/2014 in-service
    - Woodward 345/138kV circuit #2 autotransformer, (placed in-service 2014)
    - TUCO 345/138kV circuit #2 autotransformer, (placed in-service 2014)
    - Reactors at Woodward and Border, (placed in-service 2014)
  - 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, (placed in-service 2014)
    - Hitchland 345/230kV circuit #2 autotransformer, (placed in-service 2014)
  - Woodward – Thistle double circuit 345kV, scheduled for 12/31/2014 in-service
  - Spearville – Clark – Thistle double circuit 345kV, scheduled for 12/31/2014 in-service
  - Thistle – Wichita double circuit 345kV, (placed in-service 2014)
  - Thistle 345/138kV autotransformer, (placed in-service 2014)
  - Thistle – Flat Ridge 138kV, (placed in-service 2014)
- Various MKEC Transmission System Upgrades<sup>6</sup>
  - Harper – Flat Ridge 138kV rebuild, (placed in-service in 2013)
  - Flat Ridge – Medicine Lodge 138kV rebuild, (placed in-service 2013)
  - Pratt – Medicine Lodge 115kV rebuild, (placed in-service 2014)
  - Medicine Lodge 138/115kV autotransformer replacement, (placed in-service 2013)
- Northwest 345/138/13.8kV circuit #3 autotransformer, scheduled for 6/1/2017 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>

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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 Transmission Service Project identified in SPP-2009-AG2-AFS6. Per SPP-NTC-20137.



- Mustang – Yoakum 230kV circuit #1 replace line traps (placed in-service in 2014)
- Yoakum 230/115kV transformer #1 and #2 replacements, scheduled for 6/1/2019 in-service
- Dobson – Gano 115kV circuit #1 replace terminal equipment (placed in-service in 2014)
- Garden City – Kansas Avenue 115kV circuit #1 replace terminal equipment (placed in-service 2014)

## 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 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 DISIS-2009-001 Interconnection Customers:
  - Lancer Project
    - Spearville – Lancer 345kV, addition
    - Lancer 345/115kV transformer circuit #1, addition
    - Lancer – North Ft. Dodge 115kV, addition
    - Ft. Dodge – North Ft. Dodge circuit #2, addition
    - Move Ft. Dodge terminal of Shooting Star 115kV
  - Fort Randall – Meadow Grove – Kelly 230kV circuit #1, rerate (320MVA)
- 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
- Upgrades assigned to DISIS-2010-002 Interconnection Customers:
  - Buckner –Spearville 345kV circuit #1, replace terminal equipment
  - Twin Church – Dixon County 230kV circuit #1, rerate (320MVA)
- Upgrades assigned to DISIS-2011-001 Interconnection Customers:
  - 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)
  - Wheatland – Lyons 115kV, rerate (199 MVA) (placed In-Service in 2012)
  - Hoskins – Dixon County – Twin Church 230kV circuit #1, rerate
  - (NRIS only) Mooreland – FPL Switch – Woodward 138kV circuit #1 rebuild
  - (NRIS only) Glass Mountain – Mooreland 138kV circuit #1, rebuild
  - (NRIS only) TUCO – New Deal – Stanton 345/115kV Project, build
  - (NRIS only) Wolfforth 230/115kV transformer circuit #1, rebuild
- Upgrades assigned to DISIS-2011-002 Interconnection Customers:

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

- Power System Stabilizers - Install Power System Stabilizers @ Tolk(Units: 1,2) and Jones (Units: 1,2,3,4)
- SUB 967 - SUB 968 69kV circuit #1, replace terminal equipment
- (NRIS only) Allen – Lubbock South 115kV circuit #1, rebuild
- (NRIS only) Hydro Carbon Tap - Sub974 69kV circuit #1, rewire CT
- (NRIS only) Nebraska City U Syracuse – SUB 970 circuit #1, replace terminal equipment
- Upgrades assigned to DISIS-2012-001 Interconnection Customers:
  - GEN 2011-017 Tap Reactive Power Support

### **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**

The stability analysis was not re-performed for this restudy.

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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 180.0 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 \$35,000,000. 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 SUNC transmission systems under system intact and contingency conditions in the peak seasons.

**Cluster Group 1 (Woodward Area)**

In addition to the 4,084.6 MW of previously queued generation in the area, 200.0 MW of new interconnection service was studied. This group was not analyzed for this restudy and previously identified results remain valid.

**Cluster Group 2 (Hitchland Area)**

In addition to the 2,662.2 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 3,830.4 MW of previously queued generation in the area, 180.0 MW of new interconnection service was studied. Power flow analysis indicates a need for a 100.0 Mvar Static Var Compensator (SVC) and 100.0 Mvar Capacitor bank installed at Thistle due to potential voltage collapse for multiple outages.

ERIS Constraints			
MONITORED ELEMENT	RATE B (MVA)	TC% LOADING (% MVA)	CONTINGENCY
Non-converged Contingency	717.1	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
Non-converged Contingency	1793	-	G11-17T 345.00 - G12-011T 345.00 345KV CKT 1
Non-converged Contingency	1793	-	G12-011T 345.00 - POST ROCK 345KV CKT 1
Non-converged Contingency	1052	-	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1

**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. This group was not analyzed for this restudy and previously identified results remain valid.

**Cluster Group 5 (Amarillo Area)**

In addition to the 692.6 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 2,371.5 MW of previously queued generation in the area, 720.15 MW of new interconnection service was studied. This group was not analyzed for this restudy and previously identified results remain valid.

**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. This group was not analyzed for this restudy and previously identified results remain valid.

**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. This group was not analyzed for this restudy and previously identified results remain valid.

**Cluster Group 9/10 (Nebraska)**

In addition to the 1,557.9 MW of previously queued generation in the area, 4.8 MW of new interconnection service was studied. This group was not analyzed for this restudy and previously identified results remain valid.

**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.

**Curtailed 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-2012-002-4 restudy 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 for this restudy was performed by SPP Staff. The analysis was performed to evaluate the impacts of the removal of the previously assigned Beaver-Buckner 345kV line. Stability analysis has determined that when all previously assigned and currently assigned network upgrades are placed in-service the transmission system will remain stable and low voltage ride through requirements are satisfied for the contingencies studied.

Power Factor analysis was not performed again for this restudy. With the power factor requirements and all network upgrades in service, all interconnection request in Group 3 will meet FERC Order #661A low voltage ride through (LVRT) requirements.

### **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 analysis from 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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Only those requests within DISIS group 3 are included within this restudy. The results for the previous restudy are still valid for the remaining groups included within this DISIS-2012-001 study. The minimum cost of interconnecting 180.0 MW of new interconnection requests included in this Definitive Interconnection System Impact Study is estimated at \$35,000,000 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 Restudy**

Request	Amount	Service	Area	Requested Point of Interconnection	Proposed Point of Interconnection	Requested In-Service Date	In Service Date Delayed Until no earlier than*
GEN-2012-024	180.00	ER	SUNCMKEC	Clark County 345kV	Clark County 345kV	12/31/2015	12/31/2014
<b>Total:</b>		<b>180.00</b>					

Requests included in Appendix A are those found to be affected and considered for this system impact restudy.

## **B: Generation Interconnection Requests in Impact Study**

See next page.

## **B: Generation Interconnection Requests in 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-2012-020	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	On-Line
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	On-Line
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: 2,127.55</b>							

Appendix B is a complete list of Generation Interconnection Requests in the original system impact study.

