



**Definitive Interconnection
System Impact Study for
Generation Interconnection
Requests**

(DISIS-2012-001-1)

February 2013

Generation Interconnection



Revision History

Date	Author	Change Description
07/26/2012	SPP	Report Issued (DISIS-2012-001)
02/08/2013	SPP	Account for Withdrawn Projects, Report Re-Posted (DISIS-2012-001-1)

Executive Summary

Generation Interconnection customers have requested a Definitive Interconnection System Impact Study (DISIS) under the Generation Interconnection Procedures (GIP) in the Southwest Power Pool Open Access Transmission Tariff (OATT). The Interconnection Customers' requests have been clustered together for the following System Impact Cluster Study window which closed March 31, 2012. The customers will be referred to in this study as the DISIS-2012-001 Interconnection Customers. This System Impact Study analyzes the interconnecting of multiple generation interconnection requests associated with new generation totaling approximately 616.3 MW of new generation which would be located within the transmission systems of Oklahoma Gas and Electric (OKGE), Sunflower Electric Power Corporation/Mid-Kansas Electric Power LLC (SUNC)/(MKEC), and Southwestern Public Service (SPS). The various generation interconnection requests have differing proposed in-service dates¹. The generation interconnection requests included in this System Impact Cluster Study are listed in Appendix A by their queue number, amount, requested interconnection service, area, requested interconnection point, proposed interconnection point, and the requested in-service date.

Power flow analysis has indicated that for the power flow cases studied, 616.3 MW of nameplate generation may be interconnected with transmission system reinforcements within the SPP transmission system. Dynamic stability and power factor analysis has determined the need for reactive compensation in accordance with Order No. 661-A for wind farm interconnection requests and those requirements are listed for each interconnection request within the contents of this report. Dynamic stability analysis has determined that the transmission system will remain stable with the assigned Network Upgrades and necessary reactive compensation requirements.

The total estimated minimum cost for interconnecting the DISIS-2012-001 Interconnection Customers is \$50,233,040.99. These costs are shown in Appendix E and F. Interconnection Service to DISIS-2012-001 Interconnection Customers is also contingent upon higher queued customers paying for certain required network upgrades. **The in service date for the DISIS customers will be deferred until the construction of these network upgrades can be completed.**

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

Network Constraints listed in Appendix H are in the local area of the new generation when this generation is injected throughout the SPP footprint for the Energy Resource (ERIS) Interconnection Request. Certain Interconnection Requests were also studied for Network Resource

¹ The generation interconnection requests in-service dates will need to be deferred based on the required lead time for the Network Upgrades necessary. The Interconnection Customers that proceed to the Facility Study will be provided a new in-service date based on the Facility Study's time for completion of the Network Upgrades necessary.

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

Pursuant to the Southwest Power Pool (SPP) Open Access Transmission Tariff (OATT), SPP has conducted this Definitive Interconnection System Impact Study (DISIS) for certain generation interconnection requests in the SPP Generation Interconnection Queue. These interconnection requests have been clustered together for the following System Impact Study window which closed March 31, 2012. The customers will be referred to in this study as the DISIS-2012-001 Interconnection Customers. This System Impact Study analyzes the interconnecting of multiple generation interconnection requests associated with new generation totaling 616.3 MW of new generation which would be located within the transmission systems of Oklahoma Gas and Electric (OKGE), Sunflower Electric Power Corporation/Mid-Kansas Electric Power LLC (SUNC/MKEC), and Southwestern Public Service (SPS). The various generation interconnection requests have differing proposed in-service dates². The generation interconnection requests included in this System Impact Study are listed in Appendix A by their queue number, amount, requested interconnection service, area, requested interconnection point, proposed interconnection point, and the requested in-service date.

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

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

Model Development

Interconnection Requests Included in the Cluster

SPP has included all interconnection requests that submitted a Definitive Interconnection System Impact Study Agreement no later than March 31, 2012 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 Impact Study is a single Affected System Study, located on the Transmission system of Pioneer Electric Cooperative. Pioneer is a member of Sunflower Electric Power Corporation. The Affected System Study Request has been given the designation: ASGI-2012-006. ASGI-2012-006 capacity nameplate is 22.5 MW with Point of Interconnection (POI) at a tap on Hugoton – Rolla 69kV line.

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 2012 series Transmission Service Request (TSR) Models 2013 spring, 2013 summer and winter peak, 2018 summer and winter peak, and the 2023 summer peak scenario 0 cases were used for this study. After the cases were developed, each of the control areas' resources were then re-dispatched to account for the new generation requests using current dispatch orders.

Dynamic Stability

The 2012 series SPP Model Development Working Group (MDWG) Models 2014 summer and 2014 winter were used as starting points for this study.

Base Case Upgrades

The following facilities are part of the SPP Transmission Expansion Plan or the Balanced Portfolio or recently approved Priority Projects. These facilities, have an approved Notice to Construct (NTC), or are in construction stages and were assumed to be in-service at the time of dispatch and added to the base case models. The DISIS-2012-001 Customers have not been assigned acceleration costs for the below listed projects. The DISIS-2012-001 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 customers.

- Hitchland 230/115kV area projects³:
 - Hitchland – Ochiltree 230kV Project, scheduled for 2/1/2013 in-service
- Balanced Portfolio Projects⁴:
 - Woodward – Border – TUCO 345kV project, scheduled for 5/19/2014 in-service
 - Woodward 345/138kV circuit #2 autotransformer
 - TUCO 345/138kV circuit #2 autotransformer
 - Reactors at Woodward and Border
 - Iatan– Nashua 345kV, scheduled for 6/1/2015 in-service
 - Nashua 345/161kV autotransformer
 - Muskogee– Seminole 345kV, scheduled for 12/31/2013 in-service
 - Cleveland – Sooner 345kV, scheduled for 12/31/2012 in-service
 - Tap Stillwell – Swissvale 345kV line at West Gardner, scheduled for 12/31/2012 in-service
- Priority Projects⁵:
 - Hitchland – Woodward double circuit 345kV, scheduled for 6/30/2014 in-service
 - Hitchland 345/230kV circuit #2 autotransformer
 - Woodward – Thistle double circuit 345kV, scheduled for 12/31/2014 in-service
 - Spearville – Clark double circuit 345kV, scheduled for 12/31/2014 in-service
 - Clark – Thistle double circuit 345kV, scheduled for 12/31/2014 in-service
 - Thistle – Wichita double circuit 345kV, scheduled for 12/31/2014 in-service
 - Thistle 345/138kV autotransformer, scheduled for 12/31/2014 in-service
 - Thistle – Flat Ridge 138kV, scheduled for 12/31/2014 in-service
- Various MKEC Transmission System Upgrades⁶
 - Harper – Flat Ridge 138kV rebuild, scheduled for 6/15/2013 in-service
 - Flat Ridge – Medicine Lodge 138kV rebuild, scheduled for 12/31/2013 in-service
 - Pratt – Medicine Lodge 115kV rebuild, scheduled for 6/15/2014 in-service
 - Medicine Lodge 138/115kV autotransformer replacement, scheduled for 6/1/2013 in-service
- Grassland Interchange 230/115kV transformer circuit #1 replacement⁷
- Move lines from Lea County to Hobbs 230/115kV, scheduled for 12/31/2013⁸

Contingent Upgrades

The following facilities do not yet have approval. These facilities have been assigned to higher queued interconnection customers. These facilities have been included in the models for the DISIS-2012-001 study and are assumed to be in service. This list may not be all inclusive. The DISIS-2012-

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

⁴ Notice to Construct (NTC) issued June 2009.

⁵ Notice to Construct (NTC) issued June 2010.

⁶ SPP Transmission Service Projects identified in SPP-2007-AG3-AFS-9.

⁷ SPP Regional Reliability Project. Per 2013 ITP NT

⁸ SPP Regional Reliability Project. Per SPP-NTC-200166 issued April 2012

001 Interconnection Customers at this time do not have responsibility for these facilities but may later be assigned the cost of these facilities if higher queued customers terminate their GIA or withdraw from the interconnection queue. The DISIS-2012-001 Interconnection Customer Generation Facilities in service dates may need to be delayed until the completion of the following upgrades.

- Upgrades assigned to ICS-2008-001 Interconnection Customers
 - Line Traps at Amarillo South – Swisher 230kV
 - Finney-Holcomb 345kV circuit #2
- Upgrades assigned to DISIS-2009-001 Interconnection Customers:
 - Fort Dodge – North Fort Dodge – Spearville 115kV circuit #2
 - Albion – Petersburg – Neligh 115kV circuit #1 rerate (placed In-Service in 2011)
 - Fort Randall – Madison County – Kelly 230kV circuit #1 rerate (320MVA)
 - Spearville 345/115kV autotransformer circuit #1
- Upgrades assigned to DISIS-2010-001 Interconnection Customers:
 - Post Rock 345/230kV circuit #2 autotransformer
 - South Hays – Hays Plant – Vine Street 115kV circuit #1 rebuild
 - Switch 2749 – Wildorado 69kV circuit # 1 rebuild
 - Washita – Gracemont 138kV circuit #2 (placed In-Service in 2012)
- Upgrades assigned to DISIS-2010-002 Interconnection Customers:
 - Twin Church – Dixon County 230kV circuit #1 rerate (320MVA)
- Upgrades assigned to DISIS-2011-001 Interconnection Customers:
 - Beaver County – Buckner 345kV circuit #1 build
 - Beaver County 345kV Expansion (Tap & Tie Hitchland – Woodward circuit #2 into Beaver County 345kV)
 - Spearville – Mullergren – Reno double circuit 345kV build
 - Tatonga – Matthewson - Cimarron 345kV circuit #2 build
 - Tatonga terminal equipment upgrade (1792 MVA)
 - Rice County – Circle 230kV conversion circuit #1
 - Rice County – Lyons 115kV rebuild circuit #1
 - Rice County 230/115kV autotransformer circuit #1
 - Lyons – Wheatland 115kV rerate (199 MVA)
 - Hoskins – Dixon County – Twin Church 230kV circuit #1 rerate
 - (NRIS only) Spearville – Mullergren 230kV circuit #1 rebuild
 - (NRIS only) FPL Switch – Woodward - Mooreland 138kV circuit #1 rebuild
 - (NRIS only) Glass Mountain – Mooreland 138kV circuit #1 rebuild
 - (NRIS only) Woodward – Woodward EHV 138kV circuit #1 rebuild
 - (NRIS only) Woodward 138/69kV auto replacement
 - (NRIS only) Woodward (OGE) – Woodward (WFEC) 69kV rebuild
- Upgrades assigned to DISIS-2011-002 interconnection Customers:
 - Amoco Wasson – Oxy Tap – Yoakum 230kV circuit #1 – replace line traps
 - Harbine – Crete 115kV circuit #1 build
 - Jones – Lubbock South 230kV circuit #2 - replace line traps
 - Power System Stabilizers - Install Power System Stabilizers @ Tolk(Units: 1,2) and Jones (Units: 1,2,3,4)
 - Mustang – Yoakum 230kV circuit #1 replace line traps

- SUB 967 - SUB 968 69kV circuit #1 replace terminal equipment
- (NRIS only) Allen – Lubbock South 115kV circuit #1 rebuild
- (NRIS only) Hydro Carbon Tap - Sub974 69kV circuit #1 rewire CT
- (NRIS only) Lubbock South 230/115kV Autotransformer build circuit #2
- (NRIS only) Nebraska City U Syracuse – SUB 970 circuit #1 replace terminal equipment
- (NRIS only) Benton – Wichita 345kV circuit #1 rerate (1195MVA)
- (NRIS only) Chisolm – Maize – Evans Energy Center 138kV circuit #1 rebuild
- (NRIS only) Duncan-Tosco 69kV rebuild
- (NRIS only) Comanche Tap-Tosco 69kV rebuild
- (NRIS only) Cimarron 345/138kV autotransformer #3
- (NRIS only) Yoakum 230/115kV transformer #2

Potential Upgrades Not in the Base Case

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

Regional Groupings

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

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

Power Flow

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

Peaking units were not dispatched in the 2013 spring model. To study peaking units' impacts, the 2014 summer and winter and 2018 summer and winter, and 2023 summer seasonal models were chosen and peaking units were modeled at 100% of the nameplate rating and wind generating facilities were modeled at 10% of the nameplate rating. Each interconnection request was also modeled separately at 100% nameplate for certain analyses.

