



**Definitive Interconnection  
System Impact Study for  
Generation Interconnection  
Requests  
(DISIS-2013-002-2)**

**October 2014**

**Generator Interconnection**

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## Revision History

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Date	Author	Change Description
01/31/2014	SPP	Report Issued (DISIS-2013-002)
07/31/2014	SPP	Account for Withdrawn Projects, Report Re-Posted (DISIS-2013-002-1)
10/23/2014	SPP	Account for Withdrawn Projects, Report Re-Posted (DISIS-2013-002-2)

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## Executive Summary

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Pursuant to the Generator Interconnection Procedures (GIP) of the Southwest Power Pool (SPP) Open Access Transmission Tariff (OATT), SPP has conducted this Definitive Interconnection System Impact Study (DISIS). The Interconnection Customers' requests have been clustered together for the following System Impact Cluster Study window which closed September 30, 2013. The customers will be referred to in this study as the DISIS-2013-002 Interconnection Customers. This System Impact Study analyzes the interconnecting of multiple generation interconnection requests associated with new generation totaling approximately 1,521.5 MW of new generation which would be located within the transmission systems of Grand River Dam Authority (GRDA), Lincoln Electric System (LES), Midwest Energy (MIDW), Nebraska Public Power District (NPPD), Oklahoma Gas and Electric (OKGE), Southwestern Public Service (SPS), and Sunflower Electric Power Corporation/Mid-Kansas Electric Power LLC (SUNC)/(MKEC). The various generation interconnection requests have differing proposed in-service 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.

Power flow analysis has indicated that for the power flow cases studied, 1,521.5 MW of nameplate generation may be interconnected with transmission system reinforcements within the SPP transmission system. Dynamic stability and power factor analysis has determined the need for reactive compensation in accordance with FERC Order #661A for wind farm interconnection requests and those requirements are listed for each interconnection request within the contents of this report. Dynamic stability analysis has determined that the transmission system will remain stable with the assigned Network Upgrades and necessary reactive compensation requirements.

In no way does this study guarantee operation for all periods of time. This interconnection study identifies and assigns transmission reinforcements for Energy Resource (ER) interconnection injection constraints (defined as a 20% distribution factor impact) and Network Resource (NR) constraints, if requested by the Customer. This interconnection study does not assign transmission reinforcements for all potential transmission constraints. It should be noted that although this study analyzed many of the most probable contingencies, it is not an all-inclusive list and cannot account for every operational situation. Because of this, it is likely that the Customer(s) may be required to reduce their generation output to 0 MW, also known as curtailment, under certain system conditions to allow system operators to maintain the reliability of the transmission network.

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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 Customers that proceed to the Facility Study will be provided a new in-service date based on the Facility Study's time for completion of the Network Upgrades necessary.

The total estimated minimum cost for interconnecting the DISIS-2013-002 Interconnection Customers is estimated at \$49,401,425. These costs are shown in Appendix E and F. Interconnection Service to DISIS-2013-002 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 Energy Resource Interconnection Service (ERIS) requests. Certain Interconnection Requests were also studied for Network Resource Interconnection Service (NRIS). Those constraints are also listed in Appendix H. Additional network constraints will have to be verified with a Transmission Service Request (TSR) and associated studies. With a defined source and sink in a TSR, this list of Network Constraints will be refined and expanded to account for all Network Upgrade requirements.

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

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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, 2013. The customers will be referred to in this study as the DISIS-2013-002 Interconnection Customers. This DISIS analyzes the interconnecting of multiple generation interconnection requests associated with new generation totaling 1,521.5 MW which would be located within the transmission systems of Grand River Dam Authority (GRDA), Lincoln Electric System (LES), Midwest Energy (MIDW), Nebraska Public Power District (NPPD), Oklahoma Gas and Electric (OKGE), Southwestern Public Service (SPS), and Sunflower Electric Power Corporation/Mid-Kansas Electric Power LLC (SUNC)/(MKEC). The various generation interconnection requests have differing proposed in-service 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.

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

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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 Customers that proceed to the Facility Study will be provided a new in-service date based on the completion of the Facility Study.

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## Model Development

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### Interconnection Requests Included in the Cluster

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

### Affected System Interconnection Request

Also included in this Definitive Interconnection System Impact Study are two Affected System Studies. The Affected System Study Requests have been given the designations: ASGI-2013-004, a 28MW/36MW combustion gas turbine interconnecting to the Garden City, Kansas, municipal 34.5kV distribution system (with a point of interconnection on Sunflower Electric Power Corporation at Morris 115kV) and ASGI-2013-005, a 1.8MW increase of the previously studied ASGI-2012-002 request on the Farmers Electric Cooperative of New Mexico transmission system at Clovis 115kV (on the Southwestern Public Service system).

### Previously Queued Interconnection Requests

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

## Development of Base Cases

### Power Flow

The 2014 series Transmission Service Request (TSR) Models including the 2015 (spring, summer and winter peak seasons), the 2020 (summer and winter peak seasons), and the 2025 (summer peak season) scenario 0 cases were used for this study. After the cases were developed, each of the control areas' resources were then re-dispatched to account for the new generation requests using current dispatch orders.

### Dynamic Stability

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

### Base Case Upgrades

The following facilities are part of the SPP Transmission Expansion Plan, the Balanced Portfolio or recently approved Priority Projects. These facilities have an approved Notification to Construct (NTC) or are in construction stages and were assumed to be in-service at the time of dispatch and added to the base case models. The DISIS-2013-002 Interconnection Customers have not been assigned costs for the below listed projects. The DISIS-2013-002 Interconnection Customers Generation Facilities in service dates may need to be delayed until the completion of the following

upgrades. If for some reason, construction on these projects is discontinued, additional restudies will be needed to determine the interconnection needs of the DISIS Interconnection Customers.

- **Balanced Portfolio Projects<sup>3</sup>:**
  - Woodward – Border – TUCO 345kV project, scheduled for 9/30/2014 in-service
    - Woodward 345/138kV circuit #2 autotransformer, placed in-service in 2014
    - TUCO 345/230kV circuit #2 autotransformer, placed in-service in 2014
    - Reactors at Woodward and Border, placed in-service in 2014
  - Iatan – Nashua 345/161kV Project, scheduled for 6/1/2015 in-service
    - Iatan – Nashua 345kV circuit #1 and associated terminal equipment
    - Nashua 345/161/13kV autotransformer circuit #1
- **Priority Projects<sup>4</sup>:**
  - Hitchland – Woodward double circuit 345kV, , placed in-service in 2014
    - Hitchland 345/230kV circuit #2 autotransformer, placed in-service in 2014
  - Woodward – Thistle double circuit 345kV, scheduled for 12/31/2014 in-service
  - Spearville – Clark County – Thistle double circuit 345kV, scheduled for 12/31/2014 in-service
  - Thistle – Wichita double circuit 345kV, placed in-service in 2014
  - Thistle 345/138kV autotransformer, placed in-service in 2014
  - Thistle – Flat Ridge 138kV, placed in-service in 2014
- St. John – Barber 115kV rebuild, placed in-service in 2014
- Northwest 345/138/13.8kV circuit #3 autotransformer, scheduled for 6/1/2015 in-service<sup>5</sup>
- Ogallala 230/115/13kV Transformer circuit #1 replacement, placed in-service in 2014<sup>6</sup>
- Hoskins – Neligh East 345/115kV Project, scheduled for 6/1/2016 in-service<sup>7</sup>
  - Neligh East 345/115kV substation and transformer
  - Neligh East Area 115kV upgrades to support new station
  - Hoskins – Neligh East 345kV circuit #1
- Maxwell – North Platte 115kV terminal equipment upgrade, placed in-service in 2014<sup>8</sup>
- Yoakum 230/115kV autotransformer CKT 1 and 2 replacements, scheduled for 6/1/2019 in-service
- Lubbock South 230/115kV Autotransformer circuit #2 addition, scheduled for 12/31/2014
- Dobson – Gano 115kV replace terminal equipment, placed in-service in 2014
- Garden City – Kansas Ave Water Treatment Plant 115kV replace terminal equipment, placed in-service in 2014
- Mustang – Yoakum 230kV circuit #1 replace line traps, placed in-service in 2014
- High Priority Incremental Loads (HPILs) Projects<sup>9</sup>:

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<sup>3</sup> Notification to Construct (NTC) issued June 2009

<sup>4</sup> Notification to Construct (NTC) issued June 2010

<sup>5</sup> SPP Transmission Service Project identified in SPP 2009-AG2-AFS6. Per SPP NTC 20137 & 200194

<sup>6</sup> Notification to Construct (NTC) SPP-2009-AGP1-AFS-5 Per SPP-NTC-20117

<sup>7</sup> SPP Regional Reliability 2012 ITP 10 Project Per SPP-NTC-200220

<sup>8</sup> SPP Regional Reliability 2014 ITPNT Per SPP-NTC-200253



- TUCO Interchange – Yoakum – Hobbs Interchange 345/230 kV Project
  - TUCO Interchange – Yoakum – Hobbs Interchange 345 kV circuit #1 and associated terminal equipment upgrades
  - Hobbs 345/230/13 kV transformer circuit #1
  - Yoakum 345/230/13 kV transformer circuit #1
- Hobbs Interchange – Kiowa 345 kV circuit #1

## Contingent Upgrades

The following facilities do not yet have approval. These facilities have been assigned to higher queued interconnection customers. These facilities have been included in the models for the DISIS-2013-002 study and are assumed to be in service. This list may not be all inclusive. The DISIS-2013-002 Interconnection Customers, at this time, do not have responsibility for these facilities but may later be assigned the cost of these facilities if higher queued customers terminate their Generation Interconnection Agreement or withdraw from the interconnection queue. The DISIS-2013-002 Interconnection 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 Fort Dodge terminal of Shooting Star 115kV at North Ft Dodge
  - Fort Randall – Meadow Grove – Kelly 230kV circuit #1 rerate (320MVA)
- Upgrades assigned to DISIS-2010-001 Interconnection Customers:
  - Switch 2749 – Wildorado 69kV circuit # 1 rebuild
- Upgrades assigned to DISIS-2010-002 Interconnection Customers:
  - Twin Church – Dixon County 230kV circuit #1 rerate (320MVA)
  - Buckner – Spearville 345kV terminal equipment
- Upgrades assigned to DISIS-2011-001 Interconnection Customers:
  - Hoskins – Dixon County – Twin Church 230kV circuit #1 conductor clearance increase
  - (NRIS only) Wolfforth Interchange 230/115/13.2kV transformer circuit #1
  - (NRIS only) New Deal – TUCO 345kV/115kV Project
  - (NRIS only) Woodward – FPL Switch – Mooreland 138kV circuit #1 rebuild
  - (NRIS Only) Glass Mountain – Mooreland 138 kV rebuild
- Upgrades assigned to DISIS-2011-002 interconnection Customers:
  - Power System Stabilizers - Install Power System Stabilizers @ Tolk (Units: 1,2) and Jones (Units: 1,2,3,4)
- Upgrades assigned to DISIS-2012-001 interconnection Customers:

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

- None at this time
- Upgrades assigned to DISIS-2012-002 interconnection Customers:
  - Associated Electric Cooperative Inc (AECI) Fairfax 138/69kV transformer replacement
  - Lake Creek – Lone Wolf 69kV circuit #1 reset CT
  - Remington – Fairfax 138kV circuit #1 conductor clearance increase
  - (NRIS only) Arkansas City – Paris 69kV circuit #1 rebuild
  - (NRIS only) City of Winfield – Rainbow 69kV circuit #1 rebuild
  - (NRIS only) Creswell – Oak 69kV circuit #1 rebuild
  - (NRIS only) Creswell – Paris 69kV circuit #1 rebuild
  - (NRIS only) Creswell 138/69kV transformer circuit #1 & #2 replace
  - (NRIS only) Oak – Rainbow 69kV circuit #1 rebuild
- Upgrades assigned to DISIS-2013-001 interconnection Customers:
  - None at this time

### **Potential Upgrades Not in the Base Case**

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

### **Regional Groupings**

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

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

### **Power Flow**

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

Peaking units were not dispatched in the 2015 spring model. To study peaking units' impacts, the 2015 summer and winter and 2020 summer and winter, and 2025 summer seasonal models were chosen and peaking units were modeled at 100% of the nameplate rating and wind generating

facilities were modeled at 10% of the nameplate rating. Each interconnection request was also modeled separately at 100% nameplate for certain analyses.

### Dynamic Stability

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

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## Identification of Network Constraints

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The initial set of network constraints were found by using PSS®MUST First Contingency Incremental Transfer Capability (FCITC) analysis on the entire cluster grouping dispatched at the various levels mentioned above. These constraints were then screened to determine which 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 transmission reinforcement. In addition, stability issues are also considered for transmission reinforcement. Interconnection Requests that have requested Network Resource Interconnection Service (NRIS) were also studied in the NRIS analysis to determine if any constraint had at least a 3% DF. If so, these constraints were also considered for mitigation.

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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 2015 spring model. Cost Allocated Network Upgrades of peaking units was determined using the 2020 summer peak model. A PSS®MUST sensitivity analysis was performed to determine the Distribution Factors (DF), a distribution factor with no contingency that each generation interconnection request had on each new upgrade. The impact each generation interconnection request had on each upgrade project was weighted by the size of each request. Finally the costs due by each request for a particular project were then determined by allocating the portion of each request's impact over the impact of all affecting requests.

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

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

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

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

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

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

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

- Repeat previous for each responsible GI request for each Project

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

### **Credits for Amounts Advanced for Network Upgrades**

Interconnection Customer shall be entitled to credits in accordance with Attachment Z2 of the SPP Tariff for any Network Upgrades including any tax gross-up or any other tax-related payments associated with the Network Upgrades, and not refunded to the Interconnection Customer.

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## **Required Interconnection Facilities**

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The requirement to interconnect the 1,521.5 MW of generation into the existing and proposed transmission systems in the affected areas of the SPP transmission footprint consist of the necessary cost allocated shared facilities listed in Appendix F by upgrade. The interconnection requirements for the cluster total an estimated \$52,800,710. Interconnection Facilities specific to each generation interconnection request are listed in Appendix E. A preliminary one-line drawing for each generation interconnection request are listed in Appendix D.

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

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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. Single element and multi-element contingencies were evaluated.

## **Power Flow Analysis**

A power flow analysis was conducted for each Interconnection Customer's facility using modified versions of the 2015 spring peak, 2015 summer and winter peak, and the 2020 summer and winter peak, 2025 summer peak models. The output of the Interconnection Customer's facility was offset in each model by a reduction in output of existing online SPP generation. This method allows the request to be studied as an Energy Resource Interconnection Service request (ERIS). Certain requests that are pursuing Network Resource Interconnection Service (NRIS) had an additional analysis conducted for displacing resources in the interconnecting Transmission Owner's balancing authority.

This analysis was conducted assuming that previous queued requests in the immediate area of these interconnect requests were in-service. The analysis of each Customer's project indicates that criteria violations will occur on the NPPD 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, 0.0 MW of new interconnection service was studied. No new constraints were found in this area.

### **Cluster Group 2 (Hitchland Area)**

In addition to the 2,662.2 MW of previously queued generation in the area, 300.0 MW of new interconnection service was studied. No new constraints were found in this area.

### **Cluster Group 3 (Spearville Area)**

In addition to the 3,610.3 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 4/11 (NW Kansas Group)**

In addition to the 1,818.1 MW of previously queued generation in the area, 57.6 MW of new interconnection service was studied. No new constraints were found in this area.

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

In addition to the 704.1 MW of previously queued generation in the area, 0.0 MW of new interconnection service was studied. No new constraints were found in this area.

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

In addition to the 3,333.45 MW of previously queued generation in the area, 26.8 MW of new interconnection service was studied. No new ERIS constraints were found in this area. For NRIS constraints the need for the Hobbs – Kiowa 345kV Project per SPP-NTC-200283 is required.

NRIS Constraints			
MONITORED ELEMENT	RATE B (MVA)	TC%LOADING (% MVA)	CONTINGENCY
CARLSBAD INTERCHANGE - PECOS INTERCHANGE 115KV CKT 1	141	103.4041	POTASH JUNCTION INTERCHANGE (GE M100747) 230/115/13.2KV TRANSFORMER CKT 1

### Cluster Group 7 (Southwestern Oklahoma)

In addition to the 1,900.0 MW of previously queued generation in the area, 0.0 MW of new interconnection service was studied. No new constraints were found in this area.

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

In addition to the 2,789.3 MW of previously queued generation in the area, 859.5 MW of new interconnection service was studied. No new constraints were found in this area.

### Cluster Group 9 (Nebraska)

In addition to the 1,553.0 MW of previously queued generation in the area, 277.6 MW of new interconnection service was studied. ERIS mitigations at this time will include the need for the Neligh – Hoskins 345kV Project per SPP-NTC-200220. These upgrades are expected to be in service by 6/1/2016. With Neligh – Hoskins 345kV Project, there are still overloads on County Line – Neligh East and Battle Creek – County Line 115kV circuits, which will require rebuilds on those two lines. No new NRIS constraints were found in this area.

ERIS Constraints			
MONITORED ELEMENT	RATE B (MVA)	TC%LOADING (% MVA)	CONTINGENCY
ALBION - PETERSBURG 115KV CKT 1	137	114.5233	COUNTY LINE - NELIGH 115KV CKT 1
BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	153.1737	PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1
BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	108.3724	COUNTY LINE - NELIGH 115KV CKT 1
COUNTY LINE - NELIGH 115KV CKT 1	120	153.8471	PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1
PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1	137	115.1337	COUNTY LINE - NELIGH 115KV CKT 1

### Cluster Group 12 (Northwest Arkansas)

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

### Cluster Group 13 (Northwest Missouri)

In addition to the 224.6 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 14 (South Central Oklahoma)

In addition to the 362.5 MW of previously queued generation in the area, 0.0 MW of new interconnection service was studied. No new constraints were found in this area.

## **Curtailment and System Reliability**

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

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## Stability Analysis

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

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

No requests in Group 1.

### **Cluster Group 2 (Hitchland Area)**

The Group 2 stability analysis was not re-performed for this study. Stability analysis from DISIS-2013-002-1 remains valid.

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 2 will meet FERC Order #661A low voltage ride through (LVRT) requirements.

### **Cluster Group 3 (Spearville Area)**

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

### **Cluster Group 4/11 (Northwest Kansas Area)**

The Group 4 stability analysis was not performed again for this restudy. The original analysis in DISIS-2013-002 is still valid.

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

The Group 5 stability analysis was not performed again for this restudy. The original analysis in DISIS-2013-002 is still valid.

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

The Group 6 stability analysis was not performed again for this restudy. The original analysis in DISIS-2013-002 is still valid.

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

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



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

The Group 8 stability analysis was not performed again for this restudy. The original analysis in DISIS-2013-002 is still valid.

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

The Group 9/10 stability analysis was performed by SPP Staff. Stability analysis has determined that with all currently assigned Network Upgrades from the powerflow analysis and all previously assigned Network Upgrades 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 analysis. The analysis performed for DISIS-2013-002 is still valid.

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

The Group 12 stability analysis was not performed again for this restudy. The original analysis in DISIS-2013-002 is still valid.

**Cluster Group 13 (Northwest Missouri Area)**

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

**Cluster Group 14 (South Central Oklahoma)**

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

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## Conclusion

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The minimum cost of interconnecting 1,521.5 MW of new interconnection requests included in this Definitive Interconnection System Impact Study is estimated at \$52,800,710 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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# Appendices

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**A: Generation Interconnection Requests Considered for Impact Study**

See next page.