## **C: Study Groupings**

See next page



## C. Study Groups

<b>GROUP 1: WOODWARD AREA</b>			
Request	Capacity	Area	Proposed Point of Interconnection
GEN-2001-014	96.00	WFEC	Ft Supply 138kV
GEN-2001-037	100.00	OKGE	FPL Moreland Tap 138kV
GEN-2005-008	120.00	OKGE	Woodward 138kV
GEN-2006-024S	19.80	WFEC	Buffalo Bear Tap 69kV
GEN-2006-046	131.00	OKGE	Dewey 138kV
GEN-2007-021	201.00	OKGE	Tatonga 345kV
GEN-2007-043	200.00	OKGE	Minco 345kV
GEN-2007-044	300.00	OKGE	Tatonga 345kV
GEN-2007-050	170.00	OKGE	Woodward EHV 138kV
GEN-2007-062	765.00	OKGE	Woodward EHV 345kV
GEN-2008-003	101.00	OKGE	Woodward EHV 138kV
GEN-2008-044	197.80	OKGE	Tatonga 345kV
GEN-2010-011	29.70	OKGE	Tatonga 345kV
GEN-2010-040	300.00	OKGE	Cimarron 345kV
GEN-2011-007	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>4,084.60</b>		
GEN-2012-031	200.00	OKGE	Cimarron 345kV (GEN-2010-040 Sub)
<b>CURRENT CLUSTER SUBTOTAL</b>	<b>200.00</b>		
<b>AREA TOTAL</b>	<b>4,284.60</b>		

<b>GROUP 2: HITCHLAND AREA</b>			
Request	Capacity	Area	Proposed Point of Interconnection
ASGI-2011-002	20.00	SPS	Herring 115kV
GEN-2002-008	240.00	SPS	Hitchland 345kV
GEN-2002-009	80.00	SPS	Hansford 115kV
GEN-2003-020	160.00	SPS	Martin 115kV
GEN-2006-020S	18.90	SPS	DWS Frisco 115kV
GEN-2006-044	370.00	SPS	Hitchland 345kV
GEN-2007-046	199.50	SPS	Hitchland 115kV
GEN-2008-047	300.00	OKGE	Tap Hitchland - Woodward Dbl Ckt (Beaver County) 345kV
GEN-2010-001	300.00	OKGE	Tap Hitchland - Woodward Dbl Ckt (Beaver County) 345kV
GEN-2010-014	358.80	SPS	Hitchland 345kV
GEN-2011-014	201.00	OKGE	Tap Hitchland - Woodward Dbl Ckt (Beaver County) 345kV
GEN-2011-022	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>2,662.20</b>		
<b>AREA TOTAL</b>	<b>2,662.20</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-2007-040	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-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>3,830.40</b>		
GEN-2012-024	180.00	SUNCMKEC	Clark County 345kV
<b>CURRENT CLUSTER SUBTOTAL</b>	<b>180.00</b>		
<b>AREA TOTAL</b>	<b>4,010.40</b>		

<b>GROUP 4/11: NW KANSAS AREA</b>			
<b>Request</b>	<b>Capacity</b>	<b>Area</b>	<b>Proposed Point of Interconnection</b>
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>		

<b>GROUP 5: AMARILLO AREA</b>			
<b>Request</b>	<b>Capacity</b>	<b>Area</b>	<b>Proposed Point of Interconnection</b>
GEN-2002-022	240.00	SPS	Bushland 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>692.60</b>		
<b>AREA TOTAL</b>	<b>692.60</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-2008-022	300.00	SPS	Tap Eddy Co - Tolk (Crossroads) 345kV
GEN-2010-006	205.00	SPS	Jones 230kV
GEN-2010-046	56.00	SPS	TUCO Interchange 230kV
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>2,371.50</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>3,091.65</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) - Shilder (AEPW) 138kV
GEN-2002-004	200.00	WERE	Latham 345kV
GEN-2005-013	201.00	WERE	Tap Latham - Neosho (Caney River) 345kV
GEN-2007-025	300.00	WERE	Viola 345kV
GEN-2008-013	300.00	OKGE	Tap Wichita - Woodring (Hunter) 345kV
GEN-2008-021	42.00	WERE	Wolf Creek 345kV
GEN-2008-098	100.80	WERE	Tap Lacygne - Wolf Creek (Anderson County) 345kV
GEN-2009-025	60.00	OKGE	Nardins 69kV
GEN-2010-003	100.80	WERE	Tap Lacygne - Wolf Creek (Anderson County) 345kV
GEN-2010-005	300.00	WERE	Viola 345kV
GEN-2010-055	4.50	AEPW	Wekiwa 138kV
GEN-2011-057	150.40	WERE	Creswell 138kV
<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-2004-023N	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-2008-119O	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>1,557.90</b>		
GEN-2012-021	4.80	LES	Terry Bundy Generating Station 115kV
<b>CURRENT CLUSTER SUBTOTAL</b>	<b>4.80</b>		
<b>AREA TOTAL</b>	<b>1,562.70</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**

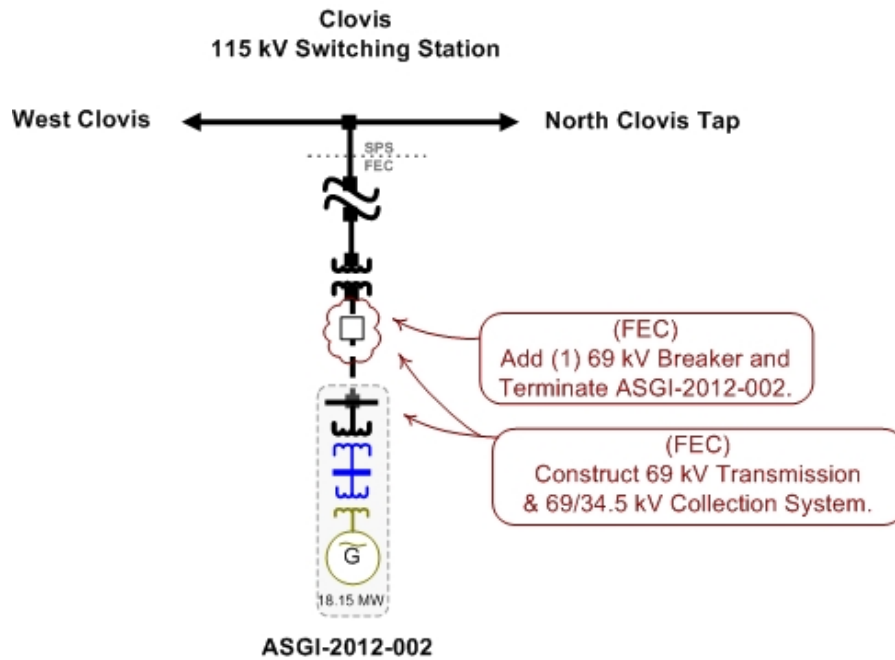
Request	Capacity	Area	Proposed Point of Interconnection
GEN-2011-040	111.00	OKGE	Tap Ratliff - Pooleville (Carter County) 138kV
GEN-2011-050	109.80	AEPW	Santa Fe Station 138kV
GEN-2012-004	41.40	OKGE	Tap Ratliff - Pooleville (Carter County) 138kV
<b>PRIOR QUEUED SUBTOTAL</b>	<b>262.20</b>		
<b>AREA TOTAL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

<b>CLUSTER TOTAL (CURRENT STUDY)</b>	<b>2,127.6</b>	<b>MW</b>
<b>PQ TOTAL (PRIOR QUEUED)</b>	<b>21,370.0</b>	<b>MW</b>
<b>CLUSTER TOTAL (INCLUDING PRIOR QUEUED)</b>	<b>23,497.6</b>	<b>MW</b>

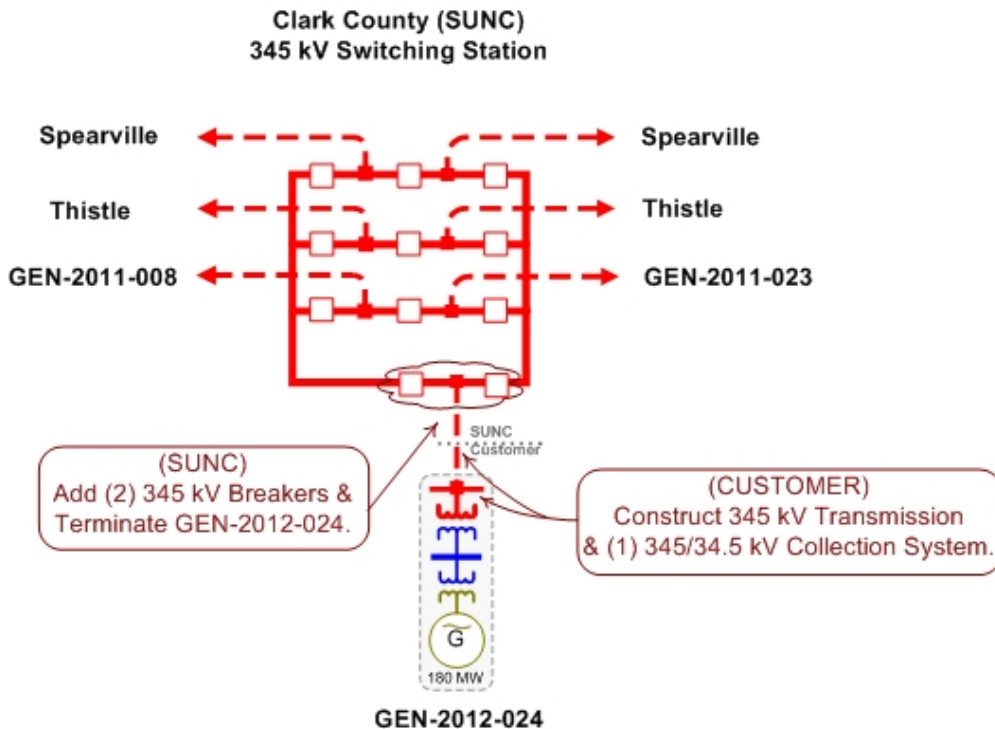
### D: Proposed Point of Interconnection One line Diagrams