Dynamic Stability

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

Identification of Network Constraints

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

Determination of Cost Allocated Network Upgrades

Cost Allocated Network Upgrades of wind generation interconnection requests were determined using the 2013 spring model. Cost Allocated Network Upgrades of peaking units was determined using the 2018 summer peak model. A MUST sensitivity analysis was performed to determine the Distribution Factors (DF), a distribution factor with no contingency that each generation interconnection request had on each new upgrade. The impact each generation interconnection request had on each upgrade project was weighted by the size of each request. Finally the costs due by each request for a particular project were then determined by allocating the portion of each request's impact over the impact of all affecting requests.

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

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

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

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

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

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

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

- Repeat previous for each responsible GI request for each Project

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

Credits for Amounts Advanced for Network Upgrades

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

Required Interconnection Facilities

The requirement to interconnect the 616.3 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 \$50,233,040.99. 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.

Power Flow Analysis

Power Flow Analysis Methodology

The ACCC function of PSS/E was used to simulate single element and special (i.e., breaker-to-breaker, multi-element, etc) contingencies in portions or all of the modeled control areas of SPP, as well as, other control areas external to SPP and the resulting scenarios analyzed. NERC Category “B” and “C” contingencies were evaluated.

Power Flow Analysis

A power flow analysis was conducted for each Interconnection Customer’s facility using modified versions of the 2013 spring peak, 2014 summer and winter peak, the 2018 summer and winter peak models, and the 2023 summer peak models. The output of the Interconnection Customer’s facility was offset in each model by a reduction in output of existing online SPP generation. This method allows the request to be studied as an Energy Resource (ER) Interconnection Request. Certain requests that requested Network Resource Interconnection Service (NRIS) had an additional analysis conducted for displacing resources in the interconnecting Transmission Owner’s balancing authority.

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

Cluster Group 1 (Woodward Area)

In addition to the 4,953.8 MW of previously queued generation in the area, 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 3,180.2 MW of previously queued generation in the area, 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 5,221.5 MW of previously queued generation in the area, 342.5 MW of new interconnection service was studied. Overloads around GEN-2012-002 were identified for the loss of the Holcomb 345/115kV autotransformer. Overloads of the Holcomb auto were identified in later years that were caused by all Group 3 projects. Withdrawal of the GEN-2012-012 request alleviated any possible voltage collapse issues for this study. The previously identified 345kV line from GEN-2011-017T to Post Rock 345kV is no longer required. Identified overloads on the Hickok 115kV line was due to an incorrect line rating on that line.

MONITORED ELEMENT	RATE B (MVA)	TC% LOADING (% MVA)	CONTINGENCY
HOLCOMB (HOLCOMB) 345/115/13.8KV TRANSFORMER CKT 1	336	101.4047	G12_002T 115.00 - SCOTT CITY 115KV CKT 1

Cluster Group 4 (Mingo/NW Kansas Group)

In addition to the 2,188.1 MW of previously queued generation in the area, 101.2 MW of new interconnection service was studied. Overloads around GEN-2012-002 were identified for the loss of the Holcomb 345/115kV autotransformer.

MONITORED ELEMENT	RATE B (MVA)	TC%LOADING (% MVA)	CONTINGENCY
HOLCOMB (HOLCOMB) 345/115/13.8KV TRANSFORMER CKT 1	336	121.1041	G12_002T 115.00 - SCOTT CITY 115KV CKT 1
G12_002T 115.00 - SCOTT CITY 115KV CKT 1	198	124.3947	HOLCOMB (HOLCOMB) 345/115/13.8KV TRANSFORMER CKT 1
HOLCOMB (HOLCOMB) 345/115/13.8KV TRANSFORMER CKT 1	336	103.1935	SCOTT CITY - SETAB 115KV CKT 1
HOLCOMB (HOLCOMB) 345/115/13.8KV TRANSFORMER CKT 1	336	103.3371	FLETCHER - HOLCOMB 115KV CKT 1

Cluster Group 5 (Amarillo Area)

In addition to the 1,572.6 MW of previously queued generation in the area, 0.0 MW of new interconnection service was studied. No new constraints were found in this area.

Cluster Group 6 (South Texas Panhandle/New Mexico)

In addition to the 2,460.3 MW of previously queued generation in the area, 131.2 MW of new interconnection service was studied. Outlet constraints of the Mustang 115kV bus were identified for generators at Mustang. Additionally, potential stability issues were identified for GEN-2012-001 for loss of the Grassland 230kV line from the wind farm.

MONITORED ELEMENT	RATE B (MVA)	TC%LOADING (% MVA)	CONTINGENCY
Non-Converged Contingency	541	-	G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1
DENVER CITY INTERCHANGE N. - MUSTANG STATION N. 115KV CKT 1	309	104.4032	DENVER CITY INTERCHANGE S. - MUSTANG STATION N. 115KV CKT 2
DENVER CITY INTERCHANGE S. - MUSTANG STATION N. 115KV CKT 2	309	103.2311	DENVER CITY INTERCHANGE N. - MUSTANG STATION N. 115KV CKT 1

Cluster Group 7 (Southwestern Oklahoma)

In addition to the 1,926.0 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 1,986.3 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 9/10 (Nebraska)

In addition to the 1,828.6 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 11 (North Central Kansas)

In addition to the 1,445.1 MW of previously queued generation in the area, 0 MW of new interconnection service was studied. No new constraints were found in this area.

Cluster Group 12 (Northwest Arkansas)

In addition to the 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 585.6 MW of previously queued generation in the area, 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 420.8 MW of previously queued generation in the area, 41.4 MW of new interconnection service was studied. No new ERIS constraints were found in this area.

Cluster Group 15 (reserved)

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

Stability Analysis

A stability analysis was conducted for each Interconnection Customer’s facility using modified versions of the 2012 summer and 2012 winter peak models. The stability analysis was conducted with all upgrades in service that were identified in the power flow analysis. For each group, the interconnection requests were studied at 100% nameplate output while the other groups were dispatched at 20% output for wind requests and 100% output for fossil requests. The output of the Interconnection Customer’s facility was offset in each model by a reduction in output of existing online SPP generation. The following synopsis is included for each group. The entire stability study for each group can be found in the Appendices.

Cluster Group 1 (Woodward Area)

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

Cluster Group 2 (Hitchland Area)

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

Cluster Group 3 (Spearville Area)

The Group 3 stability analysis for this study was performed by SPP Staff. Stability analysis has determined that with the withdrawal of GEN-2012-012 that Group 3 projects no longer require the addition of a second 345 kV line between G11-017 POI and Post Rock. Additionally, it was determined that the once proposed Rubart-Amoco 115kV line is not required for interconnection for the GEN-2012-007 request. Once the previously assigned upgrades are placed in service the transmission system will remain stable and low voltage ride through requirements are satisfied for the contingencies studied.

With the power factor requirements and all network upgrades in service, all interconnection requests in Group 3 will meet FERC Order #661A low voltage ride through (LVRT) requirements.

Power Factor Requirements:

Request	Size (MW)	Generator Model	Point of Interconnection	Power Factor Requirement at POI	
				Lagging (supplying)	Leading (absorbing)
ASGI-2012-006	21.21 Winter 20.74 Summer	GENSAL	Hugoton 115kV (562114)	0.95	0.95
GEN-2012-007	120.0 Winter 96.0 Summer	GENSAL	Rubart 115kV (562116)	0.95	0.95
GEN-2012-011	200.0	GE 1.6MW	Tap Spearville – Post Rock 345kV (576704)	0.95	0.95

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

Cluster Group 4 (Mingo Area)

The Group 4 stability analysis was not re-performed for this study. Previous power factor requirements are listed below.

Power Factor Requirements:

Request	Size (MW)	Generator Model	Point of Interconnection	Power Factor Requirement at POI	
				Lagging (supplying)	Leading (absorbing)
GEN-2012-002	101.2	Siemens 2.3MW	Tap Pile – Scott City 115kV (562110)	0.95	0.95

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

Cluster Group 5 (Amarillo Area)

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

Cluster Group 6 (South Texas Panhandle/New Mexico)

The Group 6 stability analysis for this study was performed by SPP Staff. Stability analysis has determined that GEN-2012-001 still requires the addition of 24 MVAR capacitor bank on its 34.5 kV bus. Additionally, a reactor bank of approximately 6 Mvars is also required after the Sharyland Utilities transmission system is integrated into the ERCOT system in 2014. With the previously allocated Power System Stabilizers (PSS) on certain units within the Southwestern Public Service (SPS) Balancing Authority, the additional reactive support at GEN-2012-001, and with the addition of previously assigned network upgrades, the 131.2 MW of new generation interconnection requests can be accommodated. Once the previously assigned upgrades are placed in service (these upgrades include the Tuco-Woodward 345kV line and the Hitchland-Woodward double circuit 345kV line as well as the Grassland-Wolfforth 230kV line) the transmission system will remain stable and low voltage ride through requirements are satisfied for the contingencies studied.

With the power factor requirements and all network upgrades in service, all interconnection requests in Group 6 will meet FERC Order #661A low voltage ride through (LVRT) requirements.

Power Factor Requirements:

Request	Size (MW)	Generator Model	Point of Interconnection	Power Factor Requirement at POI	
				Lagging (supplying)	Leading (absorbing)
GEN-2012-001	61.2	CCWE 3.6MW	Tap Borden – Grassland 230kV (562089)	0.95	0.95
GEN-2012-008	40	GENROU	Mustang 115kV (527146)	0.95	0.95
GEN-2012-009	15	GENROU	Mustang 230kV (527151)	0.95	0.95
GEN-2012-010	15	GENROU	Mustang 230kV (527151)	0.95	0.95

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

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)

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

Cluster Group 9/10 (Nebraska)

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

Cluster Group 11 (North Central Kansas Area)

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

Cluster Group 12 (Northwest Arkansas Area)

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

Cluster Group 13 (Northwest Missouri Area)

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

Cluster Group 14 (South Central Oklahoma)

The Group 14 stability analysis was not performed for this study. Previous power factor requirements are listed below.

Power Factor Requirements:

Request	Size (MW)	Generator Model	Point of Interconnection	Power Factor Requirement at POI	
				Lagging (supplying)	Leading (absorbing)
GEN-2012-004	41.4	Siemens 2.3MW	Tap Ratliff – Pooleville 138kV (562038)	0.95	0.95

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

Cluster Group 15 (reserved)

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

Conclusion

The minimum cost of interconnecting 616.3 MW of new interconnection requests included in this Definitive Interconnection System Impact Study is estimated at \$50,233,040.99 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).

Appendix

A: Generation Interconnection Requests Considered for Impact Study

See next page.

A: Generation Interconnection Requests Considered for Impact Study

Request	Amount	Service	Area	Requested Point of Interconnection	Proposed Point of Interconnection	Requested In-Service Date	In Service Date Delayed Until no earlier than*
ASGI-2012-006	22.5	ER	SUNCMKEC	Tap Hugoton - Rolla 69kV	Tap Hugoton - Rolla 69kV		
GEN-2012-001	61.2	ER/NR	SPS	Tap Grassland - Borden County 230kV	Tap Grassland - Borden County 230kV	11/30/2012	
GEN-2012-002	101.2	ER	SUNCMKEC	Tap Pile - Scott City 115kV	Tap Pile - Scott City 115kV	1/1/2014	
GEN-2012-004	41.4	ER/NR	OKGE	Pooleville 138kV	Tap Ratliff - Pooleville 138kV	12/31/2013	
GEN-2012-007	120.0	ER/NR	SUNCMKEC	Rubart 115kV	Rubart 115kV	4/1/2014	TBD
GEN-2012-008	40.0	ER	SPS	Mustang 115kV & Mustang 230kV	Mustang 115kV & Mustang 230kV	4/1/2015	
GEN-2012-009	15.0	ER	SPS	Mustang 230kV	Mustang 230kV	4/1/2015	
GEN-2012-010	15.0	ER	SPS	Mustang 230kV	Mustang 230kV	4/1/2015	
GEN-2012-011	200.0	ER	SUNCMKEC	Tap Spearville - Post Rock 345kV (North of GEN-2011-017 Tap)	Tap Spearville - Post Rock 345kV (North of GEN-2011-017 Tap)	11/1/2013	TBD
TOTAL	616.3						

*request dependent upon Priority Projects or Balanced Portfolio may be delayed until 12/31/2014. Other projects in service date to be determined after Facility Study.