## **A: Generation Interconnection Requests Considered for Impact Study**

Request	Amount	Service	Area	Requested Point of Interconnection	Proposed Point of Interconnection	Requested In-Service Date	In Service Date Delayed Until no earlier than*
ASGI-2013-004	29.60	ER	SUNCMKEC	Morris 115kV	Morris 115kV		
ASGI-2013-005	1.80	ER	SPS	FE Clovis 115kV	FE Clovis 115kV		
GEN-2013-019	73.60	ER/NR	LES	Tap Sheldon - Folsom & Pleasant Hill (GEN-2013-002 Tap) 115kV CKT 2	Tap Sheldon - Folsom & Pleasant Hill (GEN-2013-002 Tap) 115kV CKT 2	6/30/2014	TBD
GEN-2013-022	25.00	ER/NR	SPS	Norton 115kV	Norton 115kV	5/1/2015	TBD
GEN-2013-028	559.50	ER	GRDA	Tap N Tulsa - GRDA 1 345kV	Tap N Tulsa - GRDA 1 345kV	4/16/2016	TBD
GEN-2013-029	300.00	ER	OKGE	Renfrow 345kV	Renfrow 345kV	12/15/2015	TBD
GEN-2013-030	300.00	ER	OKGE	Tap Hitchland - Woodward Dbl Ckt (Beaver County) 345kV	Tap Hitchland - Woodward Dbl Ckt (Beaver County) 345kV	12/15/2015	TBD
GEN-2013-032	204.00	ER	NPPD	Neligh 115kV	Neligh 115kV	12/31/2016	6/1/2016
GEN-2013-033	28.00	ER/NR	MIDW	Goodman Energy Center 115kV	Goodman Energy Center 115kV	12/31/2015	TBD
<b>Total: 1,521.50</b>							

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

## **B: Prior Queued Interconnection Requests**

See next page.

## **B: Prior Queued Interconnection Requests**

<b>Request</b>	<b>Amount</b>	<b>Area</b>	<b>Requested/Proposed Point of Interconnection</b>	<b>Status or In-Service Date</b>
ASGI-2010-006	150.00	AECI	Tap Fairfax (AECI) - Shilder (AEPW) 138kV	AECI queue Affected Study
ASGI-2010-010	42.20	SPS	Lovington 115kV	Lea County Affected Study
ASGI-2010-020	30.00	SPS	Tap LE-Tatum - LE-Crossroads 69kV	Lea County Affected Study
ASGI-2010-021	15.00	SPS	Tap LE-Saunders Tap - LE-Anderson 69kV	Lea County Affected Study
ASGI-2011-001	28.80	SPS	Lovington 115kV	On-Line
ASGI-2011-002	20.00	SPS	Herring 115kV	On-Line
ASGI-2011-003	10.00	SPS	Hendricks 115kV	On-Line
ASGI-2011-004	20.00	SPS	Pleasant Hill 69kV	Under Study (DISIS-2011-002)
ASGI-2012-002	18.15	SPS	FE-Clovis Interchange 115kV	Under Study (DISIS-2012-002)
ASGI-2012-006	22.50	SUNCMKEC	Tap Hugoton - Rolla 69kV	Under Study (DISIS-2012-001)
ASGI-2013-001	11.50	SPS	PanTex South 115kV	Under Study (DISIS-2013-001)
ASGI-2013-002	18.40	SPS	FE Tucumcari 115kV	Under Study (DISIS-2013-001)
ASGI-2013-003	18.40	SPS	FE Clovis 115kV	Under Study (DISIS-2013-001)
ASGI-2013-006	2.00	SPS	SP-Erskine 115kV	
ASGI-2013-007	90.00	AECI	Tap Hickory Creek - Locust Creek 161kV	AECI System Impact Study
GEN-2001-014	96.00	WFEC	Ft Supply 138kV	On-Line
GEN-2001-026	74.00	WFEC	Washita 138kV	On-Line
GEN-2001-033	180.00	SPS	San Juan Tap 230kV	On-Line at 120MW
GEN-2001-036	80.00	SPS	Norton 115kV	On-Line
GEN-2001-037	100.00	OKGE	FPL Moreland Tap 138kV	On-Line
GEN-2001-039A	105.00	SUNCMKEC	Tap Greensburg - Ft Dodge (Shooting Star Tap) 115kV	On-Line
GEN-2001-039M	100.00	SUNCMKEC	Central Plains Tap 115kV	On-Line
GEN-2002-004	200.00	WERE	Latham 345kV	On-Line at 150MW
GEN-2002-005	120.00	WFEC	Red Hills Tap 138kV	On-Line
GEN-2002-008	240.00	SPS	Hitchland 345kV	On-Line at 120MW
GEN-2002-009	80.00	SPS	Hansford 115kV	On-Line
GEN-2002-022	240.00	SPS	Bushland 230kV	On-Line
GEN-2002-023N	0.80	NPPD	Harmony 115kV	On-Line
GEN-2002-025A	150.00	SUNCMKEC	Spearville 230kV	On-Line
GEN-2003-004	100.00	WFEC	Washita 138kV	On-Line
GEN-2003-005	100.00	WFEC	Anadarko - Paradise (Blue Canyon) 138kV	On-Line
GEN-2003-006A	200.00	SUNCMKEC	Elm Creek 230kV	On-Line
GEN-2003-019	250.00	MIDW	Smoky Hills Tap 230kV	On-Line
GEN-2003-020	160.00	SPS	Martin 115kV	On-Line
GEN-2003-021N	75.00	NPPD	Ainsworth Wind Tap 115kV	On-Line
GEN-2003-022	120.00	AEPW	Washita 138kV	On-Line
GEN-2004-014	154.50	SUNCMKEC	Spearville 230kV	On-Line at 100MW
GEN-2004-020	27.00	AEPW	Washita 34.5kV	On-Line
GEN-2004-023	20.60	WFEC	Washita 138kV	On-Line
GEN-2004-023N	75.00	NPPD	Columbus Co 115kV	On-Line
GEN-2005-003	30.60	WFEC	Washita 138kV	On-Line
GEN-2005-008	120.00	OKGE	Woodward 138kV	On-Line
GEN-2005-012	250.00	SUNCMKEC	Ironwood 345kV	On-Line at 160MW
GEN-2005-013	201.00	WERE	Tap Latham - Neosho (Caney River) 345kV	On-Line
GEN-2006-002	101.00	AEPW	Sweetwater 230kV	On-Line
GEN-2006-006	205.50	SUNCMKEC	Spearville 345kV	On Suspension
GEN-2006-018	170.00	SPS	TUCO Interchange 230kV	On-Line

Request	Amount	Area	Requested/Proposed Point of Interconnection	Status or In-Service Date
GEN-2006-020N	42.00	NPPD	Bloomfield 115kV	On-Line
GEN-2006-020S	18.90	SPS	DWS Frisco 115kV	On-Line
GEN-2006-021	101.00	SUNCMKEC	Flat Ridge Tap 138kV	On-Line
GEN-2006-024S	19.80	WFEC	Buffalo Bear Tap 69kV	On-Line
GEN-2006-026	604.00	SPS	Hobbs 230kV & Hobbs 115kV	On-Line
GEN-2006-031	75.00	MIDW	Knoll 115kV	On-Line
GEN-2006-035	225.00	AEPW	Sweetwater 230kV	On-Line at 132MW
GEN-2006-037N1	75.00	NPPD	Broken Bow 115kV	On-Line
GEN-2006-038N005	80.00	NPPD	Broken Bow 115kV	On-Line
GEN-2006-038N019	80.00	NPPD	Petersburg North 115kV	On-Line
GEN-2006-040	108.00	SUNCMKEC	Mingo 115kV	On Suspension
GEN-2006-043	99.00	AEPW	Sweetwater 230kV	On-Line
GEN-2006-044	370.00	SPS	Hitchland 345kV	On-Line at 120MW
GEN-2006-044N	40.50	NPPD	North Petersburg 115kV	On-Line
GEN-2006-046	131.00	OKGE	Dewey 138kV	On-Line
GEN-2007-011	135.00	SUNCMKEC	Syracuse 115kV	On Suspension
GEN-2007-011N08	81.00	NPPD	Bloomfield 115kV	On-Line
GEN-2007-021	201.00	OKGE	Tatonga 345kV	On Schedule for 2014
GEN-2007-025	300.00	WERE	Viola 345kV	On-Line
GEN-2007-032	150.00	WFEC	Tap Clinton Junction - Clinton 138kV	On Suspension
GEN-2007-040	200.00	SUNCMKEC	Buckner 345kV	On-Line at 132MW
GEN-2007-043	200.00	OKGE	Minco 345kV	On-Line
GEN-2007-044	300.00	OKGE	Tatonga 345kV	On Schedule for 2014
GEN-2007-046	199.50	SPS	Hitchland 115kV	On Schedule for 2015
GEN-2007-050	170.00	OKGE	Woodward EHV 138kV	On-Line at 150MW
GEN-2007-052	150.00	WFEC	Anadarko 138kV	On-Line
GEN-2007-062	765.00	OKGE	Woodward EHV 345kV	On Schedule for 2014
GEN-2008-003	101.00	OKGE	Woodward EHV 138kV	On-Line
GEN-2008-013	300.00	OKGE	Tap Wichita - Woodring (Hunter) 345kV	On-Line at 235MW
GEN-2008-017	300.00	SUNCMKEC	Setab 345kV	On Schedule for 2015
GEN-2008-018	250.00	SPS	Finney 345kV	On-Line
GEN-2008-021	42.00	WERE	Wolf Creek 345kV	On-Line
GEN-2008-022	300.00	SPS	Tap Eddy Co - Tolk (Crossroads) 345kV	On Schedule for 2015
GEN-2008-023	150.00	AEPW	Hobart Junction 138kV	On-Line
GEN-2008-037	101.00	WFEC	Tap Washita - Blue Canyon Wind 138kV	On-Line
GEN-2008-044	197.80	OKGE	Tatonga 345kV	On-Line
GEN-2008-047	300.00	OKGE	Tap Hitchland - Woodward Dbl Ckt (Beaver County) 345kV	On Schedule for 2014
GEN-2008-051	322.00	SPS	Potter County 345kV	On-Line at 161MW
GEN-2008-079	99.20	SUNCMKEC	Tap Cudahy - Ft Dodge 115kV	On-Line
GEN-2008-086N02	200.00	NPPD	Tap Ft Randle - Columbus (Meadow Grove) 230kV	On Schedule for 2014
GEN-2008-088	50.60	SPS	Vega 69kV	On Suspension
GEN-2008-092	201.00	MIDW	Post Rock 230kV	On Schedule for 2014
GEN-2008-098	100.80	WERE	Tap Lacygne - Wolf Creek (Anderson County) 345kV	On Schedule for 2015
GEN-2008-1190	60.00	OPPD	S1399 161kV	On-Line
GEN-2008-123N	89.70	NPPD	Tap Guide Rock - Pauline (Rosemont) 115kV	On Schedule for 2014
GEN-2008-124	200.10	SUNCMKEC	Ironwood 345kV	On Schedule for 2016
GEN-2008-129	80.00	MIPU	Pleasant Hill 161kV	On-Line
GEN-2009-008	199.50	MIDW	South Hays 230kV	On Suspension
GEN-2009-020	48.60	MIDW	Tap Nekoma - Bazine (Walnut Creek) 69kV	On Schedule for 2015



Request	Amount	Area	Requested/Proposed Point of Interconnection	Status or In-Service Date
GEN-2009-025	60.00	OKGE	Nardins 69kV	On-Line
GEN-2009-040	73.80	WERE	Marshall 115kV	On Schedule for 2015
GEN-2010-001	300.00	OKGE	Tap Hitchland - Woodward Dbl Ckt (Beaver County) 345kV	On Schedule for 2014 (204 MW) and 2015 (96 MW)
GEN-2010-003	100.80	WERE	Tap Lacygne - Wolf Creek (Anderson County) 345kV	On Schedule for 2015
GEN-2010-005	300.00	WERE	Viola 345kV	On-Line at 170MW
GEN-2010-006	205.00	SPS	Jones 230kV	On-Line
GEN-2010-009	165.60	SUNCMKEC	Buckner 345kV	On-Line
GEN-2010-011	29.70	OKGE	Tatonga 345kV	On Line
GEN-2010-014	358.80	SPS	Hitchland 345kV	On Suspension
GEN-2010-036	4.60	WERE	6th Street 115kV	On-Line
GEN-2010-040	300.00	OKGE	Cimarron 345kV	On-Line
GEN-2010-041	10.50	OPPD	S 1399 161kV	On Schedule for 2015
GEN-2010-045	197.80	SUNCMKEC	Buckner 345kV	On Schedule for 2017
GEN-2010-046	56.00	SPS	TUCO Interchange 230kV	On Schedule for 2016
GEN-2010-051	200.00	NPPD	Tap Twin Church - Hoskins 230kV	On Schedule for 2014
GEN-2010-055	4.50	AEPW	Wekiwa 138kV	On-Line
GEN-2010-057	201.00	MIDW	Rice County 230kV	On-Line
GEN-2011-007	250.10	OKGE	Tap Cimarron - Woodring (Mathewson) 345kV	On Suspension
GEN-2011-008	600.00	SUNCMKEC	Clark County 345kV	On Schedule 2019
GEN-2011-010	100.80	OKGE	Minco 345kV	On-Line
GEN-2011-011	50.00	KACP	Iatan 345kV	On-Line
GEN-2011-014	201.00	OKGE	Tap Hitchland - Woodward Dbl Ckt (Beaver County) 345kV	On Schedule 2016
GEN-2011-016	200.10	SUNCMKEC	Spearville 345kV	TRANSITIONED TO IFS QUEUE
GEN-2011-017	299.00	SUNCMKEC	Tap Spearville - PostRock (GEN-2011-017T) 345kV	On Schedule 2018
GEN-2011-018	73.60	NPPD	Steele City 115kV	On-Line
GEN-2011-019	299.00	OKGE	Woodward 345kV	On Suspension
GEN-2011-020	299.00	OKGE	Woodward 345kV	On Suspension
GEN-2011-022	299.00	SPS	Hitchland 345kV	On Suspension
GEN-2011-025	82.30	SPS	Tap Floyd County - Crosby County 115kV	On Schedule for 2015
GEN-2011-027	120.00	NPPD	Tap Twin Church - Hoskins 230kV (GEN-2010-51 Tap)	On Schedule for 2015
GEN-2011-037	7.00	WFEC	Blue Canyon 5 138kV	On-Line
GEN-2011-040	111.00	OKGE	Tap Ratliff - Pooleville 138kV	On Schedule for 2014
GEN-2011-045	205.00	SPS	Jones 230kV	On-Line
GEN-2011-046	27.00	SPS	Lopez 115kV	On-Line
GEN-2011-048	175.00	SPS	Mustang 230kV	On-Line
GEN-2011-049	250.00	OKGE	Border 345kV	On Suspension
GEN-2011-050	109.80	AEPW	Rush Springs Natural Gas Tap 138kV	On Suspension
GEN-2011-051	104.40	OKGE	Tap Woodward - Tatonga 345kV	On Suspension
GEN-2011-054	300.00	OKGE	Cimarron 345kV	On Schedule for 2013 (200 MW) and 2014 (99 MW)
GEN-2011-056	3.60	NPPD	Jeffrey 115kV	On-Line
GEN-2011-056A	3.60	NPPD	John 1 115kV	On-Line
GEN-2011-056B	4.50	NPPD	John 2 115kV	On-Line
GEN-2011-057	150.40	WERE	Creswell 138kV	On Schedule for 2014
GEN-2012-001	61.20	SPS	Tap Grassland - Borden County 230kV	On-Line
GEN-2012-004	41.40	OKGE	Tap Ratliff - Pooleville (Carter County) 138kV	On Schedule for 2014
GEN-2012-007	120.00	SUNCMKEC	Rubart 115kV	On Schedule for 2014
GEN-2012-009	15.00	SPS	Mustang 230kV	On Schedule for 2015
GEN-2012-010	15.00	SPS	Mustang 230kV	On Schedule for 2015

Request	Amount	Area	Requested/Proposed Point of Interconnection	Status or In-Service Date
GEN-2012-020	478.00	SPS	TUCO 230kV	On Schedule for 2016
GEN-2012-021	4.80	LES	Terry Bundy Generating Station 115kV	On-Line
GEN-2012-024	180.00	SUNCMKEC	Clark County 345kV	TRANSITIONED TO IFS QUEUE
GEN-2012-027	136.00	AEPW	Shidler 138kV	On Suspension
GEN-2012-028	74.80	WFEC	Gotebo 69kV	On Schedule for 2015
GEN-2012-032	300.00	OKGE	Tap Rose Hill - Sooner (Ranch) 345kV	On Schedule for 2015
GEN-2012-033	98.80	OKGE	Tap and Tie South 4th - Bunch Creek & Enid Tap - Fairmont (GEN-2012-033T) 138kV	On Schedule for 2015
GEN-2012-034	7.00	SPS	Mustang 230kV	On Schedule for 2015
GEN-2012-035	7.00	SPS	Mustang 230kV	On Schedule for 2015
GEN-2012-036	7.00	SPS	Mustang 230kV	On-Line
GEN-2012-037	203.00	SPS	TUCO 345kV	On Schedule for 2015
GEN-2012-040	76.50	WFEC	Chilocco 138kV	On Suspension
GEN-2012-041	121.50	OKGE	Tap Rose Hill - Sooner 345kV	On Schedule for 2015
GEN-2013-002	50.60	LES	Tap Sheldon - Folsom & Pleasant Hill 115kV CKT 2	TRANSITIONED TO IFS QUEUE
GEN-2013-007	100.30	OKGE	Tap Prices Falls - Carter 138kV	On Schedule for 2015
GEN-2013-008	1.20	NPPD	Steele City 115kV	On-Line
GEN-2013-011	30.00	AEPW	Turk 138kV	TRANSITIONED TO IFS QUEUE
GEN-2013-012	147.00	OKGE	Redbud 345kV	On-Line
GEN-2013-014	25.50	NPPD	Tap Guide Rock - Pauline (GEN-2008-123N Tap) 115kV	On Schedule for 2015
GEN-2013-016	203.00	SPS	TUCO 345kV	TRANSITIONED TO IFS QUEUE
Gray County Wind (Montezuma)	110.00	SUNCMKEC	Gray County Tap 115kV	On-Line
Llano Estacado (White Deer)	80.00	SPS	Llano Wind 115kV	On-Line
NPPD Distributed (Broken Bow)	8.30	NPPD	Broken Bow 115kV	On-Line
NPPD Distributed (Burt County Wind)	12.00	NPPD	Tekamah & Oakland 115kV	On-Line
NPPD Distributed (Burwell)	3.00	NPPD	Ord 115kV	On-Line
NPPD Distributed (Columbus Hydro)	45.00	NPPD	Columbus 115kV	On-Line
NPPD Distributed (Ord)	11.90	NPPD	Ord 115kV	On-Line
NPPD Distributed (Stuart)	2.10	NPPD	Ainsworth 115kV	On-Line
SPS Distributed (Dumas 19th St)	20.00	SPS	Dumas 19th Street 115kV	On-Line
SPS Distributed (Etter)	20.00	SPS	Etter 115kV	On-Line
SPS Distributed (Hopi)	10.00	SPS	Hopi 115kV	On-Line
SPS Distributed (Jal)	10.00	SPS	S_Jal 115kV	On-Line
SPS Distributed (Lea Road)	10.00	SPS	Lea Road 115kV	On-Line
SPS Distributed (Monument)	10.00	SPS	Monument 115kV	On-Line
SPS Distributed (Moore E)	25.00	SPS	Moore East 115kV	On-Line
SPS Distributed (Ocotillo)	10.00	SPS	S_Jal 115kV	On-Line
SPS Distributed (Sherman)	20.00	SPS	Sherman 115kV	On-Line
SPS Distributed (Spearman)	10.00	SPS	Spearman 69kV	On-Line
SPS Distributed (TC-Texas County)	20.00	SPS	Texas County 115kV	On-Line
<b>Total:</b>		<b>23,072.2</b>		