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

#### ASGI-2012-002



#### GEN-2012-024





## **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>GEN-2012-024</b>			
GEN-2012-024 Interconnection Cost See One-Line Diagram.	Current Study	\$5,000,000.00	\$5,000,000.00
Thistle 345kV Reactive Power Support Build Thistle +100MVAR SVC and 100MVAR Switchable Capacitor Bank .	Current Study	\$30,000,000.00	\$30,000,000.00
Border - Woodward 345KV CKT 1 Balanced Portfolio: Tuco - Woodward 345kV CKT 1 (Total Project E&C Cost Shown)	In-Service		\$249,247,072.00
Hitchland - Woodward 345kV Dbl CKT Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	In-Service		\$226,040,727.00
Hitchland 345/230kV Autotransformer CKT 2 Priority Project: Hitchland 345/230kV Autotransformer CKT 2 (Total Project E&C Cost Shown).	In-Service		\$8,883,760.00
Thistle - Flat Ridge 138kV CKT 1 Priority Project: Thistle - Flat Ridge 138kV CKT 1 (Total Project E&C Cost Shown.)	In-Service		\$5,776,280.00
Thistle - Wichita 345KV Dbl CKT Priority Project: Thistle - Wichita Dbl 345kV CKT (Total Project E&C Cost Shown.)	In-Service		\$426,504,292.00
Thistle 345/138KV Transformer CKT 1 Priority Project: Thistle 345/138kV Transformer CKT 1 (Total Project E&C Cost Shown.)	In-Service		\$6,585,986.00
TUCO Interchange 345/230/13.2KV Autotransformer CKT 2 Balanced Portfolio: TUCO 345/230 kV Transformer CKT 2 (Total Project E&C Cost Shown)	In-Service		\$14,900,907.00
Woodward XFMR 345/138/13.8kV CKT 2 Balanced Portfolio: Woodward 345/138kV Transformer CKT 2 & 50 MVAR Reactor (Total Project E&C Cost Shown).	In-Service		\$249,247,072.00
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
Buckner - Spearville 345kV 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

\* 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-2011-017 Tap 345kV Reactive Power Support Build GEN-2011-017 Tap +100MVAR SVC and 100MVAR Switchable Capacitor Bank.	Previously Allocated		\$30,000,000.00
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
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>	\$35,000,000.00	
<b>TOTAL CURRENT STUDY COSTS:</b>		<b>\$35,000,000.00</b>	

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

Monday, July 28, 2014

## **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

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<b>GEN-2012-024 Interconnection Cost</b>	<b>\$5,000,000.00</b>
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See One-Line Diagram.

GEN-2012-024	\$5,000,000.00
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<b>Total Allocated Costs</b>	<b>\$5,000,000.00</b>
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<b>Thistle 345kV Reactive Power Support</b>	<b>\$30,000,000.00</b>
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Build Thistle +100MVAR SVC and 100MVAR Switchable Capacitor Bank .

GEN-2012-024	\$30,000,000.00
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<b>Total Allocated Costs</b>	<b>\$30,000,000.00</b>
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\* 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)		
FNSL-Blown up	03ALL	0	14G	G12_024	-	Non-converged Contingency	717.1	0.18821	-	BUCKNER7	345.00 - HOLCOMB 345KV CKT 1
FNSL-Blown up	03ALL	0	14G	G12_024	-	Non-converged Contingency	1793	0.158	-	G11-17T	345.00 - G12-011T 345.00 345KV CKT 1
FNSL-Blown up	03ALL	0	14G	G12_024	-	Non-converged Contingency	1793	0.158	-	G12-011T	345.00 - POST ROCK 345KV CKT 1
FNSL-Blown up	03ALL	0	14G	G12_024	-	Non-converged Contingency	1052	0.11566	-	FINNEY SWITCHING STATION - Hitchland Interchange	345KV 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	03ALL	0	14G	G12_024	TO->FROM	CHISHOLM - MAIZEE 4 138.00 138KV CKT 1	287	0.05324	102.9068	BENTON - WICHITA 345KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.08565	125.0422	DBL-WICH-THI
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0602	123.5145	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.08577	118.7326	DBL-WICH-THI
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06631	118.2684	CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06631	118.2684	CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 2
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06032	116.6817	AXTELL - POST ROCK 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0602	115.7382	KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05841	110.749	THISTLE7 345.00 - WICHITA 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05841	110.749	THISTLE7 345.00 - WICHITA 345KV CKT 2
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05832	108.6579	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05376	107.6775	ST JOHN - ST JOHN 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05483	107.3973	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05236	106.5443	SPP-MKEC-06
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05236	106.4933	SEWARD - ST JOHN 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05294	105.1543	MINGO - RED WILLOW 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05277	104.9918	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05376	104.6499	HUNTSVILLE - ST JOHN 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05376	104.4344	MIDW-CATB05
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05376	104.0884	HUNTSVILLE - HUTCHINSON ENERGY CENTER 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05017	104.052	GENS32751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05004	104.0339	DBL-BVR-WWRD
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05277	103.7367	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	0.05213	103.7133	AXTELL - PAULINE 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05143	103.6981	GRAND ISLAND - SWEETWATER 345KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06068	103.6691	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05277	103.5923	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	0.0512	103.3719	GREAT BEND TAP - SEWARD 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0512	103.3678	GREAT BEND TAP - MULLERGREN 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05154	103.351	SPP-MKEC-02
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.044	103.3062	CLARKCOUNTY7345.00 - IRONWOOD7 345.00 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05017	103.2858	GENS32652 1-JEFFREY ENERGY CENTER UNIT 2
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05017	103.2854	GENS32653 1-JEFFREY ENERGY CENTER UNIT 3
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05154	103.1765	ELLSWTP3 115.00 - MULLERGREN 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.044	103.1576	CLARKCOUNTY7345.00 - SPEARVILLE 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05017	102.9986	GENS32651 1-JEFFREY ENERGY CENTER UNIT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05186	102.9311	MOORE - PAULINE 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05147	102.2079	SPP-MKEC-08
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05154	102.1626	ELLSWTP3 115.00 - RUSSELL 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05004	102.0545	DBL-HTCH-BVR
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05101	102.0446	DBL-THIS-WVR
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05028	101.7279	LAWTON EASTSIDE - OKLAUNION 345KV CKT 1
FNSL	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05035	101.1976	TRF-STEGALL
FNSL	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05035	101.1931	NEB01WAPAB3
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05035	101.1908	STEGALL - STEGALL TY 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05035	101.1873	STEGALL TY 345/230KV TRANSFORMER CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05062	101.1525	SPP-MKEC-09B
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05017	101.124	GENS30690 1-PRWINDG1 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05154	101.0844	RUSSELL - WALDO 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05077	101.0641	GRAND ISLAND - MCCOOL 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05114	101.0001	HARPER - MILAN TAP 138KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05147	100.9925	ELM CREEK - NORTHWEST MANHATTAN 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05017	100.9322	GENS42955 1-LACYGNE UNIT #1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05017	100.929	GENS42956 2-LACYGNE UNIT #2
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05114	100.8804	SPP-MKEC-05
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05114	100.8769	SPP-MKEC-03A
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05017	100.8564	GENS42962 2-IATAN UNIT #2
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05114	100.835	CLEARWATER - MILAN TAP 138KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05114	100.8307	SPP-MKEC-03B
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05133	100.7811	GERALD GENTLEMAN STATION - RED WILLOW 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05114	100.6754	CLEARWATER - GILL ENERGY CENTER WEST 138KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05154	100.6575	COVERT 3 115.00 - WALDO 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05077	100.6544	MCCOOL - MOORE 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05154	100.6312	COVERT 3 115.00 - SMITH CENTER 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05069	100.5783	MULLERGREN (MULGREN6) 230/115/13.8KV TRANSFORMER CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05017	100.5754	GENS42957 1-IATAN UNIT #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 - MULLERGREN 230KV CKT 1	318.7	0.05017	100.5476	GEN532663 1-LAWRENCE ENERGY CENTER UNIT 5
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05069	100.5161	MEDICINE LODGE (BARBER 4) 138/115/2.72KV TRANSFORMER CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05068	100.5154	HEIZER 6 230.00 (HEIZER T1) 230/115/12.5KV TRANSFORMER CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05069	100.5138	FLATRDG3 - MEDICINE LODGE 138KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05068	100.5136	HEIZER 6 230.00 - MULLERGREN 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05039	100.4877	G10-056T 345.00 - ST JOE 345KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.06077	100.3454	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1
FDNS	03G12_024	0	14G	G12_024	FROM->TO	CLEARWATER - GILL ENERGY CENTER WEST 138KV CKT 1	191	0.06346	125.4402	DBL-WICH-THI
FDNS	3	0	14G	G12_024	FROM->TO	CLEARWATER - GILL ENERGY CENTER WEST 138KV CKT 1	191	0.06353	119.2989	DBL-WICH-THI
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.06346	230.107	DBL-WICH-THI
FDNS	3	0	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.06353	219.3324	DBL-WICH-THI
FDNS	03ALL	0	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.03341	153.9897	THISTLE7 345.00 - WICHITA 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.03341	153.9897	THISTLE7 345.00 - WICHITA 345KV CKT 2
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.03361	134.5577	THISTLE7 345.00 - WICHITA 345KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.03361	134.5577	THISTLE7 345.00 - WICHITA 345KV CKT 2
FDNS	03ALL	0	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.03258	131.718	DBL-THIS-WWR
FDNS	3	0	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.03365	128.4426	THISTLE7 345.00 - WICHITA 345KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.03365	128.4426	THISTLE7 345.00 - WICHITA 345KV CKT 2
FDNS	00G12_024	0	14WP	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.06346	116.5137	DBL-WICH-THI
FDNS	03G12_024	0	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.03271	113.6503	DBL-THIS-WWR
FNSL	00G12_024	0	19WP	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.06605	110.3479	DBL-WICH-THI
FDNS	3	0	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.03273	107.6669	DBL-THIS-WWR
FDNS	03ALL	0	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.03528	106.5965	DBL-SPRVL-CL
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04742	166.5871	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06035	159.0804	DBL-WICH-THI
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04742	152.9304	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04742	151.2651	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06043	150.143	DBL-WICH-THI
FDNS	03G12_024	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04767	143.5648	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04774	137.0549	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03705	133.787	WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03891	130.6892	IODINE - WOODWARD EHV 138KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04767	130.2786	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	129.3978	GEN520997 1-MORLND2
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03891	128.9292	DEWEY - IODINE 138KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04767	128.603	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03937	124.1787	THISTLE7 345.00 - WICHITA 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03937	124.1787	THISTLE7 345.00 - WICHITA 345KV CKT 2
FDNS	3	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04774	123.9325	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	123.3101	GEN520998 1-MORLND3
FDNS	3	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04774	122.2313	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03335	121.2814	LAWTON EASTSIDE - OKLAUNION 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03705	120.2081	WOODWARD - WOODWARD 69KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	119.6733	BASE CASE
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03961	119.3375	RENFROW7 345.00 - VIOLA 7 345.00 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03329	117.0194	SPP-SWPS-03
FDNS	03G12_024	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03723	116.8446	WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03328	116.706	ELK CITY 230KV - SWEETWATER 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03328	116.7053	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03328	116.0219	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03383	115.9503	RENFROW7 345.00 (BANK 1) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03312	115.3825	GEN520997 1-MORLND2
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	114.4259	RENFROW4 138.00 - SAND RDG_138138.00 138KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03315	114.2377	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03667	114.0079	BORDER 7345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03328	113.5105	SPP-SWPS-02A
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03961	113.4175	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0391	112.9017	IODINE - WOODWARD EHV 138KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03545	112.6481	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03475	112.0688	AXTELL - POST ROCK 345KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03729	111.9232	WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03667	111.9039	BORDER 7345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03335	111.9032	SPP-AEPW-32
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03453	111.5434	MINGO - RED WILLOW 345KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03318	111.3834	GEN520997 1-MORLND2