B: Prior Queued Interconnection Requests

See next page.

B: Prior Queued Interconnection Requests

Request	Amount	Area	Requested/Proposed Point of Interconnection	Status or In-Service Date
ASGI-2010-006	150	AECI	Tap Fairfax (AECI) - Shilder (AEPW) 138kV	AECI queue Affected Study
ASGI-2010-010	42.2	SPS	Lovington 115kV	Lea County Affected Study
ASGI-2010-020	30	SPS	Tap LE-Tatum - LE-Crossroads 69kV	Lea County Affected Study
ASGI-2010-021	15	SPS	Tap LE-Saunders Tap - LE-Anderson 69kV	Lea County Affected Study
ASGI-2011-001	28.8	SPS	Lovington 115kV	Lea County Affected Study
ASGI-2011-002	10	SPS	Herring 115kV	AECI queue Affected Study
ASGI-2011-003	10	SPS	Hendricks 115kV	AECI queue Affected Study
ASGI-2011-004	20	SPS	Pleasant Hill 69kV	Under Study (DISIS-2011-002)
GEN-2001-014	96	WFEC	Ft Supply 138kV	On-Line
GEN-2001-026	74	WFEC	Washita 138kV	On-Line
GEN-2001-033	180	SPS	San Juan Tap 230kV	On-Line
GEN-2001-036	80	SPS	Norton 115kV	On-Line
GEN-2001-037	102	OKGE	FPL Moreland Tap 138kV	On-Line
GEN-2001-039A	105	SUNCMKEC	Tap Greensburg - Ft Dodge (Shooting Star Tap) 115kV	On Schedule for 2012
GEN-2001-039M	99	SUNCMKEC	Central Plains Tap 115kV	On-Line
GEN-2002-004	200	WERE	Latham 345kV	On-Line at 150MW
GEN-2002-005	120	WFEC	Red Hills Tap 138kV	On-Line
GEN-2002-008	240	SPS	Hitchland 345kV	On-Line at 120MW
GEN-2002-009	80	SPS	Hansford 115kV	On-Line
GEN-2002-022	240	SPS	Bushland 230kV	On-Line
GEN-2002-023N	0.8	NPPD	Harmony 115kV	On-Line
GEN-2002-025A	150	SUNCMKEC	Spearville 230kV	On-Line
GEN-2003-004 GEN-2004-023 GEN-2005-003	151.2	WFEC	Washita 138kV	On-Line
GEN-2003-005	100	WFEC	Anadarko - Paradise (Blue Canyon) 138kV	On-Line
GEN-2003-006A	200	SUNCMKEC	Elm Creek 230kV	On-Line
GEN-2003-019	250	MIDW	Smoky Hills Tap 230kV	On-Line
GEN-2003-020	160	SPS	Martin 115kV	On-Line at 80MW
GEN-2003-021N	75	NPPD	Ainsworth Wind Tap 115kV	On-Line
GEN-2003-022	120	AEPW	Washita 138kV	On-Line
GEN-2004-005N	30	NPPD	St Francis 115kV	On Suspension
GEN-2004-014	154.5	SUNCMKEC	Spearville 230kV	On Schedule for 2012
GEN-2004-020	27	AEPW	Washita 34.5kV	On-Line
GEN-2004-023N	75	NPPD	Columbus Co 115kV	On-Line
GEN-2005-005	18	OKGE	FPL Moreland Tap 138kV	IA Pending
GEN-2005-008	120	OKGE	Woodward 138kV	On-Line
GEN-2005-012	250	SUNCMKEC	Spearville 345kV	On Schedule for 2012
GEN-2005-013	201	WERE	Tap Latham - Neosho (Caney River) 345kV	On-Line
GEN-2006-002	101	AEPW	Sweetwater 230kV	On-Line
GEN-2006-006	205.5	SUNCMKEC	Spearville 345kV	IA Pending
GEN-2006-014	300	MIPU	Tap Maryville - Midway (Nodway Co) 161kV	On Suspension
GEN-2006-018	170	SPS	TUCO Interchange 230kV	On-Line
GEN-2006-020N	42	NPPD	Bloomfield 115kV	On-Line
GEN-2006-020S	18.9	SPS	DWS Frisco 115kV	On Schedule for 3/2012
GEN-2006-021	101	SUNCMKEC	Flat Ridge Tap 138kV	On-Line

Request	Amount	Area	Requested/Proposed Point of Interconnection	Status or In-Service Date
GEN-2006-022	150	SUNCMKEC	Ninnescah 115kV	On Suspension
GEN-2006-024S	19.8	WFEC	Buffalo Bear Tap 69kV	On-Line
GEN-2006-026	604	SPS	Hobbs 230kV & Hobbs 115kV	On-Line
GEN-2006-031	75	MIDW	Knoll 115kV	On-Line
GEN-2006-032	200	MIDW	South Hays 230kV	On Suspension
GEN-2006-035	225	AEPW	Sweetwater 230kV	On-Line at 132MW
GEN-2006-037N1	75	NPPD	Broken Bow 115kV	On Suspension
GEN-2006-038N005	80	NPPD	Broken Bow 115kV	On-Line
GEN-2006-038N019	80	NPPD	Petersburg North 115kV	On-Line
GEN-2006-040	108	SUNCMKEC	Mingo 115kV	On Suspension
GEN-2006-043	99	AEPW	Sweetwater 230kV	On-Line
GEN-2006-044	370	SPS	Hitchland 345kV	On Schedule for 2012
GEN-2006-044N	40.5	OPPD	North Petersburg 115kV	On-Line
GEN-2006-045	240	SPS	Tap Potter - Plant X 230kV (South Randle County) 230kV	On Suspension
GEN-2006-046	131	OKGE	Dewey 138kV	On-Line
GEN-2006-047	240	SPS	Tap Bushland - Deaf Smith (Buffalo) 230kV	On Suspension
GEN-2007-011	135	SUNCMKEC	Syracuse 115kV	On Suspension
GEN-2007-011N08	81	NPPD	Bloomfield 115kV	On-Line
GEN-2007-015	135	WERE	Tap Kelly(WERE) - S1399(OPPD) 161kV	On Schedule 2014
GEN-2007-021	201	OKGE	Tatonga 345kV	On Schedule for 2014
GEN-2007-025	300	WERE	Viola 345kV	On Schedule for 2012
GEN-2007-032	150	WFEC	Tap Clinton Junction - Clinton 138kV	On Schedule for 2013
GEN-2007-038	200	SUNCMKEC	Spearville 345kV	On Schedule for 2015
GEN-2007-040	200	SUNCMKEC	Buckner 345kV	On Schedule for 2012
GEN-2007-043	200	OKGE	Minco 345kV	On-Line
GEN-2007-044	300	OKGE	Tatonga 345kV	On Schedule for 2014
GEN-2007-046	199.5	SPS	Hitchland 115kV	On Schedule for 2014
GEN-2007-048	400	SPS	Tap Amarillo S - Swisher 230kV	On Schedule for 2014
GEN-2007-050	170	OKGE	Woodward EHV 138kV	On-Line at 150MW
GEN-2007-052	150	WFEC	Anadarko 138kV	On-Line
GEN-2007-057	34.5	SPS	Moore County East 115kV	On Schedule for 2014
GEN-2007-062	765	OKGE	Woodward EHV 345kV	On Schedule for 2014
GEN-2008-003	101	OKGE	Woodward EHV 138kV	On-Line
GEN-2008-008	60	SPS	Graham 69kV	On Suspension
GEN-2008-009	60	SPS	San Juan Tap 230kV	On Schedule for 2014
GEN-2008-013	300	OKGE	Tap Wichita - Woodring (Hunter) 345kV	On-Line
GEN-2008-017	300	SUNCMKEC	Setab 345kV	On Schedule for 2014
GEN-2008-018	405	SPS	Finney 345kV	On Schedule for 2012
GEN-2008-019	300	OKGE	Tatonga 345kV	On Schedule for 2015
GEN-2008-021	42.0	WERE	Wolf Creek 345kV	On-Line
GEN-2008-022	300	SPS	Tap Eddy Co - Tolk (Chaves County) 345kV	On Schedule for 2015
GEN-2008-023	150	AEPW	Hobart Junction 138kV	On Schedule for 2012
GEN-2008-025	101	SUNCMKEC	Ruleton 115kV	On Schedule for 2015
GEN-2008-029	250	OKGE	Woodward EHV 138kV	On Schedule for 2014
GEN-2008-037	101	WFEC	Tap Washita - Blue Canyon Wind 138kV	On-Line
GEN-2008-044	197.8	OKGE	Tatonga 345kV	On-Line
GEN-2008-046	200	OKGE	Sunnyside 345kV	On Suspension

Request	Amount	Area	Requested/Proposed Point of Interconnection	Status or In-Service Date
GEN-2008-047	300	SPS	Tap Hitchland - Woodward Ckt 1 (Beaver County) 345kV	IA Pending
GEN-2008-051	322	SPS	Potter County 345kV	On Schedule for 2012
GEN-2008-071	76.8	OKGE	Newkirk 138kV	On Suspension
GEN-2008-079	98.9	SUNCMKEC	Tap Cudahy - Ft Dodge 115kV	On-Line
GEN-2008-086N02	200	NPPD	Tap Ft Randle - Columbus (Madison County) 230kV	On Schedule for 2014
GEN-2008-088	50.6	SPS	Vega 69kV	On Schedule for 2013
GEN-2008-092	201	MIDW	Knoll 230kV	IA Pending
GEN-2008-098	100.8	WERE	Tap Lacygne - Wolf Creek (Anderson County) 345kV	IA Pending
GEN-2008-1190	60	OPPD	S1399 161kV	On-Line
GEN-2008-123N	89.7	NPPD	Tap Guide Rock - Pauline 115kV	On Suspension
GEN-2008-124	200	SUNCMKEC	Spearville 345kV	On Schedule for 2014
GEN-2008-124T	42	SPS	TC-Keyes Texas County 69kV	IA Pending
GEN-2008-129	80	MIPU	Pleasant Hill 161kV	On-Line
GEN-2009-008	199.5	MIDW	South Hays 230kV	On Suspension
GEN-2009-016	100.8	AEPW	Falcon Road 138kV	On Suspension
GEN-2009-020	48.6	MIDW	Tap Nekoma - Bazine 69kV	On Suspension
GEN-2009-025	60	OKGE	Tap Deer Creek - Sinclair Blackwell 69kV	On Schedule for 2012
GEN-2009-040	73.8	WERE	Marshall 115kV	On Suspension
GEN-2009-067S	20	SPS	Seven Rivers 69kV	On Suspension
GEN-2009-073T	48	SPS	TC-Eva Texas County 69kV	IA Pending
GEN-2010-001	300	SPS	Tap Hitchland - Woodward Ckt 1 (Beaver County) 345kV	On Schedule for 2014 (204 MW) and 2015 (96 MW)
GEN-2010-003	100.8	WERE	Tap Lacygne - Wolf Creek (Anderson County) 345kV	IA Pending
GEN-2010-005	300	WERE	Viola 345kV	On Schedule for 2012
GEN-2010-006	205	SPS	Jones 230kV	On-Line
GEN-2010-009	165.6	SUNCMKEC	Buckner 345kV	On-Line
GEN-2010-011	30	OKGE	Tatonga 345kV	On Line
GEN-2010-014	358.8	SPS	Hitchland 345kV	On Schedule for 2016
GEN-2010-015	200.1	SUNCMKEC	Spearville 345kV	On Schedule for 2015
GEN-2010-020	20	SPS	Roswell 69kV	On Suspension
GEN-2010-029	450	SUNCMKEC	Spearville 345kV	IA Pending
GEN-2010-036	4.6	WERE	6th Street 115kV	On Schedule for 2012
GEN-2010-040	300	OKGE	Cimarron 345kV	On Schedule for 2012
GEN-2010-041	10.5	OPPD	S 1399 161kV	Facility Study
GEN-2010-044	99	NPPD	Harbine 115kV	IA Pending
GEN-2010-045	197.8	SUNCMKEC	Buckner 345kV	IA Pending
GEN-2010-046	56	SPS	TUCO Interchange 230kV	On Schedule for 2016
GEN-2010-048	70	MIDW	Tap Beach Station - Redline 115kV	IA Pending
GEN-2010-051	200	NPPD	Tap Twin Church - Hoskins 230kV	On Schedule for 2014
GEN-2010-055	4.5	AEPW	Wekiwa 138kV	On Schedule for 2013
GEN-2010-056	151	MIPU	Tap Saint Joseph - Cooper 345kV	On Schedule for 2015
GEN-2010-057	201	MIDW	Rice County 230kV	On-Line
GEN-2010-058	20	SPS	Chaves County 115kV	On Suspension
GEN-2010-061	180	MIDW	Tap Post Rock - Spearville (GEN-2011-017T) 345kV	Facility Study
GEN-2011-007	250	OKGE	Tap Cimarron - Woodring (Matthewson) 345kV	IA Pending
GEN-2011-008	600	SUNCMKEC	Clark County 345kV	Facility Study
GEN-2011-010	100.8	OKGE	Minco 345kV	On Schedule for 2012
GEN-2011-011	50	KACP	Iatan 345kV	On-Line