## **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>		
<b>AREA TOTAL</b>	<b>4,084.60</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>		
GEN-2013-030	300.00	OKGE	Tap Hitchland - Woodward Dbl Ckt (Beaver County) 345kV
<b>CURRENT CLUSTER SUBTOTAL</b>	<b>300.00</b>		
<b>AREA TOTAL</b>	<b>2,962.20</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-2010-045	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-2012-024	180.00	SUNCMKEC	Clark County 345kV
Gray County Wind (Montezuma)	110.00	SUNCMKEC	Gray County Tap 115kV
<b>PRIOR QUEUED SUBTOTAL</b>	<b>3,610.30</b>		
<b>AREA TOTAL</b>	<b>3,610.30</b>		

**GROUP 4/11: NW KANSAS AREA**

Request	Capacity	Area	Proposed Point of Interconnection
GEN-2001-039M	100.00	SUNCMKEC	Central Plains Tap 115kV
GEN-2003-006A	200.00	SUNCMKEC	Elm Creek 230kV
GEN-2003-019	250.00	MIDW	Smoky Hills Tap 230kV
GEN-2006-031	75.00	MIDW	Knoll 115kV
GEN-2006-040	108.00	SUNCMKEC	Mingo 115kV
GEN-2007-011	135.00	SUNCMKEC	Syracuse 115kV
GEN-2008-017	300.00	SUNCMKEC	Setab 345kV
GEN-2008-092	201.00	MIDW	Post Rock 230kV
GEN-2009-008	199.50	MIDW	South Hays 230kV
GEN-2009-020	48.60	MIDW	Tap Nekoma - Bazine (Walnut Creek) 69kV
GEN-2010-057	201.00	MIDW	Rice County 230kV
<b>PRIOR QUEUED SUBTOTAL</b>	<b>1,818.10</b>		
ASGI-2013-004	29.60	SUNCMKEC	Morris 115kV
GEN-2013-033	28.00	MIDW	Goodman Energy Center 115kV
<b>CURRENT CLUSTER SUBTOTAL</b>	<b>57.60</b>		
<b>AREA TOTAL</b>	<b>1,875.70</b>		

**GROUP 5: AMARILLO AREA**

Request	Capacity	Area	Proposed Point of Interconnection
ASGI-2013-001	11.50	SPS	PanTex South 115kV
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>704.10</b>		
<b>AREA TOTAL</b>	<b>704.10</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
ASGI-2012-002	18.15	SPS	FE-Clovis Interchange 115kV
ASGI-2013-002	18.40	SPS	FE Tucumcari 115kV
ASGI-2013-003	18.40	SPS	FE Clovis 115kV
ASGI-2013-006	2.00	SPS	SP-Erskine 115kV
GEN-2001-033	180.00	SPS	San Juan Tap 230kV
GEN-2001-036	80.00	SPS	Norton 115kV
GEN-2006-018	170.00	SPS	TUCO Interchange 230kV
GEN-2006-026	604.00	SPS	Hobbs 230kV & Hobbs 115kV
GEN-2008-022	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
GEN-2012-020	478.00	SPS	TUCO 230kV
GEN-2012-034	7.00	SPS	Mustang 230kV
GEN-2012-035	7.00	SPS	Mustang 230kV
GEN-2012-036	7.00	SPS	Mustang 230kV
GEN-2012-037	203.00	SPS	TUCO 345kV
GEN-2013-016	203.00	SPS	TUCO 345kV
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>3,333.45</b>		
ASGI-2013-005	1.80	SPS	FE Clovis 115kV
GEN-2013-022	25.00	SPS	Norton 115kV
<b>CURRENT CLUSTER SUBTOTAL</b>	<b>26.80</b>		
<b>AREA TOTAL</b>	<b>3,360.25</b>		

<b>GROUP 7: SW-OKLAHOMA AREA</b>			
<b>Request</b>	<b>Capacity</b>	<b>Area</b>	<b>Proposed Point of Interconnection</b>
GEN-2001-026	74.00	WFEC	Washita 138kV
GEN-2002-005	120.00	WFEC	Red Hills Tap 138kV
GEN-2003-004	100.00	WFEC	Washita 138kV
GEN-2003-005	100.00	WFEC	Anadarko - Paradise (Blue Canyon) 138kV
GEN-2003-022	120.00	AEPW	Washita 138kV
GEN-2004-020	27.00	AEPW	Washita 34.5kV
GEN-2004-023	20.60	WFEC	Washita 138kV
GEN-2005-003	30.60	WFEC	Washita 138kV
GEN-2006-002	101.00	AEPW	Sweetwater 230kV
GEN-2006-035	225.00	AEPW	Sweetwater 230kV
GEN-2006-043	99.00	AEPW	Sweetwater 230kV
GEN-2007-032	150.00	WFEC	Tap Clinton Junction - Clinton 138kV
GEN-2007-052	150.00	WFEC	Anadarko 138kV
GEN-2008-023	150.00	AEPW	Hobart Junction 138kV
GEN-2008-037	101.00	WFEC	Tap Washita - Blue Canyon Wind 138kV
GEN-2011-037	7.00	WFEC	Blue Canyon 5 138kV
GEN-2011-049	250.00	OKGE	Border 345kV
GEN-2012-028	74.80	WFEC	Gotebo 69kV
<b>PRIOR QUEUED SUBTOTAL</b>	<b>1,900.00</b>		
<b>AREA TOTAL</b>	<b>1,900.00</b>		

<b>GROUP 8: N-OK/S-KS AREA</b>			
<b>Request</b>	<b>Capacity</b>	<b>Area</b>	<b>Proposed Point of Interconnection</b>
ASGI-2010-006	150.00	AECI	Tap Fairfax (AECI) - Shilder (AEPW) 138kV
GEN-2002-004	200.00	WERE	Latham 345kV
GEN-2005-013	201.00	WERE	Tap Latham - Neosho (Caney River) 345kV
GEN-2007-025	300.00	WERE	Viola 345kV
GEN-2008-013	300.00	OKGE	Tap Wichita - Woodring (Hunter) 345kV
GEN-2008-021	42.00	WERE	Wolf Creek 345kV
GEN-2008-098	100.80	WERE	Tap Lacygne - Wolf Creek (Anderson County) 345kV
GEN-2009-025	60.00	OKGE	Nardins 69kV
GEN-2010-003	100.80	WERE	Tap Lacygne - Wolf Creek (Anderson County) 345kV
GEN-2010-005	300.00	WERE	Viola 345kV
GEN-2010-055	4.50	AEPW	Wekiwa 138kV
GEN-2011-057	150.40	WERE	Creswell 138kV
GEN-2012-027	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
GEN-2013-012	147.00	OKGE	Redbud 345kV
<b>PRIOR QUEUED SUBTOTAL</b>	<b>2,789.30</b>		
GEN-2013-028	559.50	GRDA	Tap N Tulsa - GRDA 1 345kV
GEN-2013-029	300.00	OKGE	Renfrow 345kV
<b>CURRENT CLUSTER SUBTOTAL</b>	<b>859.50</b>		
<b>AREA TOTAL</b>	<b>3,648.80</b>		



<b>GROUP 9: 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 (Meadow Grove) 230kV
GEN-2008-119O	60.00	OPPD	S1399 161kV
GEN-2008-123N	89.70	NPPD	Tap Guide Rock - Pauline (Rosemont) 115kV
GEN-2009-040	73.80	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-2011-056	3.60	NPPD	Jeffrey 115kV
GEN-2011-056A	3.60	NPPD	John 1 115kV
GEN-2011-056B	4.50	NPPD	John 2 115kV
GEN-2012-021	4.80	LES	Terry Bundy Generating Station 115kV
GEN-2013-002	50.60	LES	Tap Sheldon - Folsom & Pleasant Hill 115kV CKT 2
GEN-2013-008	1.20	NPPD	Steele City 115kV
GEN-2013-014	25.50	NPPD	Tap Guide Rock - Pauline (GEN-2008-123N Tap) 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>1,553.00</b>		
GEN-2013-019	73.60	LES	Tap Sheldon - Folsom & Pleasant Hill (GEN-2013-002 Tap) 115kV CKT 2
GEN-2013-032	204.00	NPPD	Neligh 115kV
<b>CURRENT CLUSTER SUBTOTAL</b>	<b>277.60</b>		
<b>AREA TOTAL</b>	<b>1,830.60</b>		

**GROUP 12: NW-AR AREA**

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

**GROUP 13: NW MISSOURI AREA**

Request	Capacity	Area	Proposed Point of Interconnection
ASGI-2013-007	90.00	AECI	Tap Hickory Creek - Locust Creek 161kV
GEN-2008-129	80.00	MIPU	Pleasant Hill 161kV
GEN-2010-036	4.60	WERE	6th Street 115kV
GEN-2011-011	50.00	KACP	Iatan 345kV
<b>PRIOR QUEUED SUBTOTAL</b>	<b>224.60</b>		
<b>AREA TOTAL</b>	<b>224.60</b>		

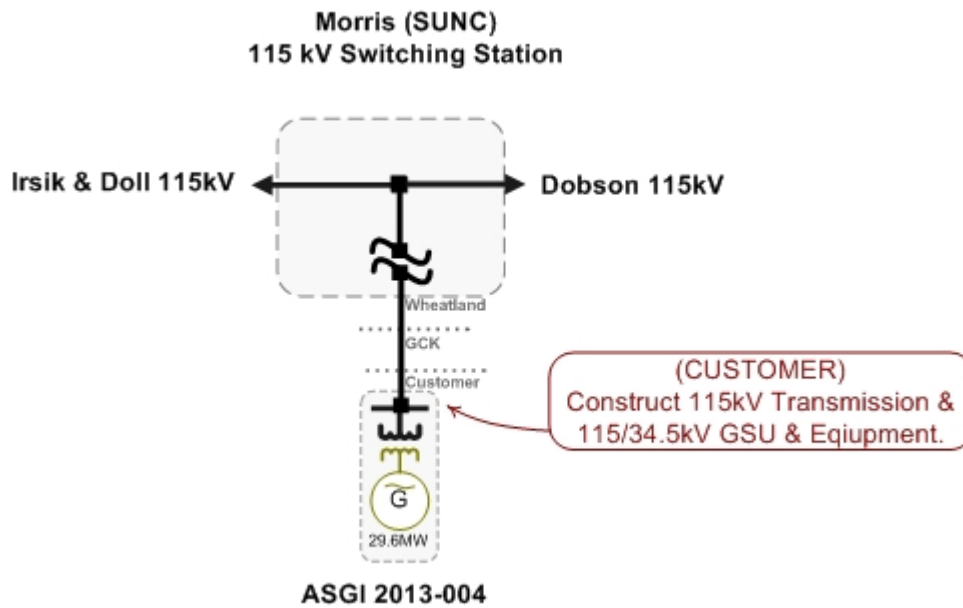
**GROUP 14: S-OKLAHOMA AREA**

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

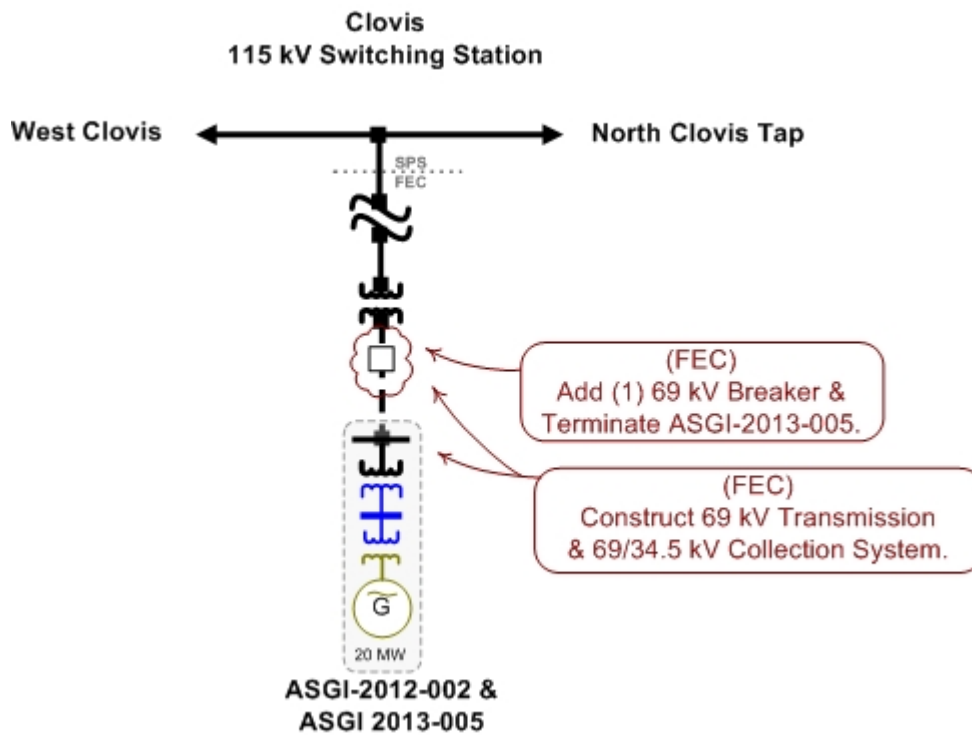
<b>CLUSTER TOTAL (CURRENT STUDY)</b>	<b>1,521.5</b>	<b>MW</b>
<b>PQ TOTAL (PRIOR QUEUED)</b>	<b>23,072.2</b>	<b>MW</b>
<b>CLUSTER TOTAL (INCLUDING PRIOR QUEUED)</b>	<b>24,593.7</b>	<b>MW</b>

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

#### ASGI-2013-004



#### ASGI-2013-005



**GEN-2013-019**

**\*\*\*Refer to Facility Study for GEN-2013-019\*\*\***

**GEN-2013-022**

**\*\*\*Refer to Facility Study for GEN-2013-022\*\*\***

**GEN-2013-028**

**\*\*\*Refer to Facility Study for GEN-2013-028\*\*\***

**GEN-2013-029**

**\*\*\*Refer to Facility Study for GEN-2013-029\*\*\***

**GEN-2013-030**

**\*\*\*Refer to Facility Study for GEN-2013-029\*\*\***

**GEN-2013-032**

**\*\*\*Refer to Facility Study for GEN-2013-032\*\*\***

**GEN-2013-033**

**\*\*\*Refer to Facility Study for GEN-2013-033\*\*\***

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

Important Note:

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

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

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

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

The required interconnection costs listed do not include all costs associated with the deliverability of the energy to final customers. These costs are determined by separate studies if the Customer submits a Transmission Service Request through SPP's Open Access Same Time Information System (OASIS) as required by Attachment Z1 of the SPP OATT. In addition, costs associated with a short circuit analysis will be allocated should the Interconnection Request Customer choose to execute a Facility Study Agreement.

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

# Appendix E. Cost Allocation Per Request

(Including Previously Allocated Network Upgrades\*)

Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
<b>ASGI-2013-004</b>			
ASGI-2013-004 Interconnection Costs See One-line diagram	Current Study	\$0.00	\$0.00
Dobson - Gano 115kV CKT 1 Replace Terminal Equipment	In-Service		\$82,481.09
Garden City - Kansas Avenue Water Treatment Plant 115kV Ckt 1 Replace Terminal Equipment	In-Service		\$112,722.18
Power System Stabilizers (PSS) Install Power System Stabilizers @ Tolk(Units: 1,2) and Jones (Units: 1,2,3,4)	In-Service		\$210,000.00
Thistle - Wichita 345KV Dbl CKT Priority Project: Thistle - Wichita Dbl 345kV CKT (Total Project E&C Cost Shown.)	In-Service		\$426,504,292.00
Bucker - Spearville 345V CKT 1 Replace Terminal equipment	Previously Allocated		\$771,000.00
Clark - Thistle 345KV Dbl CKT Priority Project: Spearville - Clark - Thistle Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$426,504,292.00
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
	<b>Current Study Total</b>	<b>\$0.00</b>	

## ASGI-2013-005

ASGI-2013-005 Interconnection Costs See One-line diagram	Current Study	\$0.00	\$0.00
Beaver County - Woodward 345kV Dbl CKT Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	In-Service		\$226,040,727.00
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 - Beaver County 345kV Dbl CKT Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	In-Service		\$226,040,727.00
Power System Stabilizers (PSS) Install Power System Stabilizers @ Tolk(Units: 1,2) and Jones (Units: 1,2,3,4)	In-Service		\$210,000.00

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

<b>Interconnection Request and Upgrades</b>	<b>Upgrade Type</b>	<b>Allocated Cost</b>	<b>Upgrade Cost</b>
Thistle - Wichita 345KV Dbl CKT Priority Project: Thistle - Wichita Dbl 345kV CKT (Total Project E&C Cost Shown.)	In-Service		\$426,504,292.00
TUCO Interchange 345/230/13.2KV Autotransformer CKT 2 Balanced Portfolio: TUCO 345/230 kV Transformer CKT 2 (Total Project E&C Cost Shown)	In-Service		\$14,900,907.00
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
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>		\$0.00
<b>GEN-2013-019</b>			
GEN-2013-019 Interconnection Costs See One-line diagram	Current Study	\$0.00	\$0.00
GEN-2013-002 Interconnection Costs See One-Line Diagram.	Previously Allocated		\$3,399,285.00
	<b>Current Study Total</b>		\$0.00
<b>GEN-2013-022</b>			
GEN-2013-022 Interconnection Costs See One-line diagram	Current Study	\$0.00	\$0.00
Beaver County - Woodward 345kV Dbl CKT Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	In-Service		\$226,040,727.00
Hitchland - Beaver County 345kV Dbl CKT Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	In-Service		\$226,040,727.00
Power System Stabilizers (PSS) Install Power System Stabilizers @ Tolk(Units: 1,2) and Jones (Units: 1,2,3,4)	In-Service		\$210,000.00
TUCO Interchange 345/230/13.2KV Autotransformer CKT 2 Balanced Portfolio: TUCO 345/230 kV Transformer CKT 2 (Total Project E&C Cost Shown)	In-Service		\$14,900,907.00
Hobbs - Kiowa 345kV CKT 1 Per HPILs SPP-NTC-200283 (Total Project E&C Cost Shown)	Previously Allocated		\$237,543,568.00
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>		\$0.00
<b>GEN-2013-028</b>			

\* 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-2013-028 Interconnection Costs See One-line diagram	Current Study	\$23,431,333.00	\$23,431,333.00
	<b>Current Study Total</b>	<b>\$23,431,333.00</b>	
<b>GEN-2013-029</b>			
GEN-2013-029 Interconnection Costs See One-line diagram	Current Study	\$2,688,935.00	\$2,688,935.00
	<b>Current Study Total</b>	<b>\$2,688,935.00</b>	
<b>GEN-2013-030</b>			
GEN-2013-030 Interconnection Costs See One-line diagram	Current Study	\$5,052,157.00	\$5,052,157.00
Beaver County - Woodward 345kV Dbl CKT Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	In-Service		\$226,040,727.00
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 - Beaver County 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 - Wichita 345KV Dbl CKT Priority Project: Thistle - Wichita Dbl 345kV CKT (Total Project E&C Cost Shown.)	In-Service		\$426,504,292.00
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
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
Bucker - Spearville 345V CKT 1 Replace Terminal equipment	Previously Allocated		\$771,000.00
Clark - Thistle 345KV Dbl CKT Priority Project: Spearville - Clark - Thistle Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$426,504,292.00
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

\* 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>
	<b>Current Study Total</b>	<b>\$5,052,157.00</b>	
<b>GEN-2013-032</b>			
Battle Creek-County Line 115kV CKT 1 Rebuild approximately 11 miles of 115kV from Battle Creek to County Line.	Current Study	\$7,679,000.00	\$7,679,000.00
County Line-Neligh East 115kV CKT 1 Rebuild approximately 12 miles of 115kV from County Line to Neligh East.	Current Study	\$8,050,000.00	\$8,050,000.00
GEN-2013-032 Interconnection Costs See One-line diagram	Current Study	\$2,500,000.00	\$2,500,000.00
Hoskins - Neligh 345/115kV Projects Per SPP 2014 ITP NT and NTC 200253 for 6/1/2016 in-service.	Previously Allocated		\$98,697,720.00
Twin Church - Dixon County 230kV Increase conductor clearances to accommodate 320MVA facility rating	Previously Allocated		\$100,000.00
	<b>Current Study Total</b>	<b>\$18,229,000.00</b>	
<b>GEN-2013-033</b>			
GEN-2013-033 Interconnection Costs See One-line diagram	Current Study	\$0.00	\$0.00
Thistle - Wichita 345KV Dbl CKT Priority Project: Thistle - Wichita Dbl 345kV CKT (Total Project E&C Cost Shown.)	In-Service		\$426,504,292.00
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
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
	<b>Current Study Total</b>	<b>\$0.00</b>	
<b>TOTAL CURRENT STUDY COSTS:</b>		<b>\$49,401,425.00</b>	

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

## **F: Cost Allocation per Proposed Study Network Upgrade**

Important Note:

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

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

The required interconnection costs listed do not include all costs associated with the deliverability of the energy to final customers. These costs are determined by separate studies if the Customer submits a Transmission Service Request through SPP's Open Access Same Time Information System (OASIS) as required by Attachment Z1 of the SPP OATT. In addition, costs associated with a short circuit analysis will be allocated should the Interconnection Request Customer choose to execute a Facility Study Agreement.