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	03G12_024	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0391	111.186	DEWEY - IODINE 138KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03421	111.1132	MINGO - SETAB 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03545	110.9058	SPP-SWPS-04
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03545	110.8065	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	110.148	SAND RDG_138138.00 - WAKITA_138 138.00 138KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03345	109.6725	SPP-SWPS-01
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03602	109.6685	G11-17T 345.00 - SPEARVILLE 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.035	109.5978	BENTON - WICHITA 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03335	109.4389	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03312	109.188	GEN520998 1-MORLND3
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03332	109.1071	WOODRING (WOODRNG2) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	109.023	GEN514805 1-SOONER UNIT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	108.5468	GEN515787 1-OKLA WIND ENERGY CENTER
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03363	108.4602	SMOKYHLL6 230.00 - SUMMIT 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03376	108.3065	CIRCLE - MULLERGREN 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03388	108.2283	HOLCOMB - SETAB 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03328	108.1025	STATELINE INTERCHANGE - STLN-DEMARC6 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03328	108.0925	SPP-SWPS-02
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03328	108.0859	STLN-DEMARC6 - SWEETWATER 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03384	108.0244	MULLERGREN - SPEARVILLE 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03349	107.7073	CIMARRON - NORTHWEST 345KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03916	107.6974	IODINE - WOODWARD EHV 138KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	107.5979	GEN520922 1-SLEEPING BEAR
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03365	107.4872	SPP-MKEC-08
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	107.2895	GEN514806 1-SOONER UNIT 2
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0337	107.1056	HARPER - MILAN TAP 138KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03334	107.0934	GRAND ISLAND - SWEETWATER 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0337	107.0477	SPP-MKEC-05
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0337	107.0447	SPP-MKEC-03A
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03411	106.9164	DEWEY - TALOGA 138KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0337	106.8143	CLEARWATER - MILAN TAP 138KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0337	106.8113	SPP-MKEC-03B
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03363	106.7305	KNOLL 230 - SMOKYHLL6 230.00 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03375	106.7034	FARGO JCT - WOODWARD 69KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0337	106.5491	CLEARWATER - GILL ENERGY CENTER WEST 138KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03343	106.5266	AXTELL - PAULINE 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03359	106.3503	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03414	106.2276	BENTON - ROSE HILL 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03339	106.1434	MOORE - PAULINE 345KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03916	105.9404	DEWEY - IODINE 138KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03956	105.3355	THISTLE7 345.00 - WICHITA 345KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03956	105.3355	THISTLE7 345.00 - WICHITA 345KV CKT 2
FDNS	3	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03318	105.1297	GEN520998 1-MORLND3
FDNS	03G12_024	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03355	104.6689	LAWTON EASTSIDE - OKLAUNION 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	104.0298	NC1_GEN-NEBRASKA CITY 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03723	103.2765	WOODWARD - WOODWARD 69KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03977	102.5006	RENFROW7 345.00 - VIOLA 7 345.00 345KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03312	102.3849	BASE CASE
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	102.0674	GEN562074 1-G11_049_3 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	102.015	GEN560221 1-G07-62-1 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	102.015	GEN560222 1-G07-62-2 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	102.015	GEN560223 1-G07-62-3 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	102.015	GEN560224 1-G07-62-4 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03273	101.9598	LYDIA - VALLIANT 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03272	101.9557	SPP-AEPW-01
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	101.8455	GEN562017 1-G11_022_3 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	101.7361	GEN542957 1-IATAN UNIT #1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	101.7198	GEN560267 1-G10-15-1 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	101.6943	GEN560121 1-G08-47 0.5750
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	101.6928	GEN539762 1-SSWIND 1 34.500
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	101.6802	GEN531459 2-S2 GENERATOR
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	101.6747	GEN539785 1-ENSNW 1 0.5750
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	101.6638	GEN560268 1-G10-15-2 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	101.5816	GEN531208 1-FLTRDG-WG1 0.6000
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03229	101.5599	DOVER - TWIN LAKES 138KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03272	101.5159	KNOBHILL (KNOBHIL4) 138/69/13.2KV TRANSFORMER 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	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	101.5144	GEN539767 1-GRAY COUNTY WIND FARM
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03343	101.5039	IODINE - MOORELAND 138KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	101.5011	GEN527161 1-MUSTANG GEN #1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	101.5011	GEN527162 1-MUSTANG GEN #2
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	101.5011	GEN645001 1-FORT CALHOUN 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	101.481	GEN515365 1-CENT 21 34.500
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	101.4721	EASTDC - WELSH 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03229	101.4549	DOVER - DOVER SW 138KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	101.3522	GEN560696 1-G11-008-4 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03219	101.3381	WOODWARD - WOODWARD EHV 138KV CKT 2
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03246	101.2857	CLINTON AIR FORCE BASE TAP - HOBART JUNCTION 138KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	101.2499	GEN645011 1-NEBRASKA CITY 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03397	101.2397	RENFROW7 345.00 (BANK 1) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	101.2257	GEN542962 2-IATAN UNIT #2
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	101.1908	GEN659111 2-LELAND OLDS UNIT2
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	101.1788	GEN515393 1-OGEWINDG
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03246	101.0759	CLINTON AIR FORCE BASE TAP - ELK CITY 138KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	101.0688	GEN527163 1-MUSTANG GEN #3 22 KV
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	101.0192	GEN659103 1-ANTELOPE VALLEY UNIT1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	101.0192	GEN659107 2-ANTELOPE VALLEY UNIT2
FDNS	03G12_024	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03348	100.9749	SPP-SWPS-03
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100.9237	GEN562023 1-G11_020_3 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100.9237	GEN562026 1-G11_019_3 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100.8169	GEN532653 1-JEFFREY ENERGY CENTER UNIT 3
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100.8166	GEN532652 1-JEFFREY ENERGY CENTER UNIT 2
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100.8133	GEN539670 4-JUDSON LARGE GENERATOR
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100.8115	GEN527882 1-CUNNINGHAM GEN #2 20 KV
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100.7794	GEN532651 1-JEFFREY ENERGY CENTER UNIT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100.7433	GEN527902 1-HOBBS PLANT #2 (CT)
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100.7203	GEN527901 1-HOBBS PLANT #1 (CT)
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03205	100.7153	MATHWSN7 345.00 - WOODRING 345KV CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03347	100.7085	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03347	100.7072	ELK CITY 230KV - SWEETWATER 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100.6214	GEN645012 2-NEBRASKA CITY 2
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100.6106	GEN542902 1-GPW_G1 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100.5992	GEN560695 1-G11-008-3 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03254	100.5124	CLINTON JUNCTION - ELK CITY 138KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100.4804	GEN526331 1-JONES GEN #1 22 KV
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100.4706	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100.4365	GEN560514 1-G04_014 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100.4033	GEN560694 1-G11-008-2 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100.3619	GEN526334 1-JONES_4 116.500
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100.3134	GEN640009 1-COOPER NUCLEAR STATION
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03205	100.2055	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03275	100.1007	BYRON 138 138.00 - SANDY_CN 138138.00 138KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100.0967	GEN562123 1-G12_011_3 0.6900
FDNS	03G12_024	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0331	100.0821	RENFROW4 138.00 - SAND RDG 138138.00 138KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100.0655	GEN526332 1-JONES GEN #2 21 KV
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100.0604	GEN640011 2-GERALD GENTLEMAN STATION UNIT 2
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03302	100	BEAVER CO 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03302	100	BEAVER CO 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100	GEN539807 1-G05-12 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100	GEN560238 1-G10-09 0.6900
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100	GEN640010 1-GERALD GENTLEMAN STATION UNIT 1
FDNS	03G12_024	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03347	100	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03361	99.9154	LAWTON EASTSIDE - OKLAUNION 345KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03962	99.7	THISTLE7 345.00 - WICHITA 345KV CKT 1
FDNS	3	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03962	99.7	THISTLE7 345.00 - WICHITA 345KV CKT 2
FDNS	03ALL	0	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	99.7	GEN562298 1-G12-024 0.6500
FDNS	03G12_024	0	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.06346	240.4897	DBL-WICH-THI
FDNS	3	0	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.06353	229.8495	DBL-WICH-THI
FDNS	03ALL	0	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.03341	164.0294	THISTLE7 345.00 - WICHITA 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.03341	164.0294	THISTLE7 345.00 - WICHITA 345KV CKT 2
FDNS	03G12_024	0	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.03361	144.6328	THISTLE7 345.00 - WICHITA 345KV CKT 1
FDNS	03G12_024	0	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.03361	144.6328	THISTLE7 345.00 - WICHITA 345KV CKT 2
FDNS	03ALL	0	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.03258	141.4314	DBL-THIS-WWR