Request	Amount	Area	Requested/Proposed Point of Interconnection	Status or In-Service Date
GEN-2011-012	104.5	SPS	Tap Moore County - Hitchland 345kV	IA Pending
GEN-2011-014	201	SPS	Tap Hitchland - Woodward Ckt 1 (Beaver County) 345kV	IA Pending
GEN-2011-016	200.1	SUNCMKEC	Spearville 345kV	IA Pending
GEN-2011-017	299	SUNCMKEC	Tap Spearville - PostRock (GEN-2011-017T) 345kV	Facility Study
GEN-2011-018	73.6	NPPD	Steele City 115kV	On Schedule for 2013
GEN-2011-019	299	OKGE	Woodward 345kV	IA Pending
GEN-2011-020	299	OKGE	Woodward 345kV	IA Pending
GEN-2011-021	299	SPS	Beaver County 345kV	IA Pending
GEN-2011-022	299	SPS	Hitchland 345kV	IA Pending
GEN-2011-023	299	SUNCMKEC	Clark County 345kV	Facility Study
GEN-2011-024	299	OKGE	Tatonga 345kV	IA Pending
GEN-2011-025	82.3	SPS	Tap Floyd County - Crosby County 115kV	On Suspension
GEN-2011-027	120	NPPD	Hoskins 230kV	IA Pending
GEN-2011-037	7	WFEC	Blue Canyon 5 138kV	IA Pending
GEN-2011-040	111	OKGE	Tap Ratliff - Pooleville 138kV	On Schedule for 2013
GEN-2011-043	150	SUNCMKEC	Thistle 345kV	Facility Study
GEN-2011-044	150	SUNCMKEC	Thistle 345kV	Facility Study
GEN-2011-045	205	SPS	Jones 230kV	IA Pending
GEN-2011-046	27	SPS	Lopez 115kV	IA Pending
GEN-2011-048	175	SPS	Mustang 230kV	On Schedule for 2014
GEN-2011-049	250	OKGE	Border 345kV	IA Pending
GEN-2011-050	109.8	AEPW	Tap Rush Springs - Marlow 138kV	IA Pending
GEN-2011-051	104.4	OKGE	Tap Woodward - Tatonga 345kV	IA Pending
GEN-2011-054	300	OKGE	Cimarron 345kV	On Schedule for 2013 (200 MW) and 2014 (99 MW)
GEN-2011-055	52.8	OPPD	South Sterling 69kV	Facility Study
GEN-2011-056	3.6	NPPD	Jeffrey 115kV	On-Line
GEN-2011-056A	3.6	NPPD	John 1 115kV	On-Line
GEN-2011-056B	4.5	NPPD	John 2 115kV	On-Line
GEN-2011-057	150.4	WERE	Creswell 138kV	IA Pending
Gray County Wind (Montezuma)	110	SUNCMKEC	Gray County Tap 115kV	On-Line
Llano Estacado (White Deer)	80	SPS	Llano Wind 115kV	On-Line
NPPD Distributed (Broken Bow)	8.3	NPPD	Broken Bow 115kV	On-Line
NPPD Distributed (Burwell)	3	NPPD	Ord 115kV	On-Line
NPPD Distributed (Columbus Hydro)	45	NPPD	Columbus 115kV	On-Line
NPPD Distributed (North Platte - Lexington)	54	NPPD	Multiple: Jeffrey 115kV, John_1 115kV, John_2 115kV	On-Line
NPPD Distributed (Ord)	10.8	NPPD	Ord 115kV	On-Line
NPPD Distributed (Stuart)	2.1	NPPD	Ainsworth 115kV	On-Line
SPS Distributed (Dumas 19th St)	20	SPS	Dumas 19th Street 115kV	On-Line
SPS Distributed (Etter)	20	SPS	Etter 115kV	On-Line
SPS Distributed (Hopi)	10	SPS	Hopi 115kV	On-Line
SPS Distributed (Jal)	10	SPS	S Jal 115kV	On-Line
SPS Distributed (Lea Road)	10	SPS	Lea Road 115kV	On-Line
SPS Distributed (Monument)	10	SPS	Monument 115kV	On-Line
SPS Distributed (Moore E)	25	SPS	Moore East 115kV	On-Line
SPS Distributed (Ocotillo)	10	SPS	Ocotillo 115kV	On-Line
SPS Distributed (Sherman)	20	SPS	Sherman 115kV	On-Line

Request	Amount	Area	Requested/Proposed Point of Interconnection	Status or In-Service Date
SPS Distributed (Spearman)	10	SPS	Spearman 69kV	On-Line
SPS Distributed (TC-Texas County)	20	SPS	Texas County 115kV	On-Line
TOTAL		26,323.8		

C: Study Groupings

See next page

C. Study Groups

GROUP 1: WOODWARD AREA			
Request	Capacity	Area	Proposed Point of Interconnection
GEN-2001-014	96.0	WFEC	Ft Supply 138kV
GEN-2001-037	102.0	OKGE	FPL Moreland Tap 138kV
GEN-2005-005	18.0	OKGE	FPL Moreland Tap 138kV
GEN-2005-008	120.0	OKGE	Woodward 138kV
GEN-2006-024S	19.8	WFEC	Buffalo Bear Tap 69kV
GEN-2006-046	131.0	OKGE	Dewey 138kV
GEN-2007-021	201.0	OKGE	Tatonga 345kV
GEN-2007-043	200.0	OKGE	Minco 345kV
GEN-2007-044	300.0	OKGE	Tatonga 345kV
GEN-2007-050	170.0	OKGE	Woodward EHV 138kV
GEN-2007-062	765.0	OKGE	Woodward EHV 345kV
GEN-2008-003	101.0	OKGE	Woodward EHV 138kV
GEN-2008-019	300.0	OKGE	Tatonga 345kV
GEN-2008-029	250.0	OKGE	Woodward EHV 138kV
GEN-2008-044	197.8	OKGE	Tatonga 345kV
GEN-2010-011	30.0	OKGE	Tatonga 345kV
GEN-2010-040	300.0	OKGE	Cimarron 345kV
GEN-2011-007	250.0	OKGE	Tap Cimarron - Woodring (Matthewson) 345kV
GEN-2011-010	100.8	OKGE	Minco 345kV
GEN-2011-019	299.0	OKGE	Woodward 345kV
GEN-2011-020	299.0	OKGE	Woodward 345kV
GEN-2011-024	299.0	OKGE	Tatonga 345kV
GEN-2011-051	104.4	OKGE	Tap Woodward - Tatonga 345kV
GEN-2011-054	300.0	OKGE	Cimarron 345kV
PRIOR QUEUED SUBTOTAL	4,953.8		
AREA TOTAL	4,953.8		

GROUP 2: HITCHLAND AREA			
Request	Capacity	Area	Proposed Point of Interconnection
ASGI-2011-002	10.0	SPS	Herring 115kV
GEN-2002-008	240.0	SPS	Hitchland 345kV
GEN-2002-009	80.0	SPS	Hansford 115kV
GEN-2003-020	160.0	SPS	Martin 115kV
GEN-2006-020S	18.9	SPS	DWS Frisco 115kV
GEN-2006-044	370.0	SPS	Hitchland 345kV
GEN-2007-046	199.5	SPS	Hitchland 115kV
GEN-2007-057	34.5	SPS	Moore County East 115kV
GEN-2008-047	300.0	SPS	Tap Hitchland - Woodward Ckt 1 (Beaver County) 345kV
GEN-2008-124T	42.0	SPS	TC-Keyes Texas County 69kV
GEN-2009-073T	48.0	SPS	TC-Eva Texas County 69kV
GEN-2010-001	300.0	SPS	Tap Hitchland - Woodward Ckt 1 (Beaver County) 345kV
GEN-2010-014	358.8	SPS	Hitchland 345kV
GEN-2011-012	104.5	SPS	Tap Moore County - Hitchland 345kV
GEN-2011-014	201.0	SPS	Tap Hitchland - Woodward Ckt 1 (Beaver County) 345kV
GEN-2011-021	299.0	SPS	Beaver County 345kV
GEN-2011-022	299.0	SPS	Hitchland 345kV
SPS Distributed (Dumas 19th St)	20.0	SPS	Dumas 19th Street 115kV
SPS Distributed (Etter)	20.0	SPS	Etter 115kV
SPS Distributed (Moore E)	25.0	SPS	Moore East 115kV
SPS Distributed (Sherman)	20.0	SPS	Sherman 115kV
SPS Distributed (Spearman)	10.0	SPS	Spearman 69kV
SPS Distributed (TC-Texas County)	20.0	SPS	Texas County 115kV
PRIOR QUEUED SUBTOTAL	3,180.2		
AREA TOTAL	3,180.2		

GROUP 3: SPEARVILLE AREA			
Request	Capacity	Area	Proposed Point of Interconnection
GEN-2001-039A	105.0	SUNCMKEC	Tap Greensburg - Ft Dodge (Shooting Star Tap) 115kV
GEN-2002-025A	150.0	SUNCMKEC	Spearville 230kV
GEN-2004-014	154.5	SUNCMKEC	Spearville 230kV
GEN-2005-012	250.0	SUNCMKEC	Spearville 345kV
GEN-2006-006	205.5	SUNCMKEC	Spearville 345kV
GEN-2006-021	101.0	SUNCMKEC	Flat Ridge Tap 138kV
GEN-2006-022	150.0	SUNCMKEC	Ninnescah 115kV
GEN-2007-038	200.0	SUNCMKEC	Spearville 345kV
GEN-2007-040	200.0	SUNCMKEC	Buckner 345kV
GEN-2008-018	405.0	SPS	Finney 345kV
GEN-2008-079	98.9	SUNCMKEC	Tap Cudahy - Ft Dodge 115kV
GEN-2008-124	200.0	SUNCMKEC	Spearville 345kV
GEN-2010-009	165.6	SUNCMKEC	Buckner 345kV
GEN-2010-015	200.1	SUNCMKEC	Spearville 345kV
GEN-2010-029	450.0	SUNCMKEC	Spearville 345kV
GEN-2010-045	197.8	SUNCMKEC	Buckner 345kV
GEN-2010-061	180.0	MIDW	Tap Post Rock - Spearville (GEN-2011-017T) 345kV
GEN-2011-008	600.0	SUNCMKEC	Clark County 345kV
GEN-2011-016	200.1	SUNCMKEC	Spearville 345kV
GEN-2011-017	299.0	SUNCMKEC	Tap Spearville - PostRock (GEN-2011-017T) 345kV
GEN-2011-023	299.0	SUNCMKEC	Clark County 345kV
GEN-2011-043	150.0	SUNCMKEC	Thistle 345kV
GEN-2011-044	150.0	SUNCMKEC	Thistle 345kV
Gray County Wind (Montezuma)	110.0	SUNCMKEC	Gray County Tap 115kV
PRIOR QUEUED SUBTOTAL	5,221.5		
ASGI-2012-006	22.5	SUNCMKEC	Tap Hugoton - Rolla 69kV
GEN-2012-007	120.0	SUNCMKEC	Rubart 115kV
GEN-2012-011	200.0	SUNCMKEC	Tap Spearville - Post Rock 345kV (North of GEN-2011-017 Tap)
CURRENT CLUSTER SUBTOTAL	342.5		
AREA TOTAL	5,564.0		