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

# Appendix F. Cost Allocation by Upgrade

<b>ASGI-2013-004 Interconnection Costs</b>		<b>\$0.00</b>
See One-line diagram		
	ASGI-2013-004	\$0.00
	<b>Total Allocated Costs</b>	<b>\$0.00</b>
<b>ASGI-2013-005 Interconnection Costs</b>		<b>\$0.00</b>
See One-line diagram		
	ASGI-2013-005	\$0.00
	<b>Total Allocated Costs</b>	<b>\$0.00</b>
<b>Battle Creek-County Line 115kV CKT 1</b>		<b>\$7,679,000.00</b>
Rebuild approximately 11 miles of 115kV from Battle Creek to County Line.		
	GEN-2013-032	\$7,679,000.00
	<b>Total Allocated Costs</b>	<b>\$7,679,000.00</b>
<b>County Line-Neligh East 115kV CKT 1</b>		<b>\$8,050,000.00</b>
Rebuild approximately 12 miles of 115kV from County Line to Neligh East.		
	GEN-2013-032	\$8,050,000.00
	<b>Total Allocated Costs</b>	<b>\$8,050,000.00</b>
<b>GEN-2013-019 Interconnection Costs</b>		<b>\$3,399,285.00</b>
See One-line diagram		
	GEN-2013-019	\$3,399,285.00
	<b>Total Allocated Costs</b>	<b>\$3,399,285.00</b>
<b>GEN-2013-022 Interconnection Costs</b>		<b>\$0.00</b>
See One-line diagram		
	GEN-2013-022	\$0.00
	<b>Total Allocated Costs</b>	<b>\$0.00</b>
<b>GEN-2013-028 Interconnection Costs</b>		<b>\$23,431,333.00</b>
See One-line diagram		
	GEN-2013-028	\$23,431,333.00
	<b>Total Allocated Costs</b>	<b>\$23,431,333.00</b>

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

**GEN-2013-029 Interconnection Costs** **\$2,688,935.00**

See One-line diagram

GEN-2013-029 \$2,688,935.00

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**Total Allocated Costs** **\$2,688,935.00**

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**GEN-2013-030 Interconnection Costs** **\$5,052,157.00**

See One-line diagram

GEN-2013-030 \$5,052,157.00

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**Total Allocated Costs** **\$5,052,157.00**

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**GEN-2013-032 Interconnection Costs** **\$2,500,000.00**

See One-line diagram

GEN-2013-032 \$2,500,000.00

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**Total Allocated Costs** **\$2,500,000.00**

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**GEN-2013-033 Interconnection Costs** **\$0.00**

See One-line diagram

GEN-2013-033 \$0.00

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**Total Allocated Costs** **\$0.00**

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

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

See next page.

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	06NR		0 15G	G13_022	TO->FROM	CARLSBAD INTERCHANGE - PECOS INTERCHANGE 115KV CKT 1	141	0.03363	103.4041	POTASH JUNCTION INTERCHANGE (GE M100747) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	09G13_032		0 15G	G13_032	TO->FROM	ALBION - PETERSBURG 115KV CKT 1	137	0.39437	114.5868	LN-1163
FDNS	09G13_032		0 15G	G13_032	TO->FROM	ALBION - PETERSBURG 115KV CKT 1	137	0.39437	114.5233	COUNTY LINE - NELIGH 115KV CKT 1
FDNS	09G13_032		0 15G	G13_032	TO->FROM	ALBION - PETERSBURG 115KV CKT 1	137	0.39437	114.34	BATTLE CREEK - COUNTY LINE 115KV CKT 1
FDNS	09G13_032		0 15G	G13_032	TO->FROM	ALBION - PETERSBURG 115KV CKT 1	137	0.39437	112.396	BATTLE CREEK - NORTH NORFOLK 115KV CKT 1
FDNS	9		0 15G	G13_032	TO->FROM	ALBION - PETERSBURG 115KV CKT 1	137	0.39437	104.2652	LN-1163
FDNS	9		0 15G	G13_032	TO->FROM	ALBION - PETERSBURG 115KV CKT 1	137	0.39437	104.23	COUNTY LINE - NELIGH 115KV CKT 1
FDNS	9		0 15G	G13_032	TO->FROM	ALBION - PETERSBURG 115KV CKT 1	137	0.39437	104.0438	BATTLE CREEK - COUNTY LINE 115KV CKT 1
FDNS	9		0 15G	G13_032	TO->FROM	ALBION - PETERSBURG 115KV CKT 1	137	0.39437	102.0735	BATTLE CREEK - NORTH NORFOLK 115KV CKT 1
FDNS	09G13_032		0 15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.49677	153.1737	PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1
FDNS	09G13_032		0 15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.49677	152.8194	ALBION - PETERSBURG 115KV CKT 1
FDNS	09G13_032		0 15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.46045	141.7733	BLOOMFIELD - GAVINS POINT 115KV CKT 1
FDNS	9		0 15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.49677	137.1263	PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1
FDNS	9		0 15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.49677	136.773	ALBION - PETERSBURG 115KV CKT 1
FDNS	09G13_032		0 15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.44115	128.974	WAPA-OG-2
FDNS	09G13_032		0 15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.42512	127.9557	ALBION - GENOA 115KV CKT 1
FDNS	9		0 15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.46045	127.0652	BLOOMFIELD - GAVINS POINT 115KV CKT 1
FDNS	09G13_032		0 15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.42561	125.5638	WAPA-OG-1
FDNS	09G13_032		0 15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.42512	125.5461	COLUMBUS - GENOA 115KV CKT 1
FDNS	09G13_032		0 15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37798	118.2198	GAVINS POINT - HARTINGTON 115KV CKT 1
FDNS	09G13_032		0 15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.45503	118.21	LN-1164
FDNS	09G13_032		0 15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.45503	118.1916	CLEARWATER - NELIGH 115KV CKT 1
FDNS	09G13_032		0 15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.45503	117.5025	CLEARWATER - ONEILL 115KV CKT 1
FDNS	09G13_032		0 15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37798	117.3909	NEB02WAPAB2
FDNS	09G13_032		0 15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.38192	116.767	GAVINS POINT - YANKON JCT 115KV CKT 1
FDNS	09G13_032		0 15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37798	115.5836	BELDEN - HARTINGTON 115KV CKT 1
FDNS	09G13_032		0 15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.46045	115.199	CREIGHTON - NELIGH 115KV CKT 1
FDNS	9		0 15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.44115	114.7287	WAPA-OG-2
FDNS	09G13_032		0 15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.49677	114.385	NELIGH - PETERSBRG.N7115.00 115KV CKT 1
FDNS	9		0 15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.42512	114.1734	ALBION - GENOA 115KV CKT 1
FDNS	00G13_032		0 15WP	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.49667	114.0567	PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1
FDNS	09G13_032		0 15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37673	114.0543	DAK02WAPAB2
FDNS	09G13_032		0 15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37899	114.0124	UTICA - YANKON JCT 115KV CKT 1
FDNS	00G13_032		0 15WP	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.49667	113.2897	ALBION - PETERSBURG 115KV CKT 1
FDNS	09G13_032		0 15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37378	113.0967	MANNING - SPIRIT MOUND 115KV CKT 1
FDNS	09G13_032		0 15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37192	112.4303	KELLY - MEADOWGROVE4230.00 230KV CKT 1
FDNS	09G13_032		0 15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37378	112.4218	BERSFORD - MANNING 115KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY	
FDNS	09G13_032		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.41167	112.4059	LN-WAPA6
FDNS	09G13_032		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.41167	112.4059	NEB001NPPB2
FDNS	09G13_032		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.41167	112.3751	ONEILL - SPENCER 115KV CKT 1
FDNS	9		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.42561	111.7669	WAPA-OG-1
FDNS	9		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.42512	111.7617	COLUMBUS - GENOA 115KV CKT 1
FDNS	09G13_032		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.41167	111.7132	FT RANDAL - SPENCER 115KV CKT 1
FDNS	09G13_032		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37378	111.0798	BERSFORD - SIOUX FALLS 115KV CKT 1
FDNS	09G13_032		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37229	110.752	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	09G13_032		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.3696	110.7448	DIXONCO 230.00 - HOSKINS 230KV CKT 1
FDNS	09G13_032		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.3906	110.608	ALBION - SPALDING 115KV CKT 1
FDNS	09G13_032		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37651	110.4604	LOUP CITY - ST LIBORY 115KV CKT 1
FDNS	09G13_032		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37131	107.6972	BASE CASE
FDNS	09G13_032		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37131	107.6972	BASE CASE
FDNS	09G13_032		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37131	107.6323	NUCOR-1
FDNS	9		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37798	106.0853	GAVINS POINT - HARTINGTON 115KV CKT 1
FDNS	09G13_032		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.3641	105.2625	NORFOLK - NORTH NORFOLK 115KV CKT 1
FDNS	9		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37798	105.2584	NEB02WAPAB2
FDNS	09G13_032		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.38273	105.1772	AINSWORTH - STUART 115KV CKT 1
FDNS	09G13_032		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37194	104.5954	RAUN - SIOUX CITY 345KV CKT 1
FDNS	9		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.38192	104.521	GAVINS POINT - YANKON JCT 115KV CKT 1
FDNS	09G13_032		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37397	104.5183	BROKEN BOW - LOUP CITY 115KV CKT 1
FDNS	9		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.45503	103.6183	LN-1164
FDNS	9		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.45503	103.5999	CLEARWATER - NELIGH 115KV CKT 1
FDNS	9		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37798	103.4539	BELDEN - HARTINGTON 115KV CKT 1
FDNS	09G13_032		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.3429	103.2013	HOSKINS - NORTH NORFOLK 115KV CKT 1
FDNS	9		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.45503	102.9077	CLEARWATER - ONEILL 115KV CKT 1
FDNS	09G13_032		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37524	102.6047	AINSWORTH - AINSWORTH 115KV CKT 1
FDNS	9		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37673	101.7881	DAK02WAPAB2
FDNS	09G13_032		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.3696	101.7793	DIXONCO 230.00 - TWIN CHURCH 230KV CKT 1
FDNS	9		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37899	101.6872	UTICA - YANKON JCT 115KV CKT 1
FDNS	9		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37378	100.9243	MANNING - SPIRIT MOUND 115KV CKT 1
FDNS	9		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.46045	100.3771	CREIGHTON - NELIGH 115KV CKT 1
FDNS	9		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37192	100.3276	KELLY - MEADOWGROVE4230.00 230KV CKT 1
FDNS	9		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37378	100.25	BERSFORD - MANNING 115KV CKT 1
FDNS	00G13_032		0	15WP	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.46014	99.5	BLOOMFIELD - GAVINS POINT 115KV CKT 1
FDNS	09G13_032		0	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.30924	108.3724	COUNTY LINE - NELIGH 115KV CKT 1
FDNS	09G13_032		0	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.30924	108.3058	LN-1163
FDNS	09G13_032		0	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.30924	108.1976	BATTLE CREEK - COUNTY LINE 115KV CKT 1
FDNS	09G13_032		0	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.30924	106.3386	BATTLE CREEK - NORTH NORFOLK 115KV CKT 1
FDNS	09G13_032		0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.49677	153.8471	PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.49677	153.4929	ALBION - PETERSBURG 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.46045	142.4438	BLOOMFIELD - GAVINS POINT 115KV CKT 1
FDNS	9	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.49677	137.8026	PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1
FDNS	9	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.49677	137.4494	ALBION - PETERSBURG 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.44115	129.6482	WAPA-OG-2
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.42512	128.6304	ALBION - GENOA 115KV CKT 1
FDNS	9	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.46045	127.7415	BLOOMFIELD - GAVINS POINT 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.42561	126.2393	WAPA-OG-1
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.42512	126.2216	COLUMBUS - GENOA 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37798	118.8989	GAVINS POINT - HARTINGTON 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.45503	118.8864	LN-1164
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.45503	118.868	CLEARWATER - NELIGH 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.45503	118.1792	CLEARWATER - ONEILL 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37798	118.0647	NEB02WAPAB2
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.38192	117.439	GAVINS POINT - YANKON JCT 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37798	116.2579	BELDEN - HARTINGTON 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.46045	115.8707	CREIGHTON - NELIGH 115KV CKT 1
FDNS	9	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.44115	115.4052	WAPA-OG-2
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.49677	115.0608	NELIGH - PETERSBRG.N7115.00 115KV CKT 1
FDNS	9	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.42512	114.8499	ALBION - GENOA 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37673	114.7297	DAK02WAPAB2
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37899	114.6871	UTICA - YANKON JCT 115KV CKT 1
FDNS	00G13_032	0	15WP	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.49667	114.6504	PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1
FDNS	00G13_032	0	15WP	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.49667	113.8835	ALBION - PETERSBURG 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37378	113.7716	MANNING - SPIRIT MOUND 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37192	113.1048	KELLY - MEADOWGROVE4230.00 230KV CKT 1
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37378	113.0977	BERSFORD - MANNING 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.41167	113.0806	LN-WAPA6
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.41167	113.0806	NEB001NPPB2
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.41167	113.0497	ONEILL - SPENCER 115KV CKT 1
FDNS	9	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.42561	112.4445	WAPA-OG-1
FDNS	9	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.42512	112.4393	COLUMBUS - GENOA 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.41167	112.3884	FT RANDAL - SPENCER 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37378	111.757	BERSFORD - SIOUX FALLS 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37229	111.4248	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.3696	111.4179	DIXONCO 230.00 - HOSKINS 230KV CKT 1



SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.3906	111.282	ALBION - SPALDING 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37651	111.1349	LOUP CITY - ST LIBORY 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37131	108.3722	BASE CASE
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37131	108.3722	BASE CASE
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37131	108.3095	NUCOR-1
FDNS	9	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37798	106.7635	GAVINS POINT - HARTINGTON 115KV CKT 1
FDNS	9	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37798	105.9379	NEB02WAPAB2
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.3641	105.9352	NORFOLK - NORTH NORFOLK 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.38273	105.8528	AINSWORTH - STUART 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37194	105.272	RAUN - SIOUX CITY 345KV CKT 1
FDNS	9	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.38192	105.1994	GAVINS POINT - YANKON JCT 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37397	105.1946	BROKEN BOW - LOUP CITY 115KV CKT 1
FDNS	9	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.45503	104.2966	LN-1164
FDNS	9	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.45503	104.2783	CLEARWATER - NELIGH 115KV CKT 1
FDNS	9	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37798	104.1348	BELDEN - HARTINGTON 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.3429	103.8662	HOSKINS - NORTH NORFOLK 115KV CKT 1
FDNS	9	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.45503	103.5863	CLEARWATER - ONEILL 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37524	103.2835	AINSWORTH - AINSWORTH 115KV CKT 1
FDNS	9	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37673	102.4646	DAK02WAPAB2
FDNS	09G13_032	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.3696	102.4574	DIXONCO 230.00 - TWIN CHURCH 230KV CKT 1
FDNS	9	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37899	102.3631	UTICA - YANKON JCT 115KV CKT 1
FDNS	9	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37378	101.6005	MANNING - SPIRIT MOUND 115KV CKT 1
FDNS	9	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.46045	101.0555	CREIGHTON - NELIGH 115KV CKT 1
FDNS	9	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37192	101.0033	KELLY - MEADOWGROVE4230.00 230KV CKT 1
FDNS	9	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37378	100.9269	BERSFORD - MANNING 115KV CKT 1
FDNS	00G13_032	0	15WP	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.46014	100.089	BLOOMFIELD - GAVINS POINT 115KV CKT 1
FDNS	9	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.41167	100	LN-WAPA6
FDNS	9	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.41167	100	NEB001NPPB2
FDNS	9	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.41167	99.9	ONEILL - SPENCER 115KV CKT 1
FDNS	9	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37378	99.6	BERSFORD - SIOUX FALLS 115KV CKT 1
FDNS	9	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.3696	99.6	DIXONCO 230.00 - HOSKINS 230KV CKT 1
FDNS	9	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37229	99.5	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	09G13_032	0	15G	G13_032	FROM->TO	PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1	137	0.39437	115.2104	LN-1163
FDNS	09G13_032	0	15G	G13_032	FROM->TO	PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1	137	0.39437	115.1337	COUNTY LINE - NELIGH 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	FROM->TO	PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1	137	0.39437	114.9503	BATTLE CREEK - COUNTY LINE 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	FROM->TO	PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1	137	0.39437	113.0059	BATTLE CREEK - NORTH NORFOLK 115KV CKT 1
FDNS	9	0	15G	G13_032	FROM->TO	PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1	137	0.39437	104.8726	LN-1163
FDNS	9	0	15G	G13_032	FROM->TO	PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1	137	0.39437	104.8375	COUNTY LINE - NELIGH 115KV CKT 1
FDNS	9	0	15G	G13_032	FROM->TO	PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1	137	0.39437	104.6513	BATTLE CREEK - COUNTY LINE 115KV CKT 1
FDNS	9	0	15G	G13_032	FROM->TO	PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1	137	0.39437	102.6801	BATTLE CREEK - NORTH NORFOLK 115KV CKT 1
FDNS	09G13_032	2	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.34694	102.8299	NELIGH.EAST3345.00 (NELIGH.E T1) 345/115/13.8KV TRANSFORMER CKT 1
FDNS	09G13_032	2	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.34694	102.6089	HOSKINS - NELIGH.EAST3345.00 345KV CKT 1
FDNS	09G13_032	2	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH.EAST7115.00 115KV CKT 1	120	0.34694	103.5121	NELIGH.EAST3345.00 (NELIGH.E T1) 345/115/13.8KV TRANSFORMER CKT 1
FDNS	09G13_032	2	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH.EAST7115.00 115KV CKT 1	120	0.34694	103.2866	HOSKINS - NELIGH.EAST3345.00 345KV CKT 1

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

See next page.