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB		TC%LOADING		CONTINGENCY
							(MVA)	TDF	(% MVA)		
FDNS	3		0	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.03365	138.6507	THISTLE7 345.00 - WICHITA 345KV CKT 1
FDNS	3		0	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.03365	138.6507	THISTLE7 345.00 - WICHITA 345KV CKT 2
FDNS	00G12_024		0	14WP	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.06346	126.6525	DBL-WICH-THI
FDNS	03G12_024		0	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.03271	123.3415	DBL-THIS-WWR
FNSL	00G12_024		0	19WP	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.06605	121.6003	DBL-WICH-THI
FDNS	3		0	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.03273	117.5448	DBL-THIS-WWR
FDNS	03ALL		0	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.03528	116.8741	DBL-SPRVL-CL
FDNS	03G12_024		0	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.03539	107.1506	DBL-SPRVL-CL
FDNS	00G12_024		0	14SP	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.06437	102.8526	DBL-WICH-THI
FDNS	3		0	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.03541	101.4874	DBL-SPRVL-CL
FDNS	03ALL		0	14G	G12_024	TO->FROM	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1	398	0.07678	107.0092	AXTELL - POST ROCK 345KV CKT 1
FDNS	03G12_024		0	14G	G12_024	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	398	0.10918	123.1763	G12-011T 345.00 - POST ROCK 345KV CKT 1
FDNS	3		0	14G	G12_024	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	398	0.1093	117.5056	G12-011T 345.00 - POST ROCK 345KV CKT 1
FDNS	03ALL		0	14G	G12_024	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	398	0.08323	115.5394	POST ROCK (POSTROCK T1) 345/230/13.8KV TRANSFORMER CKT 1
FDNS	03ALL		0	14G	G12_024	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	398	0.10848	115.2197	G11-17T 345.00 - SPEARVILLE 345KV CKT 1
FDNS	03G12_024		0	14G	G12_024	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	398	0.10918	112.1053	G11-17T 345.00 - G12-011T 345.00 345KV CKT 1
FDNS	03ALL		0	14G	G12_024	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	398	0.08549	107.8897	CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 1
FDNS	03ALL		0	14G	G12_024	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	398	0.08549	107.8897	CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 2
FDNS	3		0	14G	G12_024	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	398	0.1093	106.6886	G11-17T 345.00 - G12-011T 345.00 345KV CKT 1
FDNS	03G12_024		0	14G	G12_024	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	398	0.09705	104.6496	DBL-WICH-THI
FDNS	3		0	14G	G12_024	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	398	0.09715	99.5	DBL-WICH-THI
FNSL-Blown up	3		0	14G	G12_024	-	Non-converged Contingency	-	0.55918	-	DBL-THIS-CLR
FNSL-Blown up	03ALL		0	14G	G12_024	-	Non-converged Contingency	-	0.55737	-	DBL-THIS-CLR
FNSL-Blown up	03ALL		0	14G	G12_024	-	Non-converged Contingency	-	0.3273	-	DBL-WICH-THI
FNSL-Blown up	03G12_024		0	14G	G12_024	-	Non-converged Contingency	-	0.5589	-	DBL-THIS-CLR
FDNS	03ALL		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.06192	130.0221	AXTELL - POST ROCK 345KV CKT 1
FDNS	03ALL		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.05419	120.6325	CIRCLE - MULLERGREN 230KV CKT 1
FDNS	03G12_024		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.0723	119.5231	DBL-WICH-THI
FDNS	03ALL		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.05794	117.7523	CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 1
FDNS	03ALL		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.05794	117.7523	CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 2
FDNS	3		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.0724	114.7855	DBL-WICH-THI
FDNS	03ALL		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.05074	110.8779	THISTLE7 345.00 - WICHITA 345KV CKT 1
FDNS	03ALL		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.05074	110.8779	THISTLE7 345.00 - WICHITA 345KV CKT 2
FDNS	03ALL		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.05102	109.6872	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNS	03G12_024		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.06239	109.2672	AXTELL - POST ROCK 345KV CKT 1
FDNS	03ALL		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04715	107.8891	AXTELL - PAULINE 345KV CKT 1
FDNS	03ALL		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04422	107.1348	GEN532652 1-JEFFREY ENERGY CENTER UNIT 2
FDNS	03ALL		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04422	107.1342	GEN532653 1-JEFFREY ENERGY CENTER UNIT 3
FDNS	03ALL		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04587	107.0571	GRAND ISLAND - SWEETWATER 345KV CKT 1
FDNS	03ALL		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04435	106.9319	MULLERGREN - SOUTH HAYS 230KV CKT 1
FDNS	03ALL		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04422	106.8701	GEN532651 1-JEFFREY ENERGY CENTER UNIT 1
FDNS	03ALL		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04642	106.6616	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	03ALL		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04667	106.5292	MOORE - PAULINE 345KV CKT 1
FDNS	03ALL		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04422	106.0678	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	03ALL		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04642	105.4231	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	0.04412	105.3622	DBL-BVR-WWRD
FDNS	03ALL		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04642	105.2889	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	0.04669	104.7533	CIRCLE - EAST MCPHERSON 230KV CKT 1
FDNS	3		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.06248	104.7465	AXTELL - POST ROCK 345KV CKT 1
FDNS	03ALL		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03898	104.7334	CLARKCOUNTY7345.00 - IRONWOOD7 345.00 345KV CKT 1
FDNS	03ALL		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03898	104.6039	CLARKCOUNTY7345.00 - SPEARVILLE 345KV CKT 1
FDNS	03ALL		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04466	104.3095	POSTROCK6 230.00 - SOUTH HAYS 230KV CKT 1
FDNS	03ALL		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04511	104.0914	MINGO - RED WILLOW 345KV CKT 1
FDNS	03ALL		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04552	103.7546	PHILLIPSBURG - SMITH CENTER 115KV CKT 1
FDNS	03ALL		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04498	103.6712	DBL-THIS-WWR
FDNS	03ALL		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04529	103.6339	ST JOHN - ST JOHN 115KV CKT 1
FDNS	03ALL		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04412	103.5944	DBL-HTCH-BVR
FDNS	03ALL		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.045	103.5096	GRAND ISLAND - MCCOOL 345KV CKT 1
FDNS	03ALL		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04431	103.4226	LAWTON EASTSIDE - OKLAUNION 345KV CKT 1
FDNS	03ALL		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04422	103.4165	GEN542962 2-IATAN UNIT #2
FDNS	03ALL		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04489	103.3719	KNOLL - SALINE RIVER 115KV CKT 1
FNSL	03ALL		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04442	103.338	TRF-STEGALL
FNSL	03ALL		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04442	103.333	NEB01WAPAB3
FDNS	03ALL		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04442	103.3305	STEGALL - STEGALL TY 345KV CKT 1
FDNS	03ALL		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04442	103.3255	STEGALL TY 345/230KV TRANSFORMER CKT 1
FDNS	03ALL		0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04502	103.2155	SPP-MKEC-08