GROUP 4: NW KANSAS AREA			
Request	Capacity	Area	Proposed Point of Interconnection
GEN-2001-039M	99.0	SUNCMKEC	Central Plains Tap 115kV
GEN-2003-006A	200.0	SUNCMKEC	Elm Creek 230kV
GEN-2003-019	250.0	MIDW	Smoky Hills Tap 230kV
GEN-2006-031	75.0	MIDW	Knoll 115kV
GEN-2006-032	200.0	MIDW	South Hays 230kV
GEN-2006-040	108.0	SUNCMKEC	Mingo 115kV
GEN-2007-011	135.0	SUNCMKEC	Syracuse 115kV
GEN-2008-017	300.0	SUNCMKEC	Setab 345kV
GEN-2008-025	101.0	SUNCMKEC	Ruleton 115kV
GEN-2008-092	201.0	MIDW	Knoll 230kV
GEN-2009-008	199.5	MIDW	South Hays 230kV
GEN-2009-020	48.6	MIDW	Tap Nekoma - Bazine 69kV
GEN-2010-048	70.0	MIDW	Tap Beach Station - Redline 115kV
GEN-2010-057	201.0	MIDW	Rice County 230kV
PRIOR QUEUED SUBTOTAL	2,188.1		
GEN-2012-002	101.2	SUNCMKEC	Tap Pile - Scott City 115kV
CURRENT CLUSTER SUBTOTAL	101.2		
AREA TOTAL	2,289.3		

GROUP 5: AMARILLO AREA			
Request	Capacity	Area	Proposed Point of Interconnection
GEN-2002-022	240.0	SPS	Bushland 230kV
GEN-2006-045	240.0	SPS	Tap Potter - Plant X 230kV (South Randle County) 230kV
GEN-2006-047	240.0	SPS	Tap Bushland - Deaf Smith (Buffalo) 230kV
GEN-2007-048	400.0	SPS	Tap Amarillo S - Swisher 230kV
GEN-2008-051	322.0	SPS	Potter County 345kV
GEN-2008-088	50.6	SPS	Vega 69kV
Llano Estacado (White Deer)	80.0	SPS	Llano Wind 115kV
PRIOR QUEUED SUBTOTAL	1,572.6		
AREA TOTAL	1,572.6		

GROUP 6: S-TX PANHANDLE/NW AREA

Request	Capacity	Area	Proposed Point of Interconnection
ASGI-2010-010	42.2	SPS	Lovington 115kV
ASGI-2010-020	30.0	SPS	Tap LE-Tatum - LE-Crossroads 69kV
ASGI-2010-021	15.0	SPS	Tap LE-Saunders Tap - LE-Anderson 69kV
ASGI-2011-001	28.8	SPS	Lovington 115kV
ASGI-2011-003	10.0	SPS	Hendricks 115kV
ASGI-2011-004	20.0	SPS	Pleasant Hill 69kV
GEN-2001-033	180.0	SPS	San Juan Tap 230kV
GEN-2001-036	80.0	SPS	Norton 115kV
GEN-2006-018	170.0	SPS	TUCO Interchange 230kV
GEN-2006-026	604.0	SPS	Hobbs 230kV & Hobbs 115kV
GEN-2008-008	60.0	SPS	Graham 69kV
GEN-2008-009	60.0	SPS	San Juan Tap 230kV
GEN-2008-022	300.0	SPS	Tap Eddy Co - Tolk (Chaves County) 345kV
GEN-2009-067S	20.0	SPS	Seven Rivers 69kV
GEN-2010-006	205.0	SPS	Jones 230kV
GEN-2010-020	20.0	SPS	Roswell 69kV
GEN-2010-046	56.0	SPS	TUCO Interchange 230kV
GEN-2010-058	20.0	SPS	Chaves County 115kV
GEN-2011-025	82.3	SPS	Tap Floyd County - Crosby County 115kV
GEN-2011-045	205.0	SPS	Jones 230kV
GEN-2011-046	27.0	SPS	Lopez 115kV
GEN-2011-048	175.0	SPS	Mustang 230kV
SPS Distributed (Hopi)	10.0	SPS	Hopi 115kV
SPS Distributed (Jal)	10.0	SPS	S Jal 115kV
SPS Distributed (Lea Road)	10.0	SPS	Lea Road 115kV
SPS Distributed (Monument)	10.0	SPS	Monument 115kV
SPS Distributed (Ocotillo)	10.0	SPS	Ocotillo 115kV
PRIOR QUEUED SUBTOTAL	2,460.3		
GEN-2012-001	61.2	SPS	Tap Grassland - Borden County 230kV
GEN-2012-008	40.0	SPS	Mustang 115kV & Mustang 230kV
GEN-2012-009	15.0	SPS	Mustang 230kV
GEN-2012-010	15.0	SPS	Mustang 230kV
CURRENT CLUSTER SUBTOTAL	131.2		
AREA TOTAL	2,591.5		

GROUP 7: SW OKLAHOMA AREA

Request	Capacity	Area	Proposed Point of Interconnection
GEN-2001-026	74.0	WFEC	Washita 138kV
GEN-2002-005	120.0	WFEC	Red Hills Tap 138kV
GEN-2003-004 GEN-2004-023 GEN-2005-003	151.2	WFEC	Washita 138kV
GEN-2003-005	100.0	WFEC	Anadarko - Paradise (Blue Canyon) 138kV
GEN-2003-022	120.0	AEPW	Washita 138kV
GEN-2004-020	27.0	AEPW	Washita 34.5kV
GEN-2006-002	101.0	AEPW	Sweetwater 230kV
GEN-2006-035	225.0	AEPW	Sweetwater 230kV
GEN-2006-043	99.0	AEPW	Sweetwater 230kV
GEN-2007-032	150.0	WFEC	Tap Clinton Junction - Clinton 138kV
GEN-2007-052	150.0	WFEC	Anadarko 138kV
GEN-2008-023	150.0	AEPW	Hobart Junction 138kV
GEN-2008-037	101.0	WFEC	Tap Washita - Blue Canyon Wind 138kV
GEN-2009-016	100.8	AEPW	Falcon Road 138kV
GEN-2011-037	7.0	WFEC	Blue Canyon 5 138kV
GEN-2011-049	250.0	OKGE	Border 345kV
PRIOR QUEUED SUBTOTAL	1,926.0		
AREA TOTAL	1,926.0		

GROUP 8: N-OK/S-KS AREA

Request	Capacity	Area	Proposed Point of Interconnection
ASGI-2010-006	150.0	AECI	Tap Fairfax (AECI) - Shilder (AEPW) 138kV
GEN-2002-004	200.0	WERE	Latham 345kV
GEN-2005-013	201.0	WERE	Tap Latham - Neosho (Caney River) 345kV
GEN-2007-025	300.0	WERE	Viola 345kV
GEN-2008-013	300.0	OKGE	Tap Wichita - Woodring (Hunter) 345kV
GEN-2008-021	42.0	WERE	Wolf Creek 345kV
GEN-2008-071	76.8	OKGE	Newkirk 138kV
GEN-2008-098	100.8	WERE	Tap Lacygne - Wolf Creek (Anderson County) 345kV
GEN-2009-025	60.0	OKGE	Tap Deer Creek - Sinclair Blackwell 69kV
GEN-2010-003	100.8	WERE	Tap Lacygne - Wolf Creek (Anderson County) 345kV
GEN-2010-005	300.0	WERE	Viola 345kV
GEN-2010-055	4.5	AEPW	Wekiwa 138kV
GEN-2011-057	150.4	WERE	Creswell 138kV
PRIOR QUEUED SUBTOTAL	1,986.3		
AREA TOTAL	1,986.3		

GROUP 9/10: NEBRASKA AREA			
Request	Capacity	Area	Proposed Point of Interconnection
GEN-2002-023N	0.8	NPPD	Harmony 115kV
GEN-2003-021N	75.0	NPPD	Ainsworth Wind Tap 115kV
GEN-2004-005N	30.0	NPPD	St Francis 115kV
GEN-2004-023N	75.0	NPPD	Columbus Co 115kV
GEN-2006-020N	42.0	NPPD	Bloomfield 115kV
GEN-2006-037N1	75.0	NPPD	Broken Bow 115kV
GEN-2006-038N005	80.0	NPPD	Broken Bow 115kV
GEN-2006-038N019	80.0	NPPD	Petersburg North 115kV
GEN-2006-044N	40.5	OPPD	North Petersburg 115kV
GEN-2007-011N08	81.0	NPPD	Bloomfield 115kV
GEN-2007-015	135.0	WERE	Tap Kelly(WERE) - S1399(OPPD) 161kV
GEN-2008-086N02	200.0	NPPD	Tap Ft Randle - Columbus (Madison County) 230kV
GEN-2008-1190	60.0	OPPD	S1399 161kV
GEN-2008-123N	89.7	NPPD	Tap Guide Rock - Pauline 115kV
GEN-2009-040	73.8	WERE	Marshall 115kV
GEN-2010-041	10.5	OPPD	S 1399 161kV
GEN-2010-044	99.0	NPPD	Harbine 115kV
GEN-2010-051	200.0	NPPD	Tap Twin Church - Hoskins 230kV
GEN-2011-018	73.6	NPPD	Steele City 115kV
GEN-2011-027	120.0	NPPD	Hoskins 230kV
GEN-2011-055	52.8	OPPD	South Sterling 69kV
GEN-2011-056	3.6	NPPD	Jeffrey 115kV
GEN-2011-056A	3.6	NPPD	John 1 115kV
GEN-2011-056B	4.5	NPPD	John 2 115kV
NPPD Distributed (Broken Bow)	8.3	NPPD	Broken Bow 115kV
NPPD Distributed (Burwell)	3.0	NPPD	Ord 115kV
NPPD Distributed (Columbus Hydro)	45.0	NPPD	Columbus 115kV
NPPD Distributed (North Platte - Lexington)	54.0	NPPD	Multiple: Jeffrey 115kV, John_1 115kV, John_2 115kV
NPPD Distributed (Ord)	10.8	NPPD	Ord 115kV
NPPD Distributed (Stuart)	2.1	NPPD	Ainsworth 115kV
PRIOR QUEUED SUBTOTAL	1,828.6		
AREA TOTAL	1,828.6		

GROUP 12: NW AR AREA

Request	Capacity	Area	Proposed Point of Interconnection
AREA TOTAL	0.0		

GROUP 13: NW MISSOURI AREA

Request	Capacity	Area	Proposed Point of Interconnection
GEN-2006-014	300.0	MIPU	Tap Maryville - Midway (Nodway Co) 161kV
GEN-2008-129	80.0	MIPU	Pleasant Hill 161kV
GEN-2010-036	4.6	WERE	6th Street 115kV
GEN-2010-056	151.0	MIPU	Tap Saint Joseph - Cooper 345kV
GEN-2011-011	50.0	KACP	Iatan 345kV
PRIOR QUEUED SUBTOTAL	585.6		
AREA TOTAL	585.6		