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	06ALL		0 15G	ASGI_13_005	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.03325	125.8436	DBL-THIS-WIC
FDNS	06ASGI_13_005		0 15G	ASGI_13_005	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.0334	115.97	DBL-THIS-WIC
FDNS	06ALL		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04571	139.7251	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	06ALL		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04571	136.4884	SPSCONT-05B
FDNS	06ALL		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04571	135.9364	SPSCONT-04
FDNS	06ALL		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04308	135.5136	DBL-THIS-WIC
FDNS	06ALL		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05366	131.4087	DBL-THIS-WWR
FDNS	6		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04584	130.3726	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	06ALL		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03184	128.4917	WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	06ASGI_13_005		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04584	127.7399	SPSCONT-05B
FDNS	6		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04584	127.491	SPSCONT-05B
FDNS	06ASGI_13_005		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04584	126.8489	SPSCONT-04
FDNS	06ASGI_13_005		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04323	126.6708	DBL-THIS-WIC
FDNS	6		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04584	126.6145	SPSCONT-04
FDNS	06ALL		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04571	122.5114	SPSCONT-05AX
FDNS	06ASGI_13_005		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03193	122.3335	WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	6		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03193	122.1706	WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	06ALL		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03389	121.675	IODINE - WOODWARD EHV 138KV CKT 1
FDNS	06ALL		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04243	120.8955	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNS	06ALL		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04243	120.893	ELK CITY 230KV - SWEETWATER 230KV CKT 1
FDNS	06ASGI_13_005		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05386	120.6676	DBL-THIS-WWR
FDNS	6		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05387	120.3658	DBL-THIS-WWR
FDNS	06ALL		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03389	119.8911	DEWEY - IODINE 138KV CKT 1
FDNS	06ASGI_13_005		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04584	118.2973	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	6		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04584	118.0641	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	06ALL		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04243	118.0117	SPP-SWPS-02A
FDNS	06ALL		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04243	117.7081	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNS	06ALL		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04626	117.2893	SPSCONT-01
FDNS	06ASGI_13_005		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04584	116.6669	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	6		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04584	116.4341	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	06ALL		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03184	115.6176	WOODWARD - WOODWARD 69KV CKT 1
FDNS	06ASGI_13_005		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03399	115.1687	IODINE - WOODWARD EHV 138KV CKT 1
FDNS	6		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03399	114.9927	IODINE - WOODWARD EHV 138KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	06ALL		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04626	114.9166	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0457	114.6573	SPP-SWPS-01
FDNS	06ASGI_13_005		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04584	113.5187	SPSCONT-05AX
FDNS	6		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04584	113.2869	SPSCONT-05AX
FDNS	06ASGI_13_005		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03399	113.2682	DEWEY - IODINE 138KV CKT 1
FDNS	06ALL		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03473	113.1879	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNS	6		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03399	113.1146	DEWEY - IODINE 138KV CKT 1
FDNS	06ALL		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04243	112.5786	STLN-DEMAR6 - SWEETWATER 230KV CKT 1
FDNS	06ALL		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04243	112.5598	STATELINE INTERCHANGE - STLN-DEMAR6 230KV CKT 1
FDNS	06ALL		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04243	112.5565	SPP-SWPS-02
FDNS	06ALL		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0317	109.7152	THISTLE7 345.00 - WICHITA 345KV CKT 1
FDNS	06ALL		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0317	109.7152	THISTLE7 345.00 - WICHITA 345KV CKT 2
FDNS	06ALL		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03462	109.27	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	06ALL		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03462	109.27	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNS	06ASGI_13_005		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03193	109.185	WOODWARD - WOODWARD 69KV CKT 1
FDNS	6		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03193	109.0245	WOODWARD - WOODWARD 69KV CKT 1
FDNS	06ASGI_13_005		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03483	106.5325	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNS	06ALL		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0317	106.3791	ELLIS 4 138.00 - RED HILLS WIND 138KV CKT 1
FDNS	6		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03483	106.3491	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNS	06ALL		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03436	105.2641	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNS	06ASGI_13_005		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04256	104.6131	STLN-DEMAR6 - SWEETWATER 230KV CKT 1
FDNS	6		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04257	104.3923	STLN-DEMAR6 - SWEETWATER 230KV CKT 1
FDNS	06ALL		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0317	104.2504	ELLIS 4 138.00 - MOREWOOD SW 138KV CKT 1
FDNS	06ALL		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03436	104.207	SPP-SWPS-05
FDNS	06ALL		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03436	104.1678	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1
FDNS	06ASGI_13_005		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0318	103.5518	THISTLE7 345.00 - WICHITA 345KV CKT 1
FDNS	06ASGI_13_005		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0318	103.5518	THISTLE7 345.00 - WICHITA 345KV CKT 2
FDNS	6		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0318	103.391	THISTLE7 345.00 - WICHITA 345KV CKT 1
FDNS	6		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0318	103.391	THISTLE7 345.00 - WICHITA 345KV CKT 2
FDNS	06ASGI_13_005		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03473	102.5183	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	06ASGI_13_005		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03473	102.5183	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNS	6		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03474	102.3637	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	6		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03474	102.3637	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	06ASGI_13_005		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03179	100.3424	ELLIS 4 138.00 - RED HILLS WIND 138KV CKT 1
FDNS	6		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0318	100.179	ELLIS 4 138.00 - RED HILLS WIND 138KV CKT 1
FDNS	06ALL		0 15G	ASGI_13_005	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03568	99.7	MOREWOOD SW - NINE MILE 138KV CKT 1
FDNS	06ALL		0 15G	ASGI_13_005	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	143.4	0.03325	105.6796	DBL-THIS-WIC
FDNS	06ALL		0 15G	ASGI_13_005	TO->FROM	PLANT X STATION - TOLK STATION EAST 230KV CKT 2	502	0.15817	103.0409	SPP-SWPS-06
FDNS	00G13_019		0 25SP	G13_019	FROM->TO	STERLING (STERLING T1) 115/69/13.8KV TRANSFORMER CKT 1	56	0.0305	101.034	SUB 1263 BROCK (\$1263 T1) 161/69/13.8KV TRANSFORMER CKT 1
FDNS	02ALL		0 15G	G13_022	FROM->TO	CLEARWATER - GILL ENERGY CENTER WEST 138KV CKT 1	143	0.03303	139.4777	DBL-THIS-WIC
FDNS	2		0 15G	G13_022	FROM->TO	CLEARWATER - GILL ENERGY CENTER WEST 138KV CKT 1	143	0.03324	119.7479	DBL-THIS-WIC
FDNS	02ALL		0 15G	G13_022	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.03303	191.7104	DBL-THIS-WIC
FDNS	2		0 15G	G13_022	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.03324	165.638	DBL-THIS-WIC
FDNS	06ALL		0 15G	G13_022	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.03326	125.8436	DBL-THIS-WIC
FDNS	06G13_022		0 15G	G13_022	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.0334	116.415	DBL-THIS-WIC
FDNS	02ALL		0 15G	G13_022	TO->FROM	FLATRDG3 - THISTLE4 138.00 138KV CKT 1	286	0.04768	110.507	DBL-THIS-WIC
FDNS	02ALL		0 15G	G13_022	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.04592	124.9048	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL		0 15G	G13_022	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.0535	124.6156	DBL-THIS-WWR
FDNS	02ALL		0 15G	G13_022	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.04592	123.1565	SPSCONT-05B
FDNS	02ALL		0 15G	G13_022	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.04592	123.0465	SPSCONT-04
FDNS	02ALL		0 15G	G13_022	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.04308	121.6369	DBL-THIS-WIC
FDNS	02ALL		0 15G	G13_022	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.04592	118.1323	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL		0 15G	G13_022	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.04592	117.3452	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	02ALL		0 15G	G13_022	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.04592	115.5227	SPSCONT-05AX
FDNS	02ALL		0 15G	G13_022	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.03197	109.9666	WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	2		0 15G	G13_022	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.04597	108.7868	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	2		0 15G	G13_022	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.04597	106.9951	SPSCONT-05B
FDNS	2		0 15G	G13_022	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.04597	106.6831	SPSCONT-04
FDNS	02ALL		0 15G	G13_022	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.03404	106.521	IODINE - WOODWARD EHV 138KV CKT 1
FDNS	02ALL		0 15G	G13_022	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.03404	105.5858	DEWEY - IODINE 138KV CKT 1
FDNS	2		0 15G	G13_022	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.05374	105.4785	DBL-THIS-WWR
FDNS	2		0 15G	G13_022	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.04322	105.3925	DBL-THIS-WIC
FDNS	02ALL		0 15G	G13_022	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.04253	103.9457	ELK CITY 230KV - SWEETWATER 230KV CKT 1
FDNS	02ALL		0 15G	G13_022	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.04253	103.9352	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNS	02ALL		0 15G	G13_022	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.04276	102.8489	SPP-SWPS-03
FDNS	02ALL		0 15G	G13_022	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.04253	102.2182	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNS	2		0 15G	G13_022	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.04597	102.1087	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL		0 15G	G13_022	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.04253	102.084	SPP-SWPS-02A
FDNS	02ALL		0 15G	G13_022	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.03197	101.2833	WOODWARD - WOODWARD 69KV CKT 1
FDNS	2		0 15G	G13_022	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.04597	101.2789	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	2		0 15G	G13_022	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.04597	99.5	SPSCONT-05AX
FDNS	02ALL		0 15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04592	227.0459	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL		0 15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0535	226.7156	DBL-THIS-WWR
FDNS	02ALL		0 15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04592	223.919	SPSCONT-05B
FDNS	02ALL		0 15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04592	223.6888	SPSCONT-04
FDNS	02ALL		0 15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04308	221.2037	DBL-THIS-WIC
FDNS	02ALL		0 15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04592	214.7718	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL		0 15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04592	213.3716	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	02ALL		0 15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04592	210.1152	SPSCONT-05AX
FDNS	02ALL		0 15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03197	196.7527	WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	2		0 15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04597	194.0597	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	2		0 15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04597	190.7958	SPSCONT-05B
FDNS	02ALL		0 15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03404	190.3777	IODINE - WOODWARD EHV 138KV CKT 1
FDNS	2		0 15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04597	190.1844	SPSCONT-04
FDNS	02ALL		0 15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03404	188.728	DEWEY - IODINE 138KV CKT 1
FDNS	2		0 15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05374	187.9105	DBL-THIS-WWR
FDNS	2		0 15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04322	187.7986	DBL-THIS-WIC
FDNS	02ALL		0 15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04253	185.2539	ELK CITY 230KV - SWEETWATER 230KV CKT 1
FDNS	02ALL		0 15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04253	185.2352	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNS	02ALL		0 15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04276	183.3694	SPP-SWPS-03
FDNS	02ALL		0 15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04253	182.1894	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNS	2		0 15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04597	181.8204	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL		0 15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04253	181.7652	SPP-SWPS-02A
FDNS	02ALL		0 15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03197	180.6428	WOODWARD - WOODWARD 69KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY	
FDNS	2		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04597	180.3374	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	2		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04597	177.1727	SPSCONT-05AX
FDNS	02ALL		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04253	176.7751	STATELINE INTERCHANGE - STLN-DEMARC6 230KV CKT 1
FDNS	02ALL		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04253	176.7715	SPP-SWPS-02
FDNS	02ALL		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04253	176.759	STLN-DEMARC6 - SWEETWATER 230KV CKT 1
FDNS	02ALL		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03467	175.5052	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	02ALL		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03467	175.5052	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNS	02ALL		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03484	174.3067	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNS	02ALL		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03179	173.4749	THISTLE7 345.00 - WICHITA 345KV CKT 1
FDNS	02ALL		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03179	173.4749	THISTLE7 345.00 - WICHITA 345KV CKT 2
FDNS	02ALL		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04633	172.601	SPSCONT-01
FDNS	02ALL		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04577	170.2961	SPP-SWPS-01
FDNS	02ALL		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04633	170.1903	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	2		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03408	166.4866	IODINE - WOODWARD EHV 138KV CKT 1
FDNS	2		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03408	164.8743	DEWEY - IODINE 138KV CKT 1
FDNS	02ALL		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03178	162.0787	ELLIS 4 138.00 - RED HILLS WIND 138KV CKT 1
FDNS	2		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04263	160.55	ELK CITY 230KV - SWEETWATER 230KV CKT 1
FDNS	2		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04263	160.549	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNS	2		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04287	158.3231	SPP-SWPS-03
FDNS	2		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04263	157.413	SPP-SWPS-02A
FDNS	2		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04263	157.2456	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNS	2		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.032	157.2308	WOODWARD - WOODWARD 69KV CKT 1
FDNS	02ALL		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03574	153.0735	MOREWOOD SW - NINE MILE 138KV CKT 1
FDNS	02ALL		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03574	152.6512	MOORELAND - NINE MILE 138KV CKT 1
FDNS	2		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04263	152.0158	SPP-SWPS-02
FDNS	2		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04263	152.0069	STLN-DEMARC6 - SWEETWATER 230KV CKT 1
FDNS	2		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04263	152.0003	STATELINE INTERCHANGE - STLN-DEMARC6 230KV CKT 1
FDNS	2		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03451	151.9644	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNS	2		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0349	151.7517	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNS	2		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03475	151.6083	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	2		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03475	151.6083	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNS	2		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03185	150.9087	THISTLE7 345.00 - WICHITA 345KV CKT 1
FDNS	2		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03185	150.9087	THISTLE7 345.00 - WICHITA 345KV CKT 2
FDNS	2		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03451	150.7318	SPP-SWPS-05
FDNS	2		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03451	150.6596	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1
FDNS	2		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04642	148.8364	SPSCONT-01
FDNS	02ALL		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03178	148.6578	ELK CITY - RED HILLS WIND 138KV CKT 1
FDNS	2		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04586	146.5074	SPP-SWPS-01
FDNS	2		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04642	146.3837	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04572	139.7251	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	06ALL		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04572	136.4884	SPSCONT-05B
FDNS	06ALL		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04572	135.9364	SPSCONT-04
FDNS	06ALL		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04309	135.5136	DBL-THIS-WIC
FDNS	2		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03583	132.6255	MOREWOOD SW - NINE MILE 138KV CKT 1
FDNS	2		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03583	132.1623	MOORELAND - NINE MILE 138KV CKT 1
FDNS	06ALL		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05366	131.4087	DBL-THIS-WWR
FDNS	06G13_022		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04584	131.365	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	6		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04585	130.3726	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	06ALL		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03184	128.4917	WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	06G13_022		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04584	128.1416	SPSCONT-05B
FDNS	2		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03185	127.5001	ELK CITY - RED HILLS WIND 138KV CKT 1
FDNS	6		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04585	127.491	SPSCONT-05B
FDNS	06G13_022		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04584	127.2649	SPSCONT-04
FDNS	06G13_022		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04322	127.0719	DBL-THIS-WIC
FDNS	6		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04585	126.6145	SPSCONT-04
FDNS	06G13_022		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03192	122.6235	WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	06ALL		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04572	122.5114	SPSCONT-05AX
FDNS	6		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03193	122.1706	WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	06ALL		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0339	121.675	IODINE - WOODWARD EHV 138KV CKT 1
FDNS	06G13_022		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05385	121.1775	DBL-THIS-WWR
FDNS	06ALL		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04245	120.8955	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNS	06ALL		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04245	120.893	ELK CITY 230KV - SWEETWATER 230KV CKT 1
FDNS	6		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05387	120.3658	DBL-THIS-WWR
FDNS	06ALL		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0339	119.8911	DEWEY - IODINE 138KV CKT 1
FDNS	6		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04585	118.0641	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	06ALL		0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04245	118.0117	SPP-SWPS-02A

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	06ALL	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04245	117.7081	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNS	06ALL	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04624	117.2893	SPSCONT-01
FDNS	06G13_022	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04584	117.0802	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	6	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04585	116.4341	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	06ALL	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03184	115.6176	WOODWARD - WOODWARD 69KV CKT 1
FDNS	06G13_022	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03398	115.4812	IODINE - WOODWARD EHV 138KV CKT 1
FDNS	09ALL	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04626	115.0865	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	6	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03399	114.9927	IODINE - WOODWARD EHV 138KV CKT 1
FDNS	06ALL	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04624	114.9166	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04568	114.6573	SPP-SWPS-01
FDNS	06G13_022	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04584	113.9302	SPSCONT-05AX
FDNS	06G13_022	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03398	113.5801	DEWEY - IODINE 138KV CKT 1
FDNS	6	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04585	113.2869	SPSCONT-05AX
FDNS	06ALL	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03474	113.1879	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNS	6	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03399	113.1146	DEWEY - IODINE 138KV CKT 1
FDNS	06ALL	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04245	112.5786	STLN-DEMARC6 - SWEETWATER 230KV CKT 1
FDNS	06ALL	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04245	112.5598	STATELINE INTERCHANGE - STLN-DEMARC6 230KV CKT 1
FDNS	06ALL	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04245	112.5565	SPP-SWPS-02
FDNS	9	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04622	112.3725	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	09ALL	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04626	111.9296	SPSCONT-05B
FDNS	09ALL	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03221	111.8987	WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	09ALL	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04626	111.3836	SPSCONT-04
FDNS	9	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03219	109.8512	WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	06ALL	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03171	109.7152	THISTLE7 345.00 - WICHITA 345KV CKT 1
FDNS	06ALL	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03171	109.7152	THISTLE7 345.00 - WICHITA 345KV CKT 2
FDNS	06G13_022	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03192	109.4702	WOODWARD - WOODWARD 69KV CKT 1
FDNS	06ALL	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03462	109.27	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	06ALL	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03462	109.27	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNS	9	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04622	109.2145	SPSCONT-05B
FDNS	09ALL	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04363	109.151	DBL-THIS-WIC
FDNS	6	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03193	109.0245	WOODWARD - WOODWARD 69KV CKT 1
FDNS	9	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04622	108.6775	SPSCONT-04
FDNS	06G13_022	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03483	106.8545	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNS	9	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04362	106.8245	DBL-THIS-WIC
FDNS	06ALL	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0317	106.3791	ELLIS 4 138.00 - RED HILLS WIND 138KV CKT 1
FDNS	6	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03484	106.3491	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNS	06ALL	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03437	105.2641	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNS	06G13_022	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04257	104.9975	STLN-DEMARC6 - SWEETWATER 230KV CKT 1
FDNS	6	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04258	104.3923	STLN-DEMARC6 - SWEETWATER 230KV CKT 1
FDNS	06ALL	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0317	104.2504	ELLIS 4 138.00 - MOREWOOD SW 138KV CKT 1
FDNS	06ALL	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03437	104.207	SPP-SWPS-05
FDNS	06ALL	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03437	104.1678	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1
FDNS	06G13_022	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03179	103.8373	THISTLE7 345.00 - WICHITA 345KV CKT 1
FDNS	06G13_022	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03179	103.8373	THISTLE7 345.00 - WICHITA 345KV CKT 2
FDNS	09ALL	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03429	103.6859	IODINE - WOODWARD EHV 138KV CKT 1
FDNS	6	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0318	103.391	THISTLE7 345.00 - WICHITA 345KV CKT 1
FDNS	6	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0318	103.391	THISTLE7 345.00 - WICHITA 345KV CKT 2
FDNS	09ALL	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04626	102.9079	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	06G13_022	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03472	102.8352	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	06G13_022	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03472	102.8352	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNS	6	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03474	102.3637	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	6	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03474	102.3637	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNS	09ALL	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03429	101.8014	DEWEY - IODINE 138KV CKT 1
FDNS	9	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03426	101.4859	IODINE - WOODWARD EHV 138KV CKT 1
FDNS	09ALL	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04626	101.2832	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	06G13_022	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03179	100.6303	ELLIS 4 138.00 - RED HILLS WIND 138KV CKT 1
FDNS	6	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0318	100.179	ELLIS 4 138.00 - RED HILLS WIND 138KV CKT 1
FDNS	9	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04622	99.9	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	06ALL	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03569	99.7	MOREWOOD SW - NINE MILE 138KV CKT 1
FDNS	9	0	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03426	99.6	DEWEY - IODINE 138KV CKT 1
FDNS	02ALL	0	15G	G13_022	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	143.4	0.03303	155.8062	DBL-THIS-WIC
FDNS	2	0	15G	G13_022	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	143.4	0.03324	135.9911	DBL-THIS-WIC
FDNS	06ALL	0	15G	G13_022	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	143.4	0.03326	105.6796	DBL-THIS-WIC
FDNS	06ALL	0	15G	G13_022	TO->FROM	PLANT X STATION - TOLK STATION EAST 230KV CKT 2	502	0.15696	103.0409	SPP-SWPS-06
FDNS	02ALL	0	15G	G13_022	TO->FROM	WOODWARD - WOODWARD EHV 138KV CKT 1	287	0.03882	112.813	SPSCONT-05B
FDNS	02ALL	0	15G	G13_022	TO->FROM	WOODWARD - WOODWARD EHV 138KV CKT 1	287	0.03383	112.3366	WOODWARD - WOODWARD EHV 138KV CKT 2