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	0.04468	103.2059	SPP-MKEC-09B
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04422	103.2058	GEN542955 1-LACYGNE UNIT #1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04422	103.201	GEN542956 2-LACYGNE UNIT #2
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04489	103.1508	PLAINVILLE - SALINE RIVER 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04468	103.0849	GREENSBURG - SSTARTP3 115.00 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04422	103.0536	GEN532663 1-LAWRENCE ENERGY CENTER UNIT 5
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04477	103.0297	SPP-MKEC-06
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04477	103.0135	SEWARD - ST JOHN 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04422	103.0092	GEN542957 1-IATAN UNIT #1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.045	102.9612	MCCOOL - MOORE 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04468	102.9251	GREENSBURG - SUN CITY 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04451	102.8288	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	0.04468	102.8261	MEDICINE LODGE - SUN CITY 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.0454	102.7917	ELM CREEK - NORTHWEST MANHATTAN 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04489	102.7029	PHILLIPSBURG - PLAINVILLE 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04529	102.6802	HUNTSVILLE - ST JOHN 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04529	102.6398	MIDW-CATB05
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04451	102.6293	COOPER - G10-056T 345.00 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04468	102.6256	BARBER 3 115.00 - MEDICINE LODGE 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04422	102.6155	GEN542951 5-HAWTHORN UNIT #5
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04491	102.5785	HARPER - MILAN TAP 138KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04491	102.543	SPP-MKEC-03A
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04491	102.5167	SPP-MKEC-05
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04443	102.5093	NUNDRWD - WAYSIDE 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04529	102.5046	HUNTSVILLE - HUTCHINSON ENERGY CENTER 115KV CKT 1
FDNS	03G12_024	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.05461	102.4774	CIRCLE - MULLERGRENN 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04491	102.4754	SPP-MKEC-03B
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04575	102.4523	EMPORIA ENERGY CENTER - WICHITA 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04491	102.4498	CLEARWATER - MILAN TAP 138KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04447	102.3042	GREAT BEND TAP - SEWARD 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04447	102.2994	GREAT BEND TAP - MULLERGRENN 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04466	102.2151	KNOLL 230 (KNOLL T1) 230/115/11.49KV TRANSFORMER CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04422	101.1841	BASE CASE
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04422	101.1841	NC1_GEN-NEBRASKA CITY 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.0432	100.2909	WR-DOUBLE18
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04335	100.144	MULLERGRENN - SPEARVILLE 230KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.0432	100.1218	WR-DOUBLE16
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.0432	100.1	SPP-WR-305B
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04427	100.0866	COLBY - MINGO 115KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04423	100	EASTOWN7 345.00 - IATAN 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04422	99.7	GEN523971 1-HARRINGTON GEN #1 24 KV
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04422	99.7	GEN523972 1-HARRINGTON GEN #2 24 KV
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04422	99.7	GEN523973 1-HARRINGTON GEN #3 24 KV
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04422	99.7	GEN640009 1-COOPER NUCLEAR STATION
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04422	99.7	GEN641089 2-ENERGY CENTER 2
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04303	99.7	RENFROW7 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	0.05037	99.6	BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04683	99.6	RENO COUNTY - SUMMIT 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04422	99.6	GEN531459 2-S2 GENERATOR
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04422	99.6	GEN539762 1-SSWIND 1 34.500
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04422	99.6	GEN645001 1-FORT CALHOUN 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04422	99.6	GEN645011 1-NEBRASKA CITY 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.0432	99.6	WR-DOUBLE17
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.0444	99.5	EMPORIA ENERGY CENTER - MORRIS COUNTY 345KV CKT 1
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04422	99.5	GEN539677 3-A. M. MULLERGRENN GENERATOR
FDNS	03ALL	0	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04422	99.5	GEN560522 1-G05-12-2 0.6900
FDNS	03ALL	2	14G	G12_024	FROM->TO	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1	717.1	0.23258	104.155	G12-011T 345.00 - POST ROCK 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CHISHOLM - MAIZEE 4 138.00 138KV CKT 1	287	0.05324	103.0195	BENTON - WICHITA 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGRENN 230KV CKT 1	318.7	0.0602	122.3669	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGRENN 230KV CKT 1	318.7	0.06631	116.6994	CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGRENN 230KV CKT 1	318.7	0.06631	116.6994	CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 2
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGRENN 230KV CKT 1	318.7	0.05832	115.174	SPP-SWPS-05
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGRENN 230KV CKT 1	318.7	0.05832	114.9485	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGRENN 230KV CKT 1	318.7	0.06032	114.8629	AXTELL - POST ROCK 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGRENN 230KV CKT 1	318.7	0.0602	114.665	KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGRENN 230KV CKT 1	318.7	0.05841	109.8055	THISTLE7 345.00 - WICHITA 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05841	109.8055	THISTLE7 345.00 - WICHITA 345KV CKT 2
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05832	107.503	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05376	106.9514	ST JOHN - ST JOHN 115KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05483	106.5873	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05692	106.0003	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05236	105.7933	SPP-MKEC-06
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05236	105.7426	SEWARD - ST JOHN 115KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05294	104.3968	MINGO - RED WILLOW 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05277	104.2319	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05376	103.94	HUNTSVILLE - ST JOHN 115KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05376	103.7254	MIDW-CATB05
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05376	103.383	HUNTSVILLE - HUTCHINSON ENERGY CENTER 115KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05017	103.3325	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05004	103.2366	DBL-BVR-WWRD
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05277	102.9975	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05143	102.9907	GRAND ISLAND - SWEETWATER 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05213	102.9388	AXTELL - PAULINE 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05277	102.8482	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.044	102.7284	CLARKCOUNTY7345.00 - IRONWOOD7 345.00 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05154	102.6647	SPP-MKEC-02
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0512	102.6245	GREAT BEND TAP - SEWARD 115KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05017	102.6161	GEN532652 1-JEFFREY ENERGY CENTER UNIT 2
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05017	102.6156	GEN532653 1-JEFFREY ENERGY CENTER UNIT 3
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0512	102.5952	GREAT BEND TAP - MULLERGREN 115KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.044	102.5697	CLARKCOUNTY7345.00 - SPEARVILLE 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05154	102.4901	ELLSWTP3 115.00 - MULLERGREN 115KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05017	102.3316	GEN532651 1-JEFFREY ENERGY CENTER UNIT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05186	102.1697	MOORE - PAULINE 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05147	101.5129	SPP-MKEC-08
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05154	101.4858	ELLSWTP3 115.00 - RUSSELL 115KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05004	101.4286	DBL-HTCH-BVR
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05028	101.0135	LAWTON EASTSIDE - OKLAUNION 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05114	100.7146	FLATRDG3 - HARPER 138KV CKT 1
FNSL	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05035	100.5082	TRF-STEGALL
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05035	100.501	STEGALL - STEGALL TY 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05035	100.5004	NEB01WAPAB3
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05062	100.4565	SPP-MKEC-09B
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05017	100.4462	GEN530690 1-PRWINDG1 0.6900
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05154	100.4209	RUSSELL - WALDO 115KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05077	100.3609	GRAND ISLAND - MCCOOL 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05114	100.3227	HARPER - MILAN TAP 138KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05147	100.2932	ELM CREEK - NORTHWEST MANHATTAN 230KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05017	100.2623	GEN542955 1-LACYGNE UNIT #1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05017	100.2592	GEN542956 2-LACYGNE UNIT #2
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05114	100.2072	SPP-MKEC-05
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05017	100.2051	GEN542962 2-IATAN UNIT #2
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05114	100.2045	SPP-MKEC-03A
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05114	100.1668	CLEARWATER - MILAN TAP 138KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05114	100.164	SPP-MKEC-03B
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05133	100.0752	GERALD GENTLEMAN STATION - RED WILLOW 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05154	100	COVERT 3 115.00 - SMITH CENTER 115KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05154	100	COVERT 3 115.00 - WALDO 115KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05114	100	CLEARWATER - GILL ENERGY CENTER WEST 138KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05077	100	MCCOOL - MOORE 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05069	99.9	MULLERGREN (MULGREN6) 230/115/13.8KV TRANSFORMER CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05068	99.9	HEIZER 6 230.00 - MULLERGREN 230KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05068	99.9	HEIZER 6 230.00 (HEIZER T1) 230/115/12.5KV TRANSFORMER CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05017	99.9	GEN532663 1-LAWRENCE ENERGY CENTER UNIT 5
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05017	99.9	GEN542957 1-IATAN UNIT #1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.05039	99.8	G10-056T 345.00 - ST JOE 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.03341	152.7332	THISTLE7 345.00 - WICHITA 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.03341	152.7332	THISTLE7 345.00 - WICHITA 345KV CKT 2
FDNS	03ALL	2	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.03258	129.083	DBL-THIS-WWR
FDNS	03ALL	2	14G	G12_024	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.03528	105.1244	DBL-SPRVL-CL
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04743	164.1517	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04743	150.3437	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04743	148.6561	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03706	132.1213	WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03891	128.9774	IODINE - WOODWARD EHV 138KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	128.3895	GEN520997 1-MORLND2
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03891	127.2083	DEWEY - IODINE 138KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	122.289	GEN520998 1-MORLND3
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03937	122.0424	THISTLE7 345.00 - WICHITA 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03937	122.0424	THISTLE7 345.00 - WICHITA 345KV CKT 2
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03335	119.328	LAWTON EASTSIDE - OKLAUNION 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03706	118.4488	WOODWARD - WOODWARD 69KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03961	117.9535	RENFROW7 345.00 - VIOLA 7 345.00 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	117.8802	BASE CASE
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03603	117.1566	G12-011T 345.00 - POST ROCK 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03329	115.6133	SPP-SWPS-03
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03328	115.3319	ELK CITY 230KV - SWEETWATER 230KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03328	115.3312	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03383	114.7339	RENFROW7 345.00 (BANK 1) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03328	114.6261	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	113.1788	RENFROW4 138.00 - SAND RDG 138138.00 138KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03315	112.8734	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03667	112.597	BORDER 7345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03603	112.302	G11-17T 345.00 - G12-011T 345.00 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03328	111.964	SPP-SWPS-02A
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03961	111.7192	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03545	111.2089	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03335	110.4752	SPP-AEPW-32
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03667	110.4317	BORDER 7345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03475	109.8602	AXTELL - POST ROCK 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03453	109.5236	MINGO - RED WILLOW 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03545	109.478	SPP-SWPS-04
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03421	109.4034	MINGO - SETAB 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03545	109.3698	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	108.8428	SAND RDG 138138.00 - WAKITA 138 138.00 138KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03345	108.2509	SPP-SWPS-01
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03335	108.0214	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03332	107.8003	WOODRING (WOODRNG2) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.035	107.7308	BENTON - WICHITA 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	107.6755	GEN514805 1-SOONER UNIT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03603	107.3969	G11-17T 345.00 - SPEARVILLE 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	107.014	GEN515787 1-OKLA WIND ENERGY CENTER
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03388	106.7537	HOLCOMB - SETAB 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03363	106.722	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03377	106.7016	CIRCLE - MULLERGREN 230KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03385	106.5315	MULLERGREN - SPEARVILLE 230KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03328	106.4794	STATELINE INTERCHANGE - STLN-DEMARC6 230KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03328	106.4696	SPP-SWPS-02
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03328	106.4631	STLN-DEMARC6 - SWEETWATER 230KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0337	106.3795	FLATRDG3 - HARPER 138KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03349	106.1595	CIMARRON - NORTHWEST 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03365	106.1184	SPP-MKEC-08
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	106.0807	GEN520922 1-SLEEPING BEAR
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	105.7226	GEN514806 1-SOONER UNIT 2
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03334	105.6547	GRAND ISLAND - SWEETWATER 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0337	105.5349	HARPER - MILAN TAP 138KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0337	105.4803	SPP-MKEC-05
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0337	105.4782	SPP-MKEC-03A
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03411	105.2751	DEWEY - TALOGA 138KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0337	105.2529	CLEARWATER - MILAN TAP 138KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0337	105.2507	SPP-MKEC-03B
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03375	105.0869	FARGO JCT - WOODWARD 69KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03363	105.0494	KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0337	104.9826	CLEARWATER - GILL ENERGY CENTER WEST 138KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03343	104.8785	AXTELL - PAULINE 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0336	104.7766	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03414	104.6018	BENTON - ROSE HILL 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03339	104.5254	MOORE - PAULINE 345KV CKT 1



SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	102.471	NC1_GEN-NEBRASKA CITY 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100.4427	GEN562074 1-G11_049_3 0.6900
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100.3997	GEN560221 1-G07-62-1 0.6900
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100.3997	GEN560222 1-G07-62-2 0.6900
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100.3997	GEN560223 1-G07-62-3 0.6900
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100.3997	GEN560224 1-G07-62-4 0.6900
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03273	100.3471	LYDIA - VALLIANT 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03273	100.343	SPP-AEPW-01
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100.2541	GEN562017 1-G11_022_3 0.6900
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100.1465	GEN560267 1-G10-15-1 0.6900
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03272	100.1293	KNOBHILL (KNOBHIL4) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100.11	GEN542957 1-IATAN UNIT #1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100.1078	GEN560121 1-G08-47 0.5750
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100.1007	GEN539785 1-ENSNW 1 0.5750
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100.1	GEN531208 1-FLTRDG-WG1 0.6000
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100.0988	GEN539762 1-SSWIND 1 34.500
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100.0985	GEN531459 2-S2 GENERATOR
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100.0927	GEN560268 1-G10-15-2 0.6900
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	100	GEN539767 1-GRAY COUNTY WIND FARM
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03229	100	DOVER - TWIN LAKES 138KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	99.9248	EASTDC - WELSH 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03343	99.9	IODINE - MOORELAND 138KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	99.9	GEN515365 1-CENT 21 34.500
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	99.9	GEN527161 1-MUSTANG GEN #1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	99.9	GEN527162 1-MUSTANG GEN #2
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	99.9	GEN645001 1-FORT CALHOUN 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03229	99.9	DOVER - DOVER SW 138KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	99.8	GEN560696 1-G11-008-4 0.6900
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03219	99.8	WOODWARD - WOODWARD EHV 138KV CKT 2
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	99.7	GEN645011 1-NEBRASKA CITY 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03246	99.7	CLINTON AIR FORCE BASE TAP - HOBART JUNCTION 138KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	99.6	GEN542962 2-IATAN UNIT #2
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	99.6	GEN659111 2-LELAND OLDS UNIT2
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	99.5	GEN515393 1-OGEWIND2G
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03297	99.5	GEN527163 1-MUSTANG GEN #3 22 KV
FDNS	03ALL	2	14G	G12_024	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03246	99.5	CLINTON AIR FORCE BASE TAP - ELK CITY 138KV CKT 1
FDNS	03ALL	2	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.03341	163.0462	THISTLE7 345.00 - WICHITA 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.03341	163.0462	THISTLE7 345.00 - WICHITA 345KV CKT 2
FDNS	03ALL	2	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.03258	139.2318	DBL-THIS-WWR
FDNS	03ALL	2	14G	G12_024	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.03528	115.7001	DBL-SPRVL-CL
FDNS	03ALL	2	14G	G12_024	TO->FROM	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1	398	0.07678	105.6013	AXTELL - POST ROCK 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	398	0.10848	149.7818	G12-011T 345.00 - POST ROCK 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	398	0.10848	133.6469	G11-17T 345.00 - G12-011T 345.00 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	398	0.08323	114.4232	POST ROCK (POSTROCK T1) 345/230/13.8KV TRANSFORMER CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	398	0.10848	112.7915	G11-17T 345.00 - SPEARVILLE 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	398	0.08549	106.6698	CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	398	0.08549	106.6698	CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 2
FDNS	03ALL	2	14G	G12_024	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	398	0.08805	104.9895	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FNSL-Blown up	03ALL	2	14G	G12_024	-	Non-converged Contingency	-	0.55737	-	DBL-THIS-CLR
FNSL-Blown up	03ALL	2	14G	G12_024	-	Non-converged Contingency	-	0.3273	-	DBL-WICH-THI
FDNS	03ALL	2	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.06192	127.9243	AXTELL - POST ROCK 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.05419	119.3033	CIRCLE - MULLERGREN 230KV CKT 1
FDNS	03ALL	2	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.05794	116.3009	CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.05794	116.3009	CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 2
FDNS	03ALL	2	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.05101	114.5397	SPP-SWPS-05
FDNS	03ALL	2	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.05101	114.3344	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.05074	109.5971	THISTLE7 345.00 - WICHITA 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.05074	109.5971	THISTLE7 345.00 - WICHITA 345KV CKT 2
FDNS	03ALL	2	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.05101	108.0431	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.05036	107.2352	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04715	106.7458	AXTELL - PAULINE 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04422	106.1312	GEN532652 1-JEFFREY ENERGY CENTER UNIT 2
FDNS	03ALL	2	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04422	106.1306	GEN532653 1-JEFFREY ENERGY CENTER UNIT 3
FDNS	03ALL	2	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04587	105.9828	GRAND ISLAND - SWEETWATER 345KV CKT 1
FDNS	03ALL	2	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04422	105.8709	GEN532651 1-JEFFREY ENERGY CENTER UNIT 1
FDNS	03ALL	2	14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04435	105.7044	MULLERGREN - SOUTH HAYS 230KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB		TC%LOADING		CONTINGENCY
							(MVA)	TDF	(% MVA)		
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04667	105.4288	MOORE - PAULINE 345KV CKT 1	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04642	105.3751	NORTHWEST - TATONGA7 345.00 345KV CKT 1	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04422	104.9556	GENS32751 1-WOLF CREEK GENERATING STATION UNIT 1	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04412	104.2406	DBL-BVR-WWRD	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04642	104.172	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04642	104.0391	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03898	103.8265	CLARKCOUNTY7345.00 - IRONWOOD7 345.00 345KV CKT 1	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04669	103.7944	CIRCLE - EAST MCPHERSON 230KV CKT 1	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.03898	103.6928	CLARKCOUNTY7345.00 - SPEARVILLE 345KV CKT 1	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04466	103.1241	POSTROCK6 230.00 - SOUTH HAYS 230KV CKT 1	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04511	102.9611	MINGO - RED WILLOW 345KV CKT 1	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04552	102.7808	PHILLIPSBURG - SMITH CENTER 115KV CKT 1	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04529	102.6626	ST JOHN - ST JOHN 115KV CKT 1	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04412	102.6494	DBL-HTCH-BVR	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.045	102.5029	GRAND ISLAND - MCCOOL 345KV CKT 1	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04422	102.4577	GENS42962 2-IATAN UNIT #2	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04489	102.4198	KNOLL - SALINE RIVER 115KV CKT 1	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04431	102.3587	LAWTON EASTSIDE - OKLAUNION 345KV CKT 1	
FNSL	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04442	102.3514	TRF-STEGALL	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04442	102.3436	STEGALL - STEGALL TY 345KV CKT 1	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04442	102.3432	NEB01WAPAB3	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04502	102.2377	SPP-MKEC-08	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04422	102.2325	GENS42955 1-LACYGNE UNIT #1	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04422	102.2277	GENS42956 2-LACYGNE UNIT #2	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04489	102.2036	PLAINVILLE - SALINE RIVER 115KV CKT 1	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04468	102.2012	SPP-MKEC-09B	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04468	102.0895	GREENSBURG - SSTARTP3 115.00 115KV CKT 1	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04422	102.0885	GENS32663 1-LAWRENCE ENERGY CENTER UNIT 5	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04422	102.0546	GENS42957 1-IATAN UNIT #1	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04477	102.0296	SPP-MKEC-06	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04477	102.0154	SEWARD - ST JOHN 115KV CKT 1	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.045	101.9603	MCCOOL - MOORE 345KV CKT 1	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04468	101.9324	GREENSBURG - SUN CITY 115KV CKT 1	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04491	101.9169	FLATRDG3 - HARPER 138KV CKT 1	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04451	101.8478	G10-056T 345.00 - ST JOE 345KV CKT 1	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04468	101.8367	MEDICINE LODGE - SUN CITY 115KV CKT 1	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.0454	101.8016	ELM CREEK - NORTHWEST MANHATTAN 230KV CKT 1	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04489	101.7463	PHILLIPSBURG - PLAINVILLE 115KV CKT 1	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04529	101.7251	HUNTSVILLE - ST JOHN 115KV CKT 1	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04529	101.6853	MIDW-CATB05	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04422	101.6588	GENS42951 5-HAWTHORN UNIT #5	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04468	101.6471	BARBER 3 115.00 - MEDICINE LODGE 115KV CKT 1	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04451	101.6278	COOPER - G10-056T 345.00 345KV CKT 1	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04491	101.5983	HARPER - MILAN TAP 138KV CKT 1	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04491	101.5668	SPP-MKEC-03A	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04529	101.5522	HUNTSVILLE - HUTCHINSON ENERGY CENTER 115KV CKT 1	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04491	101.5399	SPP-MKEC-05	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04443	101.53	NUNDRWD - WAYSIDE 230KV CKT 1	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04491	101.503	SPP-MKEC-03B	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04491	101.4763	CLEARWATER - MILAN TAP 138KV CKT 1	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04575	101.4749	EMPORIA ENERGY CENTER - WICHITA 345KV CKT 1	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04447	101.3074	GREAT BEND TAP - SEWARD 115KV CKT 1	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04466	101.2609	KNOLL 230 (KNOLL T1) 230/115/11.49KV TRANSFORMER CKT 1	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04422	100.2402	BASE CASE	
FDNS	03ALL		2 14G	G12_024	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.04422	100.2402	NC1_GEN-NEBRASKA CITY 1	

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

Available on Request

# **J: Dynamic Stability Analysis Report**

Available upon request