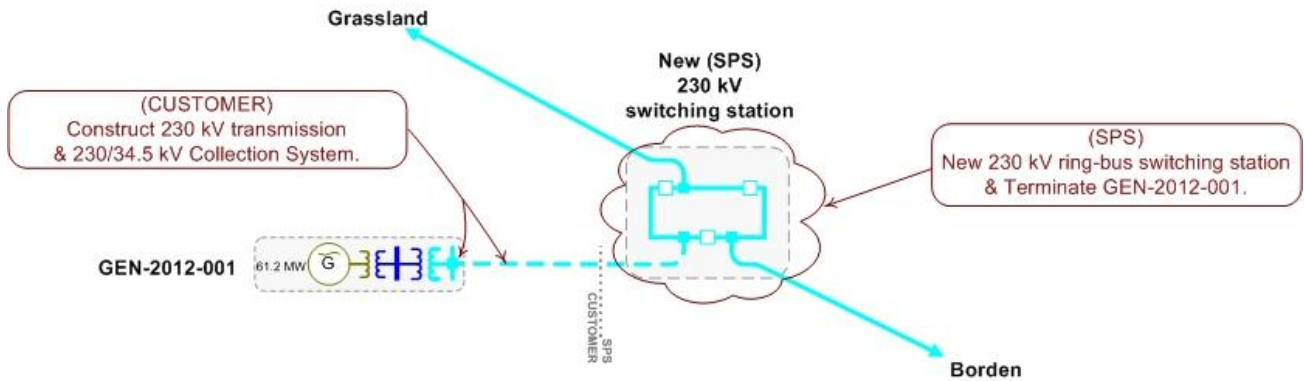
GROUP 14: S OKLAHOMA AREA

Request	Capacity	Area	Proposed Point of Interconnection
GEN-2008-046	200.0	OKGE	Sunnyside 345kV
GEN-2011-040	111.0	OKGE	Tap Ratliff - Pooleville 138kV
GEN-2011-050	109.8	AEPW	Tap Rush Springs - Marlow 138kV
PRIOR QUEUED SUBTOTAL	420.8		
GEN-2012-004	41.4	OKGE	Tap Ratliff - Pooleville 138kV
CURRENT CLUSTER SUBTOTAL	41.4		
AREA TOTAL	462.2		

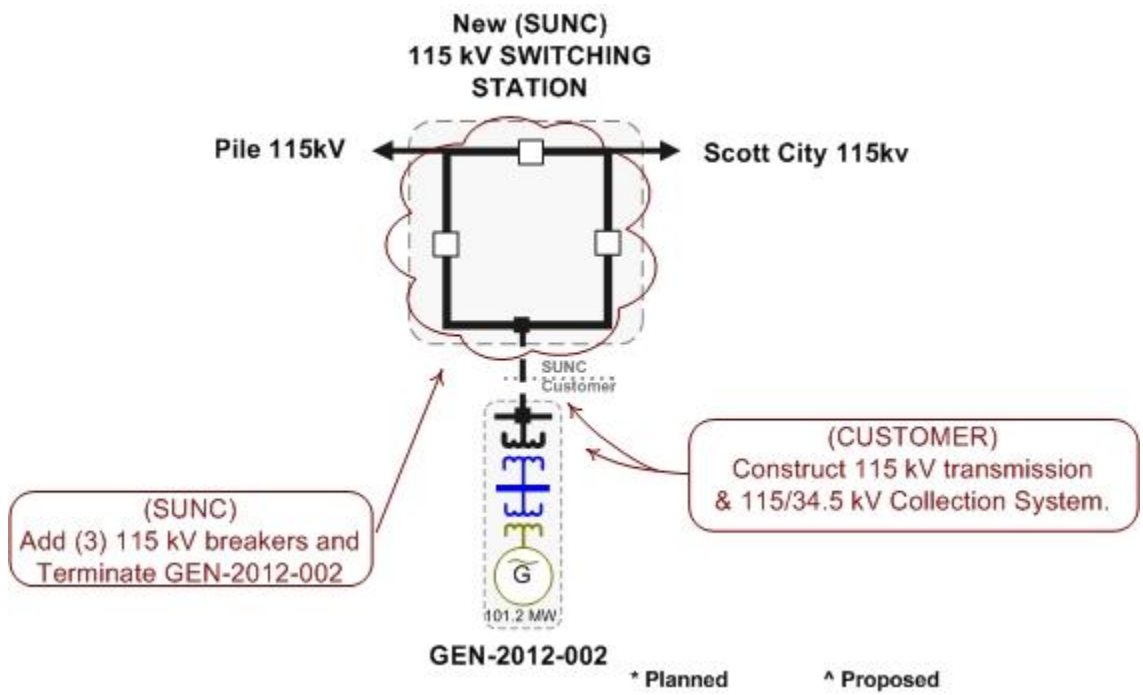
CLUSTER TOTAL (CURRENT STUDY)	616.3	MW
PQ TOTAL (PRIOR QUEUED)	26,323.8	MW
CLUSTER TOTAL (INCLUDING PRIOR QUEUED)	26,940.1	MW

D: Proposed Point of Interconnection One line Diagrams

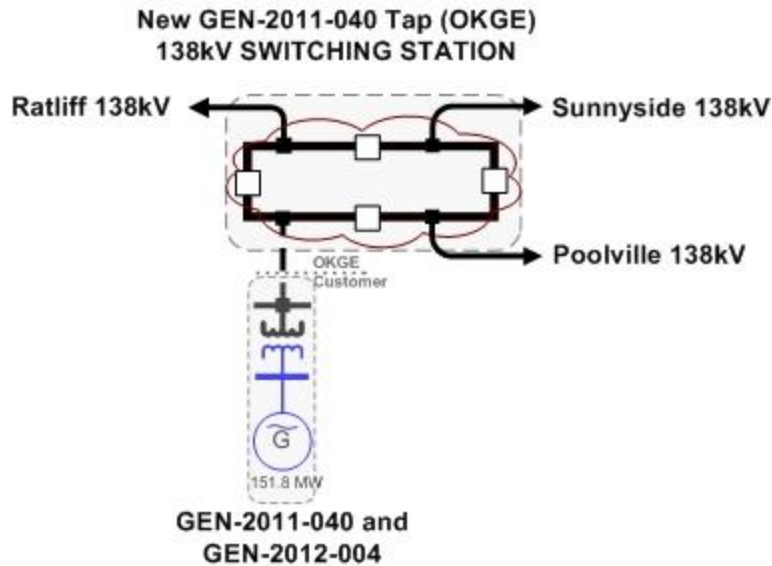
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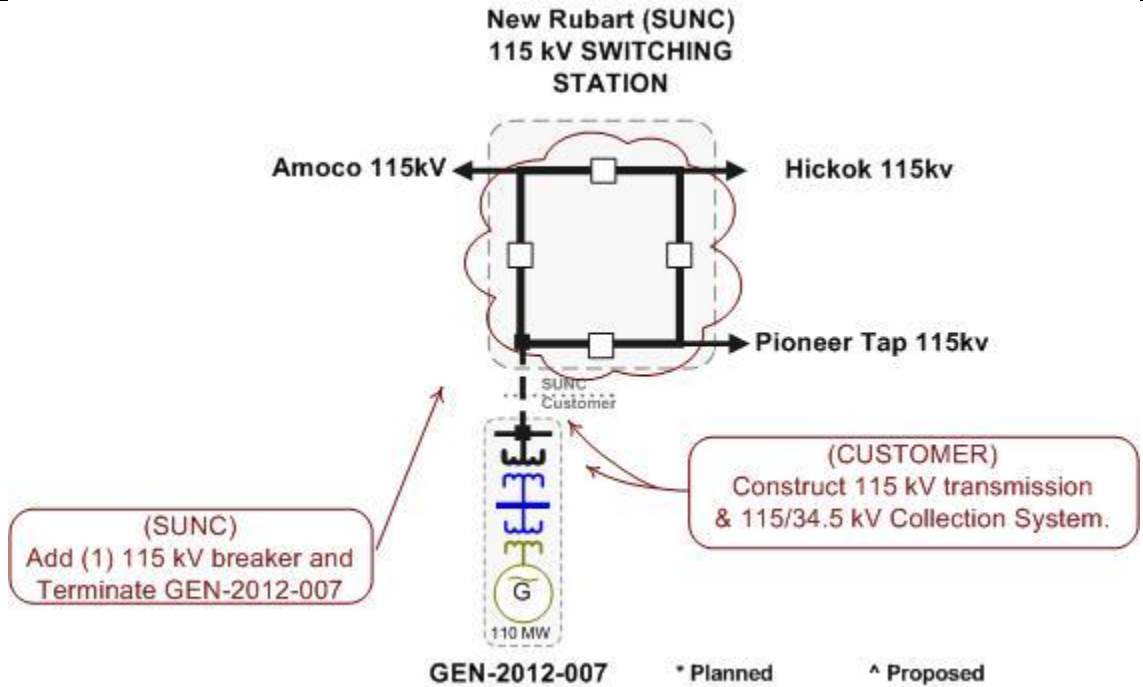
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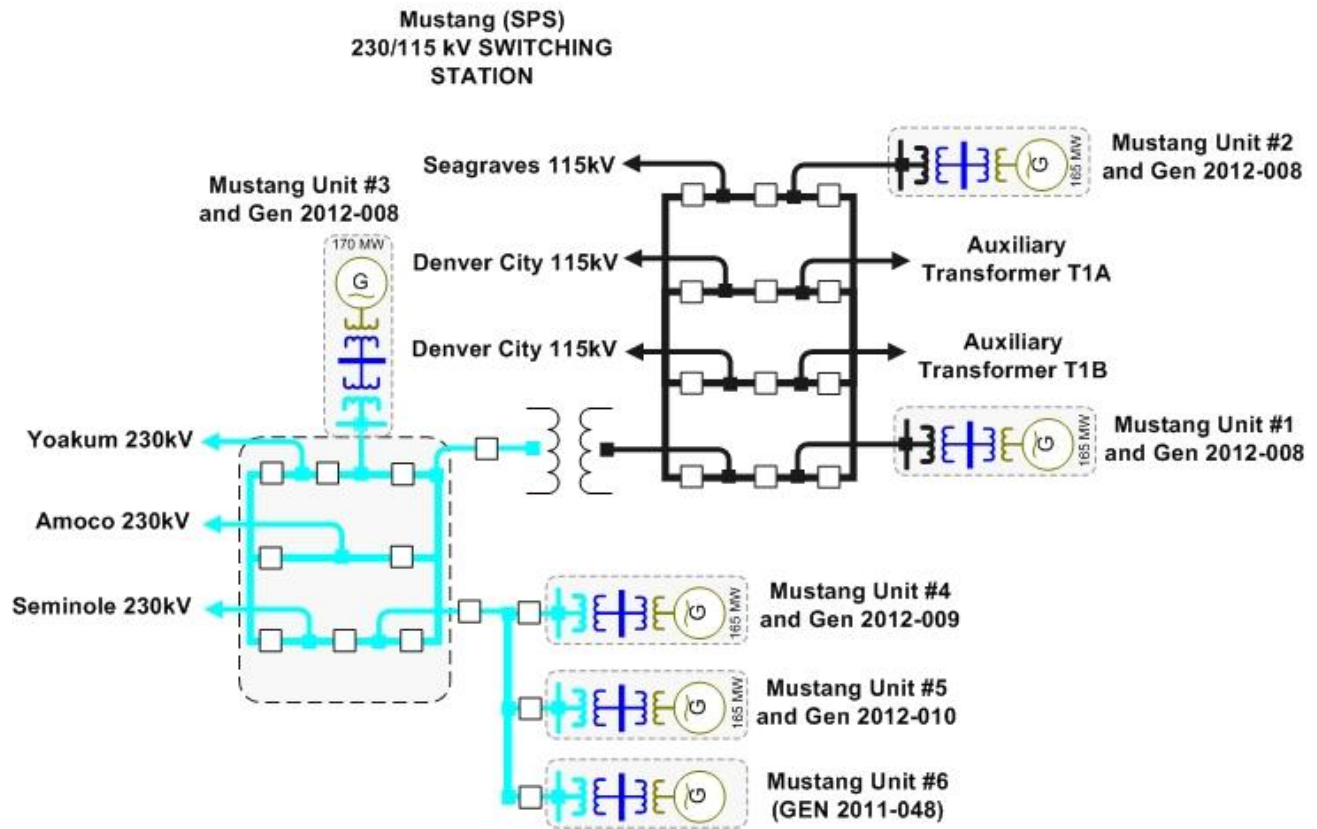
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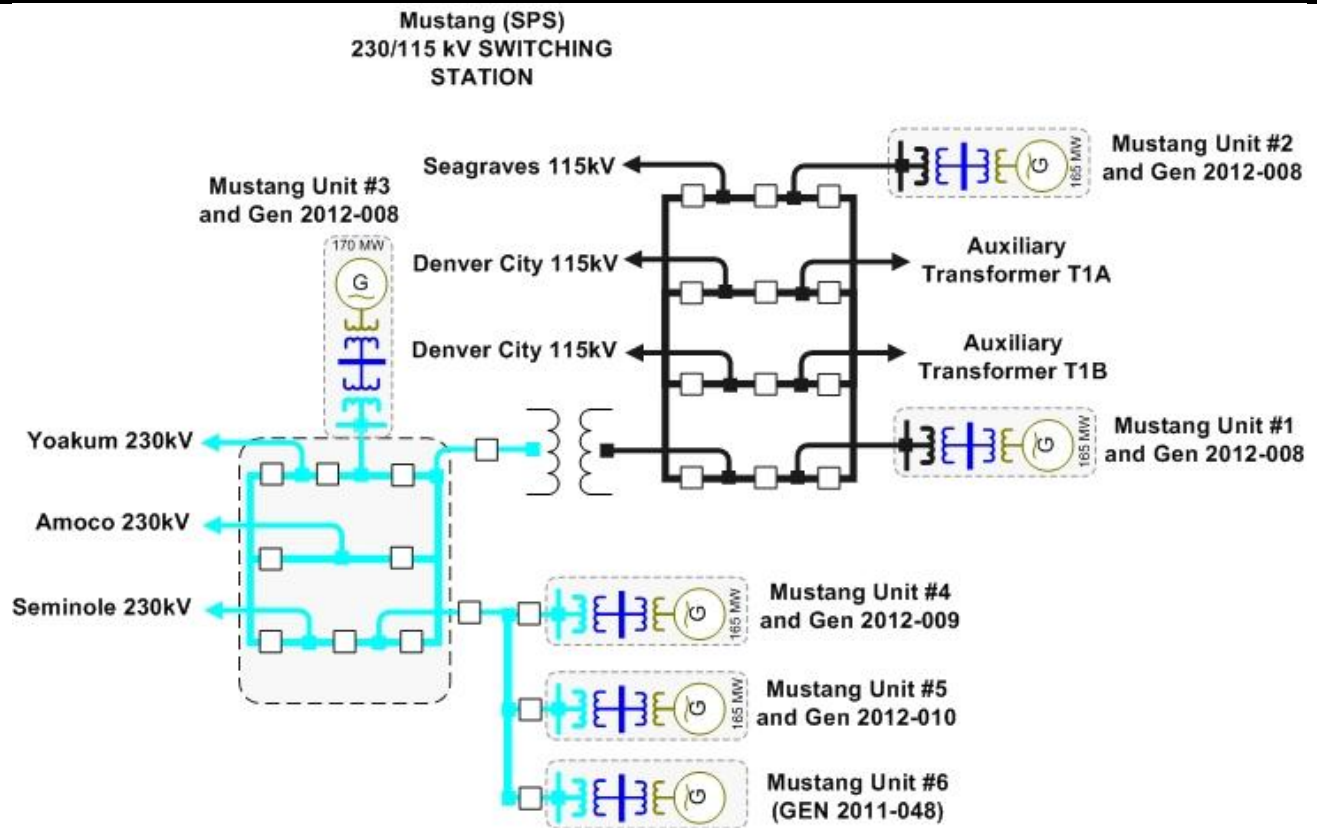
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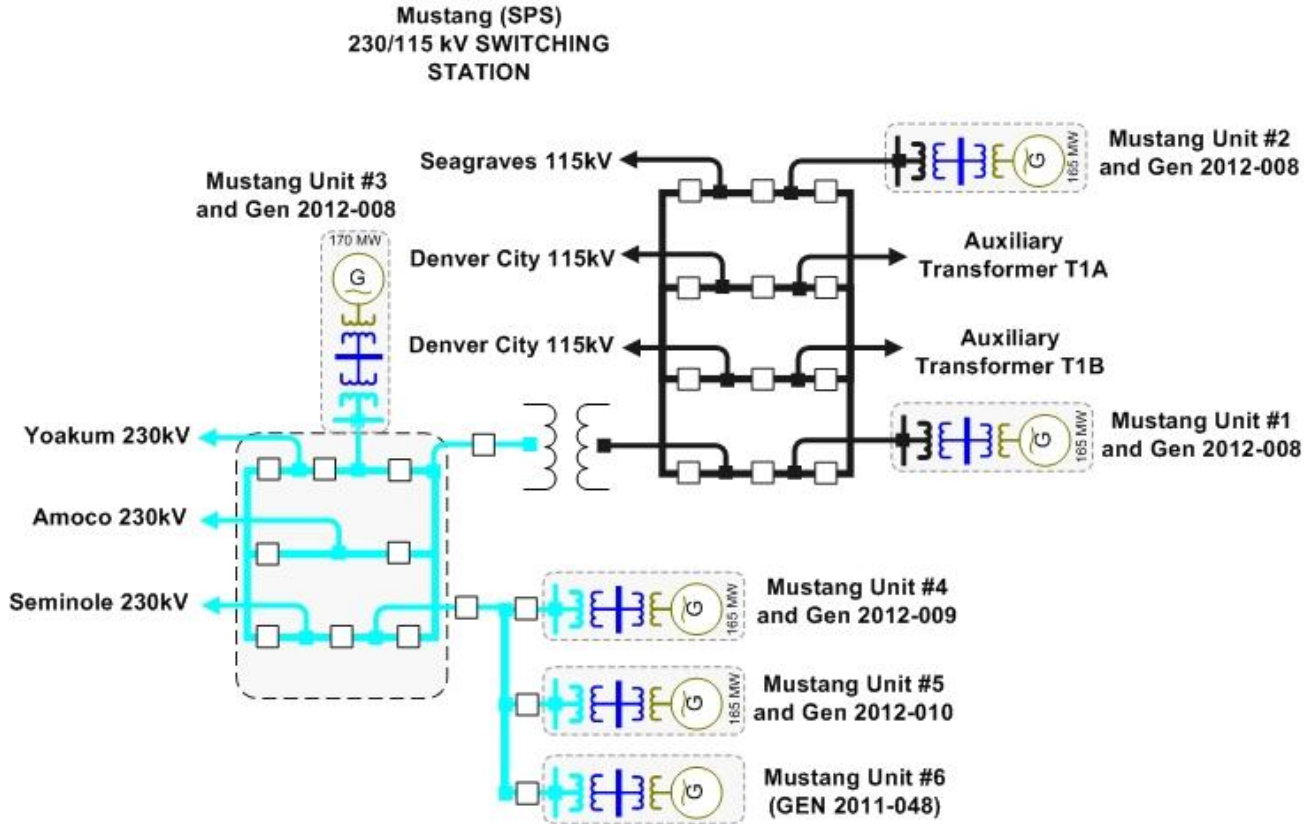
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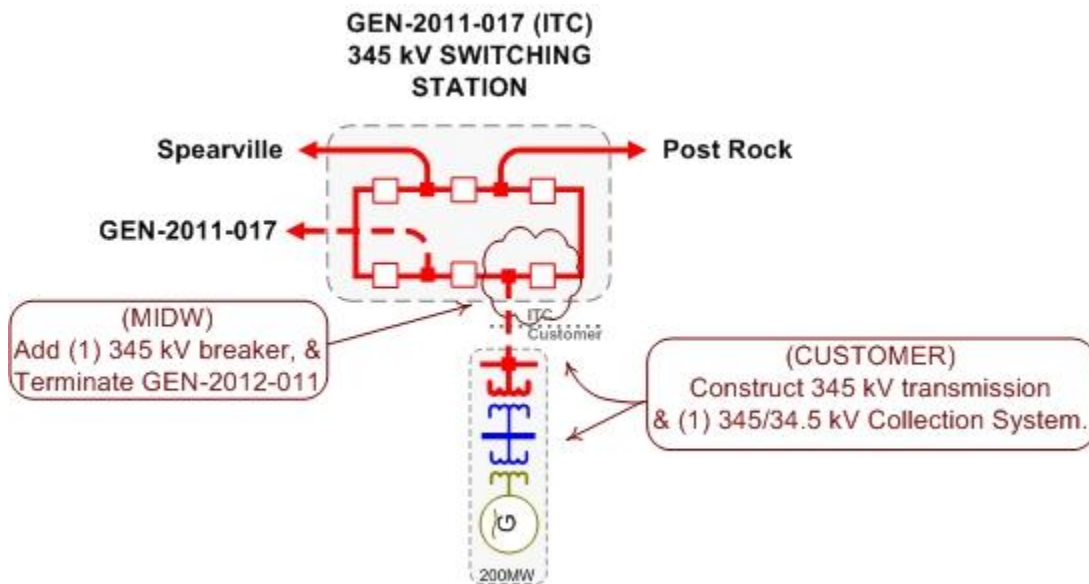
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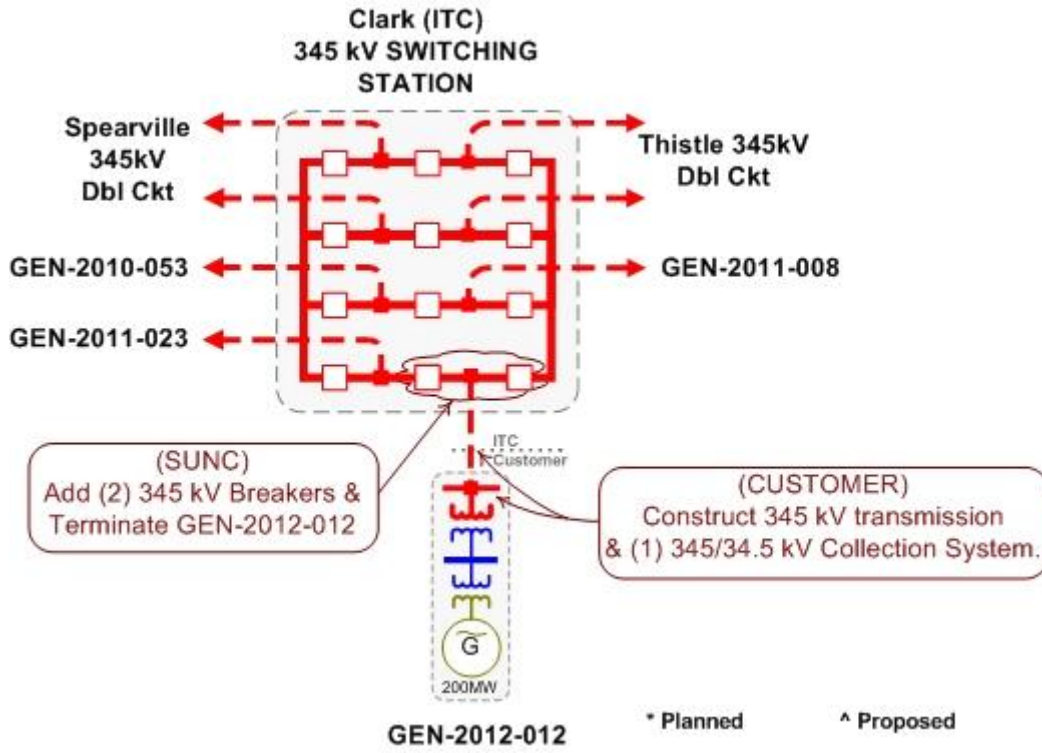
GEN-2012-010



GEN-2012-011



GEN-2012-012



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

Important Note:

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

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

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

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

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

Appendix E. Cost Allocation Per Request

(Including Previously Allocated Network Upgrades*)

Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
ASGI-2012-006			
ASGI-2012-006 Interconnection Costs See Online Diagram.	Current Study	\$1,000,000.00	\$1,000,000.00
Holcomb 345/115/13.8kV Transformer Build second 345/115/13.8kV Transformer	Current Study	\$1,721,099.82	\$15,000,000.00
Beaver County - Buckner 345kV CKT 1 Build approximately 90 miles of 345kV from Beaver County - Gray County @ 3000 amps	Previously Allocated		\$170,209,050.00
Beaver County - Woodward 345kV CKT 1 Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$226,040,727.00
Beaver County 345kV Expansion Beaver County Expansion: Tap & Tie in Hitchland - Woodward 345kV CKT 2	Previously Allocated		\$3,500,000.00
Clark - Thistle 345KV Dbl CKT Priority Project: Spearville - Clark - Thistle Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$291,088,130.00
Finney Switching Station - Holcomb 345kV CKT 2 Per GEN-2006-049 Facility Study	Previously Allocated		\$10,507,445.00
Fort Dodge - North Fort Dodge 115kV CKT 2 Construct approximately 1 mile of new 115kV for 2nd circuit	Previously Allocated		\$6,113,000.00
Hitchland - Beaver County 345kV CKT 1 Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$226,040,727.00
Hitchland 345/230kV Autotransformer CKT 2 Priority Project: Hitchland 345/230kV Autotransformer CKT 2 (Total Project E&C Cost Shown).	Previously Allocated		\$8,883,760.00
Matthewson - Cimarron 345kV CKT 2 Build second 345kV circuit from Matthewson - Cimarron @ 3000 amps	Previously Allocated		\$42,903,753.00
Mullergren - Reno 345kV Dbl CKT Build approximately 92 miles of new Dbl 345kV circuit from Mullergren - Reno @ 3000 amps	Previously Allocated		\$210,887,465.33
North Fort Dodge - Spearville 115kV CKT 2 DIS-2009-001-1 upgrade.	Previously Allocated		\$9,660,000.00
Spearville - Clark 345KV Dbl CKT Priority Project: Spearville - Clark - Thistle Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$291,088,130.00

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

Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
Spearville - Mullergren 345kV Dbl CKT Build approximately 85 miles of new Dbl 345kV circuit from Spearville - Mullergren @ 3000 amps	Previously Allocated		\$196,323,921.67
Spearville 345/115/13.8kV Transformer CKT 1 New 345/115kV Spearville Transformer (Partial Cost allocation)	Previously Allocated		\$3,745,000.00
Tatonga - Matthewson 345kV CKT 2 Build second 345kV circuit from Tatonga - Matthewson @ 3000 amps	Previously Allocated		\$104,260,473.00
Thistle - Wichita 345KV Dbl CKT Priority Project: Thistle - Wichita Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$166,598,000.00
Woodward XFMR 345/138/13.8kV CKT 2 Balanced Portfolio: Woodward 345/138kV Transformer CKT 2 & 50 MVAR Reactor (Total Project E&C Cost Shown).	Previously Allocated		\$15,000,000.00
	Current Study Total	\$2,721,099.82	

GEN-2012-001

GEN-2012-001 Interconnection Costs See Online Diagram.	Current Study	\$7,316,677.00	\$7,316,677.00
Allen - Lubbock South 115kV CKT 1 NRIS only required upgrade: Rebuild approximately 6 miles of 115kV from Allen - Lubbock South	Previously Allocated		\$2,879,262.00
Beaver County - Woodward 345kV CKT 1 Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$226,040,727.00
Beaver County 345kV Expansion Beaver County Expansion: Tap & Tie in Hitchland - Woodward 345kV CKT 2	Previously Allocated		\$3,500,000.00
Border - Tuco Interchange 345KV CKT 1 Balanced Portfolio: Tuco - Woodward 345kV CKT 1 (Total Project E&C Cost Shown)	Previously Allocated		\$249,247,072.00
Border - Woodward 345KV CKT 1 Balanced Portfolio: Tuco - Woodward 345kV CKT 1 (Total Project E&C Cost Shown)	Previously Allocated		\$249,247,072.00
Grassland 230/115kV CKT 1 NRIS only required upgrade: Per 2013 NT replace transformer	Previously Allocated		\$4,473,000.00
Hitchland - Beaver County 345kV CKT 1 Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$226,040,727.00
Hobbs 230kV Expansion NRIS only required upgrade: Per NTC 200166 Move lines from Lea County to Hobbs 230/115k and build new transformer	Previously Allocated		\$8,270,297.00
Jones - Lubbock South 230kV CKT 2 Replace Line Traps	Previously Allocated		\$356,250.00

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

Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
Lubbock South 230/115kV Autotransformer CKT 2 NRIS only required upgrade: Install 2nd 230/115/13.2kV Autotransformer	Previously Allocated		\$4,058,031.00
Power System Stabilizers (PSS) Install Power System Stabilizers @ Tolk(Units: 1,2) and Jones (Units: 1,2,3,4)	Previously Allocated		\$300,000.00
Thistle - Flat Ridge 138kV CKT 1 Priority Project: Thistle - Flat Ridge 138kV CKT 1 (Total Project E&C Cost Shown.)	Previously Allocated		\$4,727,306.00
Thistle - Wichita 345KV Dbl CKT Priority Project: Thistle - Wichita Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$166,598,000.00
Thistle - Woodward 345KV Dbl CKT Priority Project: Thistle - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$207,782,000.00
Thistle 345/138KV Transformer CKT 1 Priority Project: Thistle 345/138kV Transformer CKT 1 (Total Project E&C Cost Shown.)	Previously Allocated		\$4,379,000.00
TUCO Interchange 345/230/13.2KV Autotransformer CKT 2 Balanced Portfolio: TUCO 345/230 kV Transformer CKT 2 (Total Project E&C Cost Shown)	Previously Allocated		\$14,900,907.00
Woodward XFMR 345/138/13.8kV CKT 2 Balanced Portfolio: Woodward 345/138kV Transformer CKT 2 & 50 MVAR Reactor (Total Project E&C Cost Shown).	Previously Allocated		\$15,000,000.00
	Current Study Total		\$7,316,677.00

GEN-2012-002

GEN-2012-002 Interconnection Costs See Online Diagram.	Current Study	\$3,616,410.00	\$3,616,410.00
Holcomb 345/115/13.8kV Transformer Build second 345/115/13.8kV Transformer	Current Study	\$4,185,853.35	\$15,000,000.00
Beaver County - Buckner 345kV CKT 1 Build approximately 90 miles of 345kV from Beaver County - Gray County @ 3000 amps	Previously Allocated		\$170,209,050.00
Beaver County - Woodward 345kV CKT 1 Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$226,040,727.00
Beaver County 345kV Expansion Beaver County Expansion: Tap & Tie in Hitchland - Woodward 345kV CKT 2	Previously Allocated		\$3,500,000.00
Clark - Thistle 345KV Dbl CKT Priority Project: Spearville - Clark - Thistle Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$291,088,130.00
Finney Switching Station - Holcomb 345kV CKT 2 Per GEN-2006-049 Facility Study	Previously Allocated		\$10,507,445.00

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

Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
Hitchland - Beaver County 345kV CKT 1 Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$226,040,727.00
Hitchland 345/230kV Autotransformer CKT 2 Priority Project: Hitchland 345/230kV Autotransformer CKT 2 (Total Project E&C Cost Shown).	Previously Allocated		\$8,883,760.00
Mullergren - Reno 345kV Dbl CKT Build approximately 92 miles of new Dbl 345kV circuit from Mullergren - Reno @ 3000 amps	Previously Allocated		\$210,887,465.33
Spearville - Clark 345KV Dbl CKT Priority Project: Spearville - Clark - Thistle Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$291,088,130.00
Spearville - Mullergren 345kV Dbl CKT Build approximately 85 miles of new Dbl 345kV circuit from Spearville - Mullergren @ 3000 amps	Previously Allocated		\$196,323,921.67
Thistle - Wichita 345KV Dbl CKT Priority Project: Thistle - Wichita Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$166,598,000.00
	Current Study Total	\$7,802,263.35	

GEN-2012-004

GEN-2012-004 Interconnection Costs See Oonline Diagram.	Current Study	\$0.00	\$0.00
	Current Study Total	\$0.00	

GEN-2012-007

GEN-2012-007 Interconnection Costs See Oonline Diagram.	Current Study	\$12,299,954.00	\$12,299,954.00
Holcomb 345/115/13.8kV Transformer Build second 345/115/13.8kV Transformer	Current Study	\$9,093,046.83	\$15,000,000.00
Beaver County - Buckner 345kV CKT 1 Build approximately 90 miles of 345kV from Beaver County - Gray County @ 3000 amps	Previously Allocated		\$170,209,050.00
Beaver County - Woodward 345kV CKT 1 Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$226,040,727.00
Beaver County 345kV Expansion Beaver County Expansion: Tap & Tie in Hitchland - Woodward 345kV CKT 2	Previously Allocated		\$3,500,000.00
Clark - Thistle 345KV Dbl CKT Priority Project: Spearville - Clark - Thistle Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$291,088,130.00
Finney Switching Station - Holcomb 345kV CKT 2 Per GEN-2006-049 Facility Study	Previously Allocated		\$10,507,445.00

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

Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
Fort Dodge - North Fort Dodge 115kV CKT 2 Construct approximately 1 mile of new 115kV for 2nd circuit	Previously Allocated		\$6,113,000.00
Hitchland - Beaver County 345kV CKT 1 Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$226,040,727.00
Hitchland 345/230kV Autotransformer CKT 2 Priority Project: Hitchland 345/230kV Autotransformer CKT 2 (Total Project E&C Cost Shown).	Previously Allocated		\$8,883,760.00
Matthewson - Cimarron 345kV CKT 2 Build second 345kV circuit from Matthewson - Cimarron @ 3000 amps	Previously Allocated		\$42,903,753.00
Mullergren - Reno 345kV Dbl CKT Build approximately 92 miles of new Dbl 345kV circuit from Mullergren - Reno @ 3000 amps	Previously Allocated		\$210,887,465.33
North Fort Dodge - Spearville 115kV CKT 2 DIS-2009-001-1 upgrade.	Previously Allocated		\$9,660,000.00
Spearville - Clark 345KV Dbl CKT Priority Project: Spearville - Clark - Thistle Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$291,088,130.00
Spearville - Mullergren 345kV Dbl CKT Build approximately 85 miles of new Dbl 345kV circuit from Spearville - Mullergren @ 3000 amps	Previously Allocated		\$196,323,921.67
Spearville 345/115/13.8kV Transformer CKT 1 New 345/115kV Spearville Transformer (Partial Cost allocation)	Previously Allocated		\$3,745,000.00
Tatonga - Matthewson 345kV CKT 2 Build second 345kV circuit from Tatonga - Matthewson @ 3000 amps	Previously Allocated		\$104,260,473.00
Thistle - Wichita 345KV Dbl CKT Priority Project: Thistle - Wichita Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$166,598,000.00
Woodward XFMR 345/138/13.8kV CKT 2 Balanced Portfolio: Woodward 345/138kV Transformer CKT 2 & 50 MVAR Reactor (Total Project E&C Cost Shown).	Previously Allocated		\$15,000,000.00
	Current Study Total	\$21,393,000.83	

GEN-2012-008

GEN-2012-008 Interconnection Costs See Online Diagram.	Current Study	\$0.00	\$0.00
Mustang - Denver North CKT 1 Reconductor approximately 3 miles of 115 kV	Current Study	\$2,503,419.20	\$3,000,000.00
Mustang - Denver South CKT 1 Reconductor approximately 3 miles of 115 kV	Current Study	\$2,521,519.91	\$3,000,000.00

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

Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
Amoco Wasson - Oxy Tap 230kV CKT 1 Replace line traps at both terminals	Previously Allocated		\$200,000.00
Beaver County - Woodward 345kV CKT 1 Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$226,040,727.00
Beaver County 345kV Expansion Beaver County Expansion: Tap & Tie in Hitchland - Woodward 345kV CKT 2	Previously Allocated		\$3,500,000.00
Border - Tuco Interchange 345KV CKT 1 Balanced Portfolio: Tuco - Woodward 345kV CKT 1 (Total Project E&C Cost Shown)	Previously Allocated		\$249,247,072.00
Border - Woodward 345KV CKT 1 Balanced Portfolio: Tuco