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY	
FDNS	02ALL		0	15G	G13_022	TO->FROM	WOODWARD - WOODWARD EHV 138KV CKT 1	287	0.03882	109.1191	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL		0	15G	G13_022	TO->FROM	WOODWARD - WOODWARD EHV 138KV CKT 1	287	0.04511	109.0141	DBL-THIS-WWR
FDNS	02ALL		0	15G	G13_022	TO->FROM	WOODWARD - WOODWARD EHV 138KV CKT 1	287	0.03882	107.6822	SPSCONT-04
FDNS	02ALL		0	15G	G13_022	TO->FROM	WOODWARD - WOODWARD EHV 138KV CKT 1	287	0.03638	107.0166	DBL-THIS-WIC
FDNS	02ALL		0	15G	G13_022	TO->FROM	WOODWARD - WOODWARD EHV 138KV CKT 1	287	0.03882	106.7496	SPSCONT-05AX
FDNS	02ALL		0	15G	G13_022	TO->FROM	WOODWARD - WOODWARD EHV 138KV CKT 1	287	0.03882	103.8379	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL		0	15G	G13_022	TO->FROM	WOODWARD - WOODWARD EHV 138KV CKT 1	287	0.03882	103.2565	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	02ALL		0	15G	G13_022	TO->FROM	WOODWARD - WOODWARD EHV 138KV CKT 2	287	0.03085	102.2954	WOODWARD - WOODWARD EHV 138KV CKT 1
FDNS	09ALL		2	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04626	114.9934	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	9		2	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04622	112.2904	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	09ALL		2	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04626	111.8366	SPSCONT-05B
FDNS	09ALL		2	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03221	111.8292	WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	09ALL		2	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04626	111.2909	SPSCONT-04
FDNS	9		2	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03218	109.7893	WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	9		2	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04622	109.1324	SPSCONT-05B
FDNS	09ALL		2	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04363	109.0096	DBL-THIS-WIC
FDNS	9		2	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04622	108.5959	SPSCONT-04
FDNS	9		2	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04361	106.7343	DBL-THIS-WIC
FDNS	09ALL		2	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03429	103.6234	IODINE - WOODWARD EHV 138KV CKT 1
FDNS	09ALL		2	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04626	102.815	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	09ALL		2	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03429	101.739	DEWEY - IODINE 138KV CKT 1
FDNS	9		2	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03426	101.4203	IODINE - WOODWARD EHV 138KV CKT 1
FDNS	09ALL		2	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04626	101.1909	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	9		2	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04622	99.8	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	9		2	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03426	99.5	DEWEY - IODINE 138KV CKT 1
FDNS	09ALL		3	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04626	114.9924	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	9		3	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04622	112.2883	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	09ALL		3	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04626	111.8356	SPSCONT-05B
FDNS	09ALL		3	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03221	111.8279	WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	09ALL		3	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04626	111.2899	SPSCONT-04
FDNS	9		3	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03218	109.7878	WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	9		3	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04622	109.1303	SPSCONT-05B
FDNS	09ALL		3	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04363	109.0081	DBL-THIS-WIC
FDNS	9		3	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04622	108.5938	SPSCONT-04
FDNS	9		3	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04361	106.7319	DBL-THIS-WIC
FDNS	09ALL		3	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03429	103.629	IODINE - WOODWARD EHV 138KV CKT 1
FDNS	09ALL		3	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04626	102.8136	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	09ALL		3	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03429	101.7446	DEWEY - IODINE 138KV CKT 1
FDNS	9		3	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03426	101.4186	IODINE - WOODWARD EHV 138KV CKT 1
FDNS	09ALL		3	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04626	101.1892	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	9		3	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04622	99.8	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	9		3	15G	G13_022	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03426	99.5	DEWEY - IODINE 138KV CKT 1
FDNS	00G13_028		0	25SP	G13_028	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	317	0.12837	119.7137	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	0		0	25SP	G13_028	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	317	0.12837	119.7127	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	0		0	15SP	G13_028	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	317	0.12459	117.301	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00G13_028		0	15SP	G13_028	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	317	0.12459	117.2819	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	0		0	20WP	G13_028	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	335	0.12856	114.4802	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00G13_028		0	20WP	G13_028	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	335	0.12856	114.4748	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00G13_028		0	20SP	G13_028	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	317	0.12835	113.053	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	0		0	20SP	G13_028	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	317	0.12836	113.0524	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	0		0	15WP	G13_028	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	335	0.12564	106.264	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00G13_028		0	15WP	G13_028	FROM->TO	SILOAM CITY - SILOAM SPRINGS 161KV CKT 1	335	0.12564	106.2613	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00G13_028		0	20WP	G13_028	TO->FROM	SILOAM CITY - TONNECETP5 161.00 161KV CKT 1	286	0.09822	100.0699	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	0		0	20WP	G13_028	TO->FROM	SILOAM CITY - TONNECETP5 161.00 161KV CKT 1	286	0.09822	100.0653	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	0		0	15SP	G13_028	TO->FROM	SILOAM CITY - TONNECETP5 161.00 161KV CKT 1	286	0.09607	99.5875	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	00G13_028		0	15SP	G13_028	TO->FROM	SILOAM CITY - TONNECETP5 161.00 161KV CKT 1	286	0.09607	99.58662	FLINT CREEK - SILOAM SPRINGS TAP 345KV CKT 1
FDNS	02ALL		0	15G	G13_030	FROM->TO	BUSHLAND INTERCHANGE - DEAF SMITH COUNTY INTERCHANGE 230KV CKT 1	351	0.04759	104.376	NEWHART 230 - POTTER COUNTY INTERCHANGE 230KV CKT 1
FDNS	02ALL		0	15G	G13_030	FROM->TO	CLEARWATER - GILL ENERGY CENTER WEST 138KV CKT 1	143	0.04504	139.4777	DBL-THIS-WIC
FDNS	02G13_030		0	15G	G13_030	FROM->TO	CLEARWATER - GILL ENERGY CENTER WEST 138KV CKT 1	143	0.04526	125.4674	DBL-THIS-WIC
FDNS	2		0	15G	G13_030	FROM->TO	CLEARWATER - GILL ENERGY CENTER WEST 138KV CKT 1	143	0.04526	119.7479	DBL-THIS-WIC
FDNS	02ALL		0	15G	G13_030	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.04504	191.7104	DBL-THIS-WIC
FDNS	02G13_030		0	15G	G13_030	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.04526	173.2213	DBL-THIS-WIC
FDNS	2		0	15G	G13_030	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.04526	165.638	DBL-THIS-WIC
FDNS	06ALL		0	15G	G13_030	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.04528	125.8436	DBL-THIS-WIC
FDNS	02ALL		0	15G	G13_030	TO->FROM	FLATRDG3 - THISTLE4 138.00 138KV CKT 1	286	0.06255	110.507	DBL-THIS-WIC



SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FLATRDG3 - THISTLE4 138.00 138KV CKT 1	286	0.06288	99.9	DBL-THIS-WIC
FDNS	02ALL	0	15G	G13_030	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.08499	124.9048	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL	0	15G	G13_030	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.08872	124.6156	DBL-THIS-WWR
FDNS	02ALL	0	15G	G13_030	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.08499	123.1565	SPSCONT-05B
FDNS	02ALL	0	15G	G13_030	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.08499	123.0465	SPSCONT-04
FDNS	02ALL	0	15G	G13_030	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.07748	121.6369	DBL-THIS-WIC
FDNS	02ALL	0	15G	G13_030	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.08499	118.1323	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL	0	15G	G13_030	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.08499	117.3452	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	02ALL	0	15G	G13_030	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.08499	115.5227	SPSCONT-05AX
FDNS	02G13_030	0	15G	G13_030	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.08512	111.805	SPSCONT-04
FDNS	02G13_030	0	15G	G13_030	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.08512	110.9299	SPSCONT-05B
FDNS	02G13_030	0	15G	G13_030	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.07766	110.6631	DBL-THIS-WIC
FDNS	02G13_030	0	15G	G13_030	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.08898	110.5232	DBL-THIS-WWR
FDNS	02ALL	0	15G	G13_030	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.06461	109.9666	WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	2	0	15G	G13_030	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.08504	108.7868	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	02G13_030	0	15G	G13_030	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.08512	107.0432	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	2	0	15G	G13_030	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.08504	106.9951	SPSCONT-05B
FDNS	2	0	15G	G13_030	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.08504	106.6831	SPSCONT-04
FDNS	02ALL	0	15G	G13_030	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.06808	106.521	IODINE - WOODWARD EHV 138KV CKT 1
FDNS	02G13_030	0	15G	G13_030	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.08512	106.2137	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	02ALL	0	15G	G13_030	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.06808	105.5858	DEWEY - IODINE 138KV CKT 1
FDNS	2	0	15G	G13_030	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.08896	105.4785	DBL-THIS-WWR
FDNS	2	0	15G	G13_030	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.07762	105.3925	DBL-THIS-WIC
FDNS	02G13_030	0	15G	G13_030	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.08512	104.0509	SPSCONT-05AX
FDNS	02ALL	0	15G	G13_030	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.06392	103.9457	ELK CITY 230KV - SWEETWATER 230KV CKT 1
FDNS	02ALL	0	15G	G13_030	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.06392	103.9352	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNS	02ALL	0	15G	G13_030	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.06402	102.8489	SPP-SWPS-03
FDNS	02ALL	0	15G	G13_030	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.06392	102.2182	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNS	2	0	15G	G13_030	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.08504	102.1087	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL	0	15G	G13_030	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.06392	102.084	SPP-SWPS-02A
FDNS	02ALL	0	15G	G13_030	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.06461	101.2833	WOODWARD - WOODWARD 69KV CKT 1
FDNS	2	0	15G	G13_030	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.08504	101.2789	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	02G13_030	0	15G	G13_030	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.0647	101.196	WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	2	0	15G	G13_030	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.08504	99.5	SPSCONT-05AX
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08499	227.0459	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08872	226.7156	DBL-THIS-WWR
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08499	223.919	SPSCONT-05B
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08499	223.6888	SPSCONT-04
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.07748	221.2037	DBL-THIS-WIC
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08499	214.7718	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08499	213.3716	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08499	210.1152	SPSCONT-05AX
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08512	201.1717	SPSCONT-05B
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08898	200.5085	DBL-THIS-WWR
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08512	199.7629	SPSCONT-04
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.07766	197.7312	DBL-THIS-WIC
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06461	196.7527	WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	2	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08504	194.0597	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08512	190.9913	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	2	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08504	190.7958	SPSCONT-05B
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06808	190.3777	IODINE - WOODWARD EHV 138KV CKT 1
FDNS	2	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08504	190.1844	SPSCONT-04
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08512	189.5075	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06808	188.728	DEWEY - IODINE 138KV CKT 1
FDNS	2	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08896	187.9105	DBL-THIS-WWR
FDNS	2	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.07762	187.7986	DBL-THIS-WIC
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08512	185.4396	SPSCONT-05AX
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06392	185.2539	ELK CITY 230KV - SWEETWATER 230KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06392	185.2352	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05743	184.8412	BASE CASE
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05743	184.8412	BASE CASE
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06402	183.3694	SPP-SWPS-03
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06392	182.1894	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNS	2	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08504	181.8204	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06392	181.7652	SPP-SWPS-02A
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06461	180.6428	WOODWARD - WOODWARD 69KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0647	180.3538	WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	2	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08504	180.3374	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	2	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08504	177.1727	SPSCONT-05AX
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06392	176.7751	STATELINE INTERCHANGE - STLN-DEMARC6 230KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06392	176.7715	SPP-SWPS-02
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06392	176.759	STLN-DEMARC6 - SWEETWATER 230KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06536	175.5052	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06536	175.5052	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06038	174.3067	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06817	174.1132	IODINE - WOODWARD EHV 138KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06219	173.4749	THISTLE7 345.00 - WICHITA 345KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06219	173.4749	THISTLE7 345.00 - WICHITA 345KV CKT 2
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06234	172.601	SPSCONT-01
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06817	172.5054	DEWEY - IODINE 138KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05945	170.8432	DEWEY - TALOGA 138KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06234	170.2961	SPP-SWPS-01
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06234	170.1903	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05751	168.2705	BASE CASE
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05751	168.2705	BASE CASE
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06183	168.197	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06408	167.5614	ELK CITY 230KV - SWEETWATER 230KV CKT 1
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06408	167.5603	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0596	166.7021	BORDER 7345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06183	166.637	SPP-SWPS-04
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06183	166.5758	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	2	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06811	166.4866	IODINE - WOODWARD EHV 138KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05898	165.4207	FARGO JCT - WOODWARD 69KV CKT 1
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06418	165.3515	SPP-SWPS-03
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05872	165.018	G11-17T 345.00 - POST ROCK 345KV CKT 1
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0647	164.9076	WOODWARD - WOODWARD 69KV CKT 1
FDNS	2	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06811	164.8743	DEWEY - IODINE 138KV CKT 1
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06408	164.6284	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0596	164.6056	BORDER 7345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06408	164.5861	SPP-SWPS-02A
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05664	164.5699	WOODRING (WOODRNG2) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05898	164.5293	FARGO JCT - FT SUPPLY 69KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0592	164.5218	MINGO - SETAB 345KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05801	164.281	CIMARRON - NORTHWEST 345KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05961	164.1705	CARTER JCT - WOODWARD 69KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05865	164.0751	BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05872	164.0354	G11-17T 345.00 - SPEARVILLE 345KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05961	163.5544	CARTER JCT - MOORELAND 69KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05961	163.5525	MOORELAND (MOORELND) 138/69/13.8KV TRANSFORMER CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05887	163.3235	HOLCOMB - SETAB 345KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05865	163.0592	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05936	163.0027	MINGO - RED WILLOW 345KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05731	162.8671	ELK CITY - FALCON ROAD 138KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05803	162.7754	SPP-MKEC-08
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05897	162.5037	BENTON - WICHITA 345KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05795	162.3856	FLATRDG3 - HARPER 138KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0522	162.144	SAND RDG_138138.00 - WAKITA_138 138.00 138KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05612	162.0787	ELLIS 4 138.00 - RED HILLS WIND 138KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05772	161.9775	GRAND ISLAND - SWEETWATER 345KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05791	161.9357	FLATRDG3 - THISTLE4 138.00 138KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05791	161.9355	THISTLE7 345.00 (THISTLE T1) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05831	161.8871	AXTELL - POST ROCK 345KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05795	161.7576	HARPER - MILAN TAP 138KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05857	161.7461	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05857	161.7461	HITCHLAND INTERCHANGE - MOORE COUNTY INTERCHANGE 230KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05776	161.701	MULLERGREN - SPEARVILLE 230KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05775	161.6826	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05776	161.6287	CONWAY SUB - NICHOLS STATION 115KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05795	161.4749	CLEARWATER - MILAN TAP 138KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05795	161.4747	SPP-MKEC-05
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05795	161.4723	SPP-MKEC-03A

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05795	161.4723	SPP-MKEC-03B
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05776	161.3397	SPP-SWPS-T53
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05776	161.3371	CONWAY SUB - KIRBY SWITCHING STATION 115KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0578	161.3174	CIRCLE - MULLERGREY 230KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05774	161.2705	AXTELL - PAULINE 345KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05772	161.2359	MOORE - PAULINE 345KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05769	161.0368	KIRBY SWITCHING STATION - MCCLELLAN SUB 115KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05769	160.9684	MCCLELLAN SUB - MCLEAN RURAL SUB 115KV CKT 1
FDNS	2	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05746	160.8131	BASE CASE
FDNS	2	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05746	160.8131	BASE CASE
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05743	160.6789	NC1_GEN-NEBRASKA CITY 1
FDNS	2	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06402	160.55	ELK CITY 230KV - SWEETWATER 230KV CKT 1
FDNS	2	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06402	160.549	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06408	159.2974	STATELINE INTERCHANGE - STLN-DEMARC6 230KV CKT 1
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06408	159.2936	SPP-SWPS-02
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06408	159.2842	STLN-DEMARC6 - SWEETWATER 230KV CKT 1
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06548	159.2068	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06548	159.2068	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06632	158.7365	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06049	158.6153	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05786	158.5258	IODINE - MOORELAND 138KV CKT 1
FDNS	2	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06412	158.3231	SPP-SWPS-03
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06229	158.0336	THISTLE7 345.00 - WICHITA 345KV CKT 1
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06229	158.0336	THISTLE7 345.00 - WICHITA 345KV CKT 2
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05728	157.8645	DBL-CLRK-THI
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06183	157.4813	SPSCONT-02
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06632	157.4628	SPP-SWPS-05
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.057	157.4362	KNOBHILL (KNOBHIL4) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	2	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06402	157.413	SPP-SWPS-02A
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.057	157.4063	KNOBHILL - NOEL_SW 138.00 138KV CKT 1
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06632	157.3888	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1
FDNS	2	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06402	157.2456	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNS	2	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06465	157.2308	WOODWARD - WOODWARD 69KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05608	156.7552	WOODWARD - WOODWARD EHV 138KV CKT 2
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06248	155.7913	SPSCONT-01
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05952	155.7796	DEWEY - TALOGA 138KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05587	155.0987	CLINTON AIR FORCE BASE TAP - HOBART JUNCTION 138KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05587	154.8866	CLINTON AIR FORCE BASE TAP - ELK CITY 138KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05524	154.5524	EL RENO - ROMAN NOSE 138KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05524	154.2716	ROMAN NOSE - SOUTHARD 138KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05341	153.967	BYRON_138 138.00 - SANDY_CN_138138.00 138KV CKT 1
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06248	153.7415	SPP-SWPS-01
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05524	153.6722	DEWEY - SOUTHARD 138KV CKT 1
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06248	153.5786	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06186	153.5033	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05962	153.4416	BORDER 7345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05557	153.2682	CLINTON JUNCTION - ELK CITY 138KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05463	153.0735	MOREWOOD SW - NINE MILE 138KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05341	152.944	BYRON_138 138.00 - C_CITY_138 138.00 138KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05463	152.6512	MOORELAND - NINE MILE 138KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05341	152.3351	C_CITY_138 138.00 - NOEL_SW 138.00 138KV CKT 1
FDNS	02ALL	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0528	152.2765	DOVER SW - OKEENE 138KV CKT 1
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06186	152.1603	SPP-SWPS-04
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06186	152.1124	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	2	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06402	152.0158	SPP-SWPS-02
FDNS	2	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06402	152.0069	STLN-DEMARC6 - SWEETWATER 230KV CKT 1
FDNS	2	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06402	152.0003	STATELINE INTERCHANGE - STLN-DEMARC6 230KV CKT 1
FDNS	2	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06628	151.9644	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNS	2	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06045	151.7517	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNS	2	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06544	151.6083	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	2	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06544	151.6083	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05962	151.1504	BORDER 7345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	2	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06225	150.9087	THISTLE7 345.00 - WICHITA 345KV CKT 1
FDNS	2	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06225	150.9087	THISTLE7 345.00 - WICHITA 345KV CKT 2
FDNS	02G13_030	0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05224	150.803	SAND RDG_138138.00 - WAKITA_138 138.00 138KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY	
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06628	150.7318	SPP-SWPS-05
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0588	150.7124	G11-17T 345.00 - POST ROCK 345KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06628	150.6596	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05671	150.5389	WOODRING (WOODRNG2) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05929	150.1237	MINGO - SETAB 345KV CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05906	150.081	FARGO JCT - WOODWARD 69KV CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05873	149.8235	BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05808	149.8224	CIMARRON - NORTHWEST 345KV CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0588	149.7909	G11-17T 345.00 - SPEARVILLE 345KV CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05968	149.4405	CARTER JCT - WOODWARD 69KV CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05906	149.1992	FARGO JCT - FT SUPPLY 69KV CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05811	149.0708	SPP-MKEC-08
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05948	149.0011	DEWEY - TALOGA 138KV CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05895	148.9719	HOLCOMB - SETAB 345KV CKT 1
FDNS	02ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05061	148.9377	IMO TAP - MEN TAP 138KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06243	148.8364	SPSCONT-01
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05968	148.8259	CARTER JCT - MOORELAND 69KV CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05968	148.8254	MOORELAND (MOORELND) 138/69/13.8KV TRANSFORMER CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05803	148.7375	FLATRDG3 - HARPER 138KV CKT 1
FDNS	02ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05612	148.6578	ELK CITY - RED HILLS WIND 138KV CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05738	148.5693	ELK CITY - FALCON ROAD 138KV CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05905	148.5562	BENTON - WICHITA 345KV CKT 1
FDNS	02ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05061	148.3087	CLEOPLT4 138.00 - MEN TAP 138KV CKT 1
FDNS	02ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05061	147.7853	CLEO CORNER - CLEOPLT4 138.00 138KV CKT 1
FDNS	02ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05225	146.9943	WOODWARD DISTRICT EHV (WWDEHV) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05957	146.6681	BORDER 7345.00 - TUCO INTERCHANGE 345KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06243	146.5074	SPP-SWPS-01
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06182	146.4839	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06243	146.3837	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	02ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05199	146.3745	WOODWARD DISTRICT EHV (WWDEHV-T2) 345/138/13.8KV TRANSFORMER CKT 2
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05751	146.2744	NC1_GEN-NEBRASKA CITY 1
FDNS	02ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04936	146.1264	G11-14T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	02ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04936	146.1264	G11-14T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06182	144.9458	SPP-SWPS-04
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06182	144.8801	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05957	144.6043	BORDER 7345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05583	144.317	BVRCNTY7 345.00 - G11-14T 345.00 345KV CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05583	144.317	BVRCNTY7 345.00 - G11-14T 345.00 345KV CKT 2
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05666	144.2273	WOODRING (WOODRNG2) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05735	144.1083	DBL-CLRK-THI
FDNS	02ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05117	144.0789	CEDARDALE - OKEENE 138KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05876	144.0284	G11-17T 345.00 - POST ROCK 345KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05901	143.4361	FARGO JCT - WOODWARD 69KV CKT 1
FDNS	02ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05117	143.343	CEDARDALE - MOORELAND 138KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05219	143.325	SAND RDG_138138.00 - WAKITA_138 138.00 138KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05804	143.2786	CIMARRON - NORTHWEST 345KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05925	143.2672	MINGO - SETAB 345KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05869	143.2222	BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05876	143.1572	G11-17T 345.00 - SPEARVILLE 345KV CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05707	143.1259	KNOBHILL (KNOBHIL4) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05707	143.0964	KNOBHILL - NOEL_SW 138.00 138KV CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05615	142.7287	WOODWARD - WOODWARD EHV 138KV CKT 2
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05964	142.7143	CARTER JCT - WOODWARD 69KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05901	142.5548	FARGO JCT - FT SUPPLY 69KV CKT 1
FDNS	02ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04987	142.4912	CLEO CORNER - GLASS MOUNTAIN 138KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05806	142.4557	SPP-MKEC-08
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05593	142.2502	CLINTON AIR FORCE BASE TAP - HOBART JUNCTION 138KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05798	142.1425	FLATRDG3 - HARPER 138KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05734	142.1054	ELK CITY - FALCON ROAD 138KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05964	142.1012	CARTER JCT - MOORELAND 69KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05964	142.1008	MOORELAND (MOORELND) 138/69/13.8KV TRANSFORMER CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05593	142.0379	CLINTON AIR FORCE BASE TAP - ELK CITY 138KV CKT 1
FDNS	02ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04987	141.6958	GLASS MOUNTAIN - MOORELAND 138KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY	
FDNS	02ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05122	141.5392	WOODWARD - WOODWARD EHV 138KV CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05531	141.3709	EL RENO - ROMAN NOSE 138KV CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05531	141.0787	ROMAN NOSE - SOUTHARD 138KV CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05347	140.7189	BYRON_138 138.00 - SANDY_CN_138138.00 138KV CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05563	140.5949	CLINTON JUNCTION - ELK CITY 138KV CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05531	140.4742	DEWEY - SOUTHARD 138KV CKT 1
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0848	139.7251	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05347	139.6839	BYRON_138 138.00 - C_CITY_138 138.00 138KV CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05347	139.0718	C_CITY_138 138.00 - NOEL_SW 138.00 138KV CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05286	139.0433	DOVER SW - OKEENE 138KV CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05477	138.7525	MOREWOOD SW - NINE MILE 138KV CKT 1
FDNS	02ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05097	138.5784	MOORELAND - NOEL_SW 138.00 138KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05731	138.3102	DBL-IRON-CLR
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05477	138.2234	MOORELAND - NINE MILE 138KV CKT 1
FDNS	02ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.09286	138.1774	DBL-HTCH-BVR
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05579	137.9876	BVRCNTY7 345.00 - G11-14T 345.00 345KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05579	137.9876	BVRCNTY7 345.00 - G11-14T 345.00 345KV CKT 2
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05761	137.7456	DELAWARE - NORTHEAST STATION 345KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05748	137.5714	CIMARRON - MATHWSN7 345.00 345KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05731	137.5224	DBL-CLRK-THI
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06182	137.2655	SPSCONT-02
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05066	137.0961	IMO TAP - MEN TAP 138KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05703	136.673	KNOBHILL (KNOBHILA) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05703	136.6438	KNOBHILL - NOEL_SW 138.00 138KV CKT 1
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0848	136.4884	SPSCONT-05B
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05066	136.4649	CLEOPLT4 138.00 - MEN TAP 138KV CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05066	135.9375	CLEO CORNER - CLEOPLT4 138.00 138KV CKT 1
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0848	135.9364	SPSCONT-04
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05589	135.8976	CLINTON AIR FORCE BASE TAP - HOBART JUNCTION 138KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05589	135.6795	CLINTON AIR FORCE BASE TAP - ELK CITY 138KV CKT 1
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.07749	135.5136	DBL-THIS-WIC
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05528	135.1542	EL RENO - ROMAN NOSE 138KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05528	134.8522	ROMAN NOSE - SOUTHARD 138KV CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04941	134.8112	G11-14T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04941	134.8112	G11-14T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05342	134.7853	BYRON_138 138.00 - SANDY_CN_138138.00 138KV CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.09282	134.6505	DBL-HTCH-BVR
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05559	134.2564	CLINTON JUNCTION - ELK CITY 138KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05528	134.2553	DEWEY - SOUTHARD 138KV CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05231	133.8685	WOODWARD DISTRICT EHV (WWDEHV) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05622	133.8638	ELK CITY - RED HILLS WIND 138KV CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05205	133.3466	WOODWARD DISTRICT EHV (WWDEHV-T2) 345/138/13.8KV TRANSFORMER CKT 2
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05342	133.2064	BYRON_138 138.00 - C_CITY_138 138.00 138KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05282	133.0413	DOVER SW - OKEENE 138KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05473	132.6255	MOREWOOD SW - NINE MILE 138KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05342	132.5915	C_CITY_138 138.00 - NOEL_SW 138.00 138KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05473	132.1623	MOORELAND - NINE MILE 138KV CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05123	132.0184	CEDARDALE - OKEENE 138KV CKT 1
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08887	131.4087	DBL-THIS-WWR
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05062	131.3358	IMO TAP - MEN TAP 138KV CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05123	131.2459	CEDARDALE - MOORELAND 138KV CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04992	131.1801	CLEO CORNER - GLASS MOUNTAIN 138KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05062	130.7052	CLEOPLT4 138.00 - MEN TAP 138KV CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04992	130.3752	GLASS MOUNTAIN - MOORELAND 138KV CKT 1
FDNS	6		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08493	130.3726	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05062	130.1788	CLEO CORNER - CLEOPLT4 138.00 138KV CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05129	129.9621	WOODWARD - WOODWARD EHV 138KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04937	128.8088	G11-14T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04937	128.8088	G11-14T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06449	128.4917	WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05228	128.0609	WOODWARD DISTRICT EHV (WWDEHV) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05201	127.5641	WOODWARD DISTRICT EHV (WWDEHV-T2) 345/138/13.8KV TRANSFORMER CKT 2

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY	
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05618	127.5001	ELK CITY - RED HILLS WIND 138KV CKT 1
FDNS	6		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08493	127.491	SPSCONT-05B
FDNS	02G13_030		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05101	126.7437	MOORELAND - NOEL_SW 138.00 138KV CKT 1
FDNS	6		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08493	126.6145	SPSCONT-04
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05119	126.1567	CEDARDALE - OKEENE 138KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05119	125.4071	CEDARDALE - MOORELAND 138KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04988	125.1701	CLEO CORNER - GLASS MOUNTAIN 138KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04988	124.3674	GLASS MOUNTAIN - MOORELAND 138KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0928	123.8374	DBL-HTCH-BVR
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05125	123.7909	WOODWARD - WOODWARD EHV 138KV CKT 1
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0848	122.5114	SPSCONT-05AX
FDNS	6		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06458	122.1706	WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06793	121.675	IODINE - WOODWARD EHV 138KV CKT 1
FDNS	2		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05097	121.0148	MOORELAND - NOEL_SW 138.00 138KV CKT 1
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06384	120.8955	ELK CITY 230KV (ELKCTY-6) 230/138/13.8KV TRANSFORMER CKT 1
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06384	120.893	ELK CITY 230KV - SWEETWATER 230KV CKT 1
FDNS	6		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08909	120.3658	DBL-THIS-WWR
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06793	119.8911	DEWEY - IODINE 138KV CKT 1
FDNS	6		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08493	118.0641	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06384	118.0117	SPP-SWPS-02A
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06384	117.7081	GRAPEVINE INTERCHANGE - STATELINE INTERCHANGE 230KV CKT 1
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06226	117.2893	SPSCONT-01
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05732	117.2308	BASE CASE
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05732	117.2308	BASE CASE
FDNS	6		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08493	116.4341	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06449	115.6176	WOODWARD - WOODWARD 69KV CKT 1
FDNS	09ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08534	115.0865	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	6		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06803	114.9927	IODINE - WOODWARD EHV 138KV CKT 1
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06226	114.9166	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06226	114.6573	SPP-SWPS-01
FDNS	6		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08493	113.2869	SPSCONT-05AX
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06028	113.1879	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNS	6		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06803	113.1146	DEWEY - IODINE 138KV CKT 1
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06384	112.5786	STLN-DEMARC6 - SWEETWATER 230KV CKT 1
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06384	112.5598	STATELINE INTERCHANGE - STLN-DEMARC6 230KV CKT 1
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06384	112.5565	SPP-SWPS-02
FDNS	9		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0853	112.3725	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	09ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08534	111.9296	SPSCONT-05B
FDNS	09ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06485	111.8987	WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	09ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08534	111.3836	SPSCONT-04
FDNS	6		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0574	110.8979	BASE CASE
FDNS	6		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0574	110.8979	BASE CASE
FDNS	9		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06483	109.8512	WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06211	109.7152	THISTLE7 345.00 - WICHITA 345KV CKT 1
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06211	109.7152	THISTLE7 345.00 - WICHITA 345KV CKT 2
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05934	109.3145	DEWEY - TALOGA 138KV CKT 1
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06532	109.27	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06532	109.27	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNS	9		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0853	109.2145	SPSCONT-05B
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05205	109.202	SAND RDG_138138.00 - WAKITA_138 138.00 138KV CKT 1
FDNS	09ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.07804	109.151	DBL-THIS-WIC
FDNS	6		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06458	109.0245	WOODWARD - WOODWARD 69KV CKT 1
FDNS	9		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0853	108.6775	SPSCONT-04
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05651	106.9744	WOODRING (WOODRNG2) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	9		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.07802	106.8245	DBL-THIS-WIC
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05603	106.3791	ELLIS 4 138.00 - RED HILLS WIND 138KV CKT 1
FDNS	6		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06039	106.3491	GRAPEVINE INTERCHANGE - NICHOLS STATION 230KV CKT 1
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06613	105.2641	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05328	104.9334	SANDY_CN_138138.00 - WAKITA_138 138.00 138KV CKT 1
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05863	104.8953	G11-17T 345.00 - POST ROCK 345KV CKT 1
FDNS	6		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05211	104.618	SAND RDG_138138.00 - WAKITA_138 138.00 138KV CKT 1
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0579	104.6127	CIMARRON - NORTHWEST 345KV CKT 1
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05886	104.5691	FARGO JCT - WOODWARD 69KV CKT 1
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0572	104.44	ELK CITY - FALCON ROAD 138KV CKT 1
FDNS	6		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06397	104.3923	STLN-DEMARC6 - SWEETWATER 230KV CKT 1
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05603	104.2504	ELLIS 4 138.00 - MOREWOOD SW 138KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY	
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06613	104.207	SPP-SWPS-05
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05645	104.1846	SOONER - WOODRING 345KV CKT 1
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06613	104.1678	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05792	104.1653	SPP-MKEC-08
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05863	104.0904	G11-17T 345.00 - SPEARVILLE 345KV CKT 1
FDNS	6		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05942	103.6876	DEWEY - TALOGA 138KV CKT 1
FDNS	09ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06833	103.6859	IODINE - WOODWARD EHV 138KV CKT 1
FDNS	6		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06221	103.391	THISTLE7 345.00 - WICHITA 345KV CKT 1
FDNS	6		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06221	103.391	THISTLE7 345.00 - WICHITA 345KV CKT 2
FDNS	09ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08534	102.9079	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	6		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06543	102.3637	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	6		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06543	102.3637	THISTLE7 345.00 - WOODWARD DISTRICT EHV 345KV CKT 2
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05732	101.9065	NC1_GEN-NEBRASKA CITY 1
FDNS	09ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06833	101.8014	DEWEY - IODINE 138KV CKT 1
FDNS	6		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05659	101.6186	WOODRING (WOODRNG2) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	9		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0683	101.4859	IODINE - WOODWARD EHV 138KV CKT 1
FDNS	09ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08534	101.2832	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	6		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05613	100.179	ELLIS 4 138.00 - RED HILLS WIND 138KV CKT 1
FDNS	09ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05764	100.1704	BASE CASE
FDNS	09ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05764	100.1704	BASE CASE
FDNS	6		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05334	100.1325	SANDY_CN 138138.00 - WAKITA 138 138.00 138KV CKT 1
FDNS	9		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0853	99.9	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05746	99.7	DELAWARE - NORTHEAST STATION 345KV CKT 1
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05688	99.7	KNOBHILL - NOEL_SW 138.00 138KV CKT 1
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05688	99.7	KNOBHILL (KNOBHIL4) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05458	99.7	MOREWOOD SW - NINE MILE 138KV CKT 1
FDNS	9		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0683	99.6	DEWEY - IODINE 138KV CKT 1
FDNS	06ALL		0	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05794	99.5	OPENSKY7 345.00 - ROSE HILL 345KV CKT 1
FDNS	02ALL		0	15G	G13_030	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	143.4	0.04504	155.8062	DBL-THIS-WIC
FDNS	02G13_030		0	15G	G13_030	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	143.4	0.04526	141.7517	DBL-THIS-WIC
FDNS	2		0	15G	G13_030	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	143.4	0.04526	135.9911	DBL-THIS-WIC
FDNS	06ALL		0	15G	G13_030	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	143.4	0.04528	105.6796	DBL-THIS-WIC
FDNS	02ALL		0	15G	G13_030	TO->FROM	WOODWARD - WOODWARD EHV 138KV CKT 1	287	0.0715	112.813	SPSCONT-05B
FDNS	02ALL		0	15G	G13_030	TO->FROM	WOODWARD - WOODWARD EHV 138KV CKT 1	287	0.06818	112.3366	WOODWARD - WOODWARD EHV 138KV CKT 2
FDNS	02ALL		0	15G	G13_030	TO->FROM	WOODWARD - WOODWARD EHV 138KV CKT 1	287	0.0715	109.1191	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL		0	15G	G13_030	TO->FROM	WOODWARD - WOODWARD EHV 138KV CKT 1	287	0.07453	109.0141	DBL-THIS-WWR
FDNS	02ALL		0	15G	G13_030	TO->FROM	WOODWARD - WOODWARD EHV 138KV CKT 1	287	0.0715	107.6822	SPSCONT-04
FDNS	02ALL		0	15G	G13_030	TO->FROM	WOODWARD - WOODWARD EHV 138KV CKT 1	287	0.06511	107.0166	DBL-THIS-WIC
FDNS	02ALL		0	15G	G13_030	TO->FROM	WOODWARD - WOODWARD EHV 138KV CKT 1	287	0.0715	106.7496	SPSCONT-05AX
FDNS	02ALL		0	15G	G13_030	TO->FROM	WOODWARD - WOODWARD EHV 138KV CKT 1	287	0.0715	103.8379	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	02ALL		0	15G	G13_030	TO->FROM	WOODWARD - WOODWARD EHV 138KV CKT 1	287	0.0715	103.2565	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	02G13_030		0	15G	G13_030	TO->FROM	WOODWARD - WOODWARD EHV 138KV CKT 1	287	0.0716	102.2217	SPSCONT-05B
FDNS	02G13_030		0	15G	G13_030	TO->FROM	WOODWARD - WOODWARD EHV 138KV CKT 1	287	0.06827	100.2477	WOODWARD - WOODWARD EHV 138KV CKT 2
FDNS	02ALL		0	15G	G13_030	TO->FROM	WOODWARD - WOODWARD EHV 138KV CKT 2	287	0.06217	102.2954	WOODWARD - WOODWARD EHV 138KV CKT 1
FDNS	09ALL		2	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08534	114.9934	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	9		2	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0853	112.2904	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	09ALL		2	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08534	111.8366	SPSCONT-05B
FDNS	09ALL		2	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06485	111.8292	WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	09ALL		2	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08534	111.2909	SPSCONT-04
FDNS	9		2	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06483	109.7893	WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	9		2	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0853	109.1324	SPSCONT-05B
FDNS	09ALL		2	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.07804	109.0096	DBL-THIS-WIC
FDNS	9		2	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0853	108.5959	SPSCONT-04
FDNS	9		2	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.07802	106.7343	DBL-THIS-WIC
FDNS	09ALL		2	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06833	103.6234	IODINE - WOODWARD EHV 138KV CKT 1
FDNS	09ALL		2	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08534	102.815	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	09ALL		2	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05231	101.7621	RENFROW4 138.00 - SAND RDG_138138.00 138KV CKT 1
FDNS	09ALL		2	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06833	101.739	DEWEY - IODINE 138KV CKT 1
FDNS	9		2	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0683	101.4203	IODINE - WOODWARD EHV 138KV CKT 1
FDNS	09ALL		2	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08534	101.1909	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	09ALL		2	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05764	100.1109	BASE CASE
FDNS	09ALL		2	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05764	100.1109	BASE CASE
FDNS	9		2	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0853	99.8	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	9		2	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05229	99.8	RENFROW4 138.00 - SAND RDG_138138.00 138KV CKT 1
FDNS	9		2	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0683	99.5	DEWEY - IODINE 138KV CKT 1
FDNS	09ALL		3	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08534	114.9924	NORTHWEST - TATONGA7 345.00 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY	
FDNS	9		3	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0853	112.2883	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	09ALL		3	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08534	111.8356	SPSCONT-05B
FDNS	09ALL		3	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06485	111.8279	WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	09ALL		3	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08534	111.2899	SPSCONT-04
FDNS	9		3	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06483	109.7878	WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	9		3	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0853	109.1303	SPSCONT-05B
FDNS	09ALL		3	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.07804	109.0081	DBL-THIS-WIC
FDNS	9		3	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0853	108.5938	SPSCONT-04
FDNS	9		3	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.07802	106.7319	DBL-THIS-WIC
FDNS	09ALL		3	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06833	103.629	IODINE - WOODWARD EHV 138KV CKT 1
FDNS	09ALL		3	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08534	102.8136	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	09ALL		3	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.06833	101.7446	DEWEY - IODINE 138KV CKT 1
FDNS	9		3	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0683	101.4186	IODINE - WOODWARD EHV 138KV CKT 1
FDNS	09ALL		3	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.08534	101.1892	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	09ALL		3	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05764	100.1161	BASE CASE
FDNS	09ALL		3	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.05764	100.1161	BASE CASE
FDNS	9		3	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0853	99.8	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	9		3	15G	G13_030	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0683	99.5	DEWEY - IODINE 138KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	ALBION - PETERSBURG 115KV CKT 1	137	0.39437	118.3041	LN-1163
FDNS	09ALL		0	15G	G13_032	TO->FROM	ALBION - PETERSBURG 115KV CKT 1	137	0.39437	118.2694	COUNTY LINE - NELIGH 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	ALBION - PETERSBURG 115KV CKT 1	137	0.39437	118.0833	BATTLE CREEK - COUNTY LINE 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	ALBION - PETERSBURG 115KV CKT 1	137	0.39437	116.1012	BATTLE CREEK - NORTH NORFOLK 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	ALBION - PETERSBURG 115KV CKT 1	137	0.30254	107.0069	BLOOMFIELD - GAVINS POINT 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.46045	156.7464	BLOOMFIELD - GAVINS POINT 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.49677	155.556	PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.49677	155.2056	ALBION - PETERSBURG 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.44115	133.1549	WAPA-OG-2
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.42512	130.2816	ALBION - GENOA 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.42512	127.8932	COLUMBUS - GENOA 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.42561	127.4375	WAPA-OG-1
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.46045	122.0174	CREIGHTON - NELIGH 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.45503	119.503	LN-1164
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.45503	119.4838	CLEARWATER - NELIGH 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.45503	118.7937	CLEARWATER - ONEILL 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.41167	115.8496	LN-WAPA6
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.41167	115.8496	NEB001NPPB2
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.41167	115.8205	ONEILL - SPENCER 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.46045	115.7074	BLOOMFIELD - CREIGHTON 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37798	115.6018	GAVINS POINT - HARTINGTON 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.41167	115.1586	FT RANDAL - SPENCER 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37798	114.7726	NEB02WAPAB2
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.38192	114.1375	GAVINS POINT - YANKON JCT 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37192	113.2363	KELLY - MEADOWGROVE4230.00 230KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37673	113.1021	DAK02WAPAB2
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37798	112.953	BELDEN - HARTINGTON 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.3696	112.6362	DIXONCO 230.00 - HOSKINS 230KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37378	112.6215	GAVINS POINT - SPIRIT MOUND 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37899	112.4476	UTICA - YANKON JCT 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.3765	111.841	LOUP CITY - ST LIBORY 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37378	111.3141	MANNING - SPIRIT MOUND 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37229	111.1558	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37131	108.5617	BASE CASE
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37131	108.5617	BASE CASE
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37131	107.9396	NUCOR-1
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.3641	106.1407	NORFOLK - NORTH NORFOLK 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.3906	105.8057	LOUP CITY - NORTH LOUP 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37194	105.4085	RAUN - SIOUX CITY 345KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.36873	105.3892	SIOUX CITY - TWIN CHURCH 230KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.38273	105.1892	LN-1267
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.38273	105.1619	EMMET - ONEILL 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.38273	105.0435	ATKINSON - EMMET 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.37397	104.8722	BROKEN BOW - LOUP CITY 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.38273	104.7561	ATKINSON - STUART 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.38273	104.6287	AINSWORTH - STUART 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.3429	103.9107	HOSKINS - NORTH NORFOLK 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.3696	101.3085	DIXONCO 230.00 - TWIN CHURCH 230KV CKT 1



SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY	
FDNS	09ALL		0	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.30924	138.6553	COUNTY LINE - NELIGH 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.30924	138.5983	LN-1163
FDNS	09ALL		0	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.30924	138.4877	BATTLE CREEK - COUNTY LINE 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.30924	136.6935	BATTLE CREEK - NORTH NORFOLK 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.25292	127.6461	PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1
FDNS	09ALL		0	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.25292	127.4871	ALBION - PETERSBURG 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.21671	115.8021	ALBION - GENOA 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.21972	115.4951	WAPA-OG-2
FDNS	09ALL		0	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.21657	114.8502	WAPA-OG-1
FDNS	09ALL		0	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.21671	114.724	COLUMBUS - GENOA 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.24093	112.1877	CLEARWATER - NELIGH 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.24093	112.1478	LN-1164
FDNS	09ALL		0	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.24093	111.7948	CLEARWATER - ONEILL 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.217	110.3361	ONEILL - SPENCER 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.217	110.2776	LN-WAPA6
FDNS	09ALL		0	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.217	110.2776	NEB001NPPB2
FDNS	09ALL		0	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.19166	110.0452	FT RANDAL - UTICA JCT 230KV CKT 1
FDNS	09ALL		0	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.217	109.9313	FT RANDAL - SPENCER 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.19229	109.6644	DIXONCO 230.00 - TWIN CHURCH 230KV CKT 1
FDNS	09ALL		0	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.18856	108.8829	FT RANDAL - WHITE SWAN 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.1908	108.6645	RAUN - SIOUX CITY 345KV CKT 1
FDNS	09ALL		0	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.18856	108.5569	TYNDALL - WHITE SWAN 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.19139	105.8999	BASE CASE
FDNS	09ALL		0	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.19139	105.8999	BASE CASE
FDNS	09ALL		0	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.18059	103.1457	DAK02WAPAB2
FDNS	09ALL		0	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.18051	102.8859	UTICA JCT (UJ KV3A) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	09ALL		0	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.19095	102.2655	KELLY - MEADOWGROVE4230.00 230KV CKT 1
FDNS	09ALL		0	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.18573	101.4166	BERSFORD - MANNING 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.18228	100	BELDEN - HARTINGTON 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.18573	99.8	MANNING - SPIRIT MOUND 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.46045	157.4169	BLOOMFIELD - GAVINS POINT 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.49677	156.2345	PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1
FDNS	09ALL		0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.49677	155.8841	ALBION - PETERSBURG 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.44115	133.8293	WAPA-OG-2
FDNS	09ALL		0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.42512	130.958	ALBION - GENOA 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.42512	128.5702	COLUMBUS - GENOA 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.42561	128.1149	WAPA-OG-1
FDNS	09ALL		0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.46045	122.6919	CREIGHTON - NELIGH 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.45503	120.1797	LN-1164
FDNS	09ALL		0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.45503	120.1605	CLEARWATER - NELIGH 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.45503	119.4705	CLEARWATER - ONEILL 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.41167	116.5288	LN-WAPA6
FDNS	09ALL		0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.41167	116.5288	NEB001NPPB2
FDNS	09ALL		0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.41167	116.4996	ONEILL - SPENCER 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.46045	116.3869	BLOOMFIELD - CREIGHTON 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37798	116.2811	GAVINS POINT - HARTINGTON 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.41167	115.8378	FT RANDAL - SPENCER 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37798	115.4514	NEB02WAPAB2
FDNS	09ALL		0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.38192	114.8134	GAVINS POINT - YANKON JCT 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37192	113.9118	KELLY - MEADOWGROVE4230.00 230KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37673	113.7794	DAK02WAPAB2
FDNS	09ALL		0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37798	113.6331	BELDEN - HARTINGTON 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.3696	113.3149	DIXONCO 230.00 - HOSKINS 230KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37378	113.299	GAVINS POINT - SPIRIT MOUND 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37899	113.1254	UTICA - YANKON JCT 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.3765	112.5216	LOUP CITY - ST LIBORY 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37378	111.9931	MANNING - SPIRIT MOUND 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37229	111.8348	FT RANDAL - SIOUX CITY 230KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.3906	111.7884	ALBION - SPALDING 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37131	109.2427	BASE CASE
FDNS	09ALL		0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37131	109.2427	BASE CASE
FDNS	09ALL		0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37131	108.6179	NUCOR-1
FDNS	09ALL		0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.3641	106.8223	NORFOLK - NORTH NORFOLK 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.3906	106.488	LOUP CITY - NORTH LOUP 115KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37194	106.092	RAUN - SIOUX CITY 345KV CKT 1
FDNS	09ALL		0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.36873	106.0675	SIOUX CITY - TWIN CHURCH 230KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	09ALL	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.38273	105.8721	LN-1267
FDNS	09ALL	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.38273	105.8493	EMMET - ONEILL 115KV CKT 1
FDNS	09ALL	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.38273	105.727	ATKINSON - EMMET 115KV CKT 1
FDNS	09ALL	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.37397	105.5547	BROKEN BOW - LOUP CITY 115KV CKT 1
FDNS	09ALL	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.38273	105.4396	ATKINSON - STUART 115KV CKT 1
FDNS	09ALL	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.38273	105.3122	AINSWORTH - STUART 115KV CKT 1
FDNS	09ALL	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.3429	104.582	HOSKINS - NORTH NORFOLK 115KV CKT 1
FDNS	09ALL	0	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH 115KV CKT 1	120	0.3696	101.9907	DIXONCO 230.00 - TWIN CHURCH 230KV CKT 1
FDNS	09G13_032	0	15G	G13_032	FROM->TO	GAVINS POINT - HARTINGTON 115KV CKT 1	120	0.09372	109.2728	GAVINS POINT - YANKON JCT 115KV CKT 1
FDNS	9	0	15G	G13_032	FROM->TO	GAVINS POINT - HARTINGTON 115KV CKT 1	120	0.09372	106.2285	GAVINS POINT - YANKON JCT 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.13417	134.1096	MANNING - SPIRIT MOUND 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.13959	133.1651	NEB02WAPAB2
FDNS	09G13_032	0	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.13959	133.0349	GAVINS POINT - HARTINGTON 115KV CKT 1
FDNS	9	0	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.13417	129.8107	MANNING - SPIRIT MOUND 115KV CKT 1
FDNS	9	0	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.13959	128.7255	NEB02WAPAB2
FDNS	9	0	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.13959	128.5874	GAVINS POINT - HARTINGTON 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.13417	128.5585	BERSFORD - MANNING 115KV CKT 1
FDNS	9	0	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.13417	124.2696	BERSFORD - MANNING 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.13959	122.2751	BELDEN - HARTINGTON 115KV CKT 1
FDNS	9	0	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.13959	117.8259	BELDEN - HARTINGTON 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.13417	117.5621	BERSFORD - SIOUX FALLS 115KV CKT 1
FDNS	9	0	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.13417	113.3083	BERSFORD - SIOUX FALLS 115KV CKT 1
FDNS	00G13_032	0	15WP	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.13953	107.9035	NEB02WAPAB2
FDNS	00G13_032	0	15WP	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.13953	107.6536	GAVINS POINT - HARTINGTON 115KV CKT 1
FDNS	00G13_032	0	15WP	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.13412	106.2758	MANNING - SPIRIT MOUND 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.15934	103.6461	LN-1163
FDNS	09G13_032	0	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.15934	103.4347	COUNTY LINE - NELIGH 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.15934	103.3682	BATTLE CREEK - COUNTY LINE 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.15934	102.6901	BATTLE CREEK - NORTH NORFOLK 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.1484	102.4149	PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1
FDNS	09G13_032	0	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.1484	102.3244	ALBION - PETERSBURG 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.11398	102.1498	FT RANDAL - UTICA JCT 230KV CKT 1
FDNS	00G13_032	0	15WP	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.13412	101.0702	BERSFORD - MANNING 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	TO->FROM	MANNING - SPIRIT MOUND 115KV CKT 1	121	0.06513	102.2539	GAVINS POINT - YANKON JCT 115KV CKT 1
FDNS	9	0	15G	G13_032	TO->FROM	MANNING - SPIRIT MOUND 115KV CKT 1	121	0.06513	100.3173	GAVINS POINT - YANKON JCT 115KV CKT 1
FDNS	09ALL	0	15G	G13_032	FROM->TO	PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1	137	0.39437	118.9165	LN-1163
FDNS	09ALL	0	15G	G13_032	FROM->TO	PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1	137	0.39437	118.8819	COUNTY LINE - NELIGH 115KV CKT 1
FDNS	09ALL	0	15G	G13_032	FROM->TO	PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1	137	0.39437	118.6958	BATTLE CREEK - COUNTY LINE 115KV CKT 1
FDNS	09ALL	0	15G	G13_032	FROM->TO	PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1	137	0.39437	116.7133	BATTLE CREEK - NORTH NORFOLK 115KV CKT 1
FDNS	09ALL	0	15G	G13_032	FROM->TO	PETERSBRG.N7115.00 - PETERSBURG 115KV CKT Z1	137	0.30254	107.6161	BLOOMFIELD - GAVINS POINT 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	TO->FROM	UTICA - YANKON JCT 115KV CKT 1	120	0.11032	106.949	MANNING - SPIRIT MOUND 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	TO->FROM	UTICA - YANKON JCT 115KV CKT 1	120	0.11407	105.6233	NEB02WAPAB2
FDNS	09G13_032	0	15G	G13_032	TO->FROM	UTICA - YANKON JCT 115KV CKT 1	120	0.11407	105.5436	GAVINS POINT - HARTINGTON 115KV CKT 1
FDNS	9	0	15G	G13_032	TO->FROM	UTICA - YANKON JCT 115KV CKT 1	120	0.11033	103.4554	MANNING - SPIRIT MOUND 115KV CKT 1
FDNS	09G13_032	0	15G	G13_032	TO->FROM	UTICA - YANKON JCT 115KV CKT 1	120	0.11032	102.7152	BERSFORD - MANNING 115KV CKT 1
FDNS	9	0	15G	G13_032	TO->FROM	UTICA - YANKON JCT 115KV CKT 1	120	0.11407	102.0341	NEB02WAPAB2
FDNS	9	0	15G	G13_032	TO->FROM	UTICA - YANKON JCT 115KV CKT 1	120	0.11407	101.9503	GAVINS POINT - HARTINGTON 115KV CKT 1
FDNS	09ALL	2	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.34694	102.891	NELIGH.EAST3345.00 (NELIGH.E T1) 345/115/13.8KV TRANSFORMER CKT 1
FDNS	09ALL	2	15G	G13_032	TO->FROM	BATTLE CREEK - COUNTY LINE 115KV CKT 1	120	0.34694	102.6622	HOSKINS - NELIGH.EAST3345.00 345KV CKT 1
FDNS	09ALL	2	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.18159	103.4032	HOSKINS - NELIGH.EAST3345.00 345KV CKT 1
FDNS	09ALL	2	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.18159	103.3529	NELIGH.EAST3345.00 (NELIGH.E T1) 345/115/13.8KV TRANSFORMER CKT 1
FDNS	09ALL	2	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH.EAST7115.00 115KV CKT 1	120	0.34694	103.5747	NELIGH.EAST3345.00 (NELIGH.E T1) 345/115/13.8KV TRANSFORMER CKT 1
FDNS	09ALL	2	15G	G13_032	TO->FROM	COUNTY LINE - NELIGH.EAST7115.00 115KV CKT 1	120	0.34694	103.3412	HOSKINS - NELIGH.EAST3345.00 345KV CKT 1
FDNS	09G13_032	2	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.06424	114.9687	MANNING - SPIRIT MOUND 115KV CKT 1
FDNS	9	2	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.06424	112.8268	MANNING - SPIRIT MOUND 115KV CKT 1
FDNS	09G13_032	2	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.05826	110.9417	NEB02WAPAB2
FDNS	09G13_032	2	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.05826	110.7846	GAVINS POINT - HARTINGTON 115KV CKT 1
FDNS	09G13_032	2	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.06424	109.6482	BERSFORD - MANNING 115KV CKT 1
FDNS	9	2	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.05826	108.9805	NEB02WAPAB2
FDNS	9	2	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.05826	108.8279	GAVINS POINT - HARTINGTON 115KV CKT 1
FDNS	9	2	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.06424	107.5326	BERSFORD - MANNING 115KV CKT 1
FDNS	09G13_032	2	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.05826	100.4934	BELDEN - HARTINGTON 115KV CKT 1
FDNS	09G13_032	2	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.06424	99.5	BERSFORD - SIOUX FALLS 115KV CKT 1
FDNS	09ALL	3	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.17717	101.2684	HOSKINS - NELIGH.EAST3345.00 345KV CKT 1
FDNS	09ALL	3	15G	G13_032	FROM->TO	BLOOMFIELD - GAVINS POINT 115KV CKT 1	120	0.17717	101.19	NELIGH.EAST3345.00 (NELIGH.E T1) 345/115/13.8KV TRANSFORMER CKT 1
FDNS	09G13_032	3	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.06403	114.8938	MANNING - SPIRIT MOUND 115KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	9	3	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.06403	112.7538	MANNING - SPIRIT MOUND 115KV CKT 1
FDNS	09G13_032	3	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.05781	110.675	NEB02WAPAB2
FDNS	09G13_032	3	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.05781	110.5176	GAVINS POINT - HARTINGTON 115KV CKT 1
FDNS	09G13_032	3	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.06403	109.5782	BERSFORD - MANNING 115KV CKT 1
FDNS	9	3	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.05781	108.7347	NEB02WAPAB2
FDNS	9	3	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.05781	108.5755	GAVINS POINT - HARTINGTON 115KV CKT 1
FDNS	9	3	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.06403	107.4764	BERSFORD - MANNING 115KV CKT 1
FDNS	09G13_032	3	15G	G13_032	FROM->TO	GAVINS POINT - YANKON JCT 115KV CKT 1	120	0.05781	100.1767	BELDEN - HARTINGTON 115KV CKT 1
FDNS	04NR	0	15G	G13_033	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.04415	112.1656	DBL-THIS-WIC
FDNS	04NR	0	15G	G13_033	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03413	122.93	DBL-THIS-WIC

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

Available upon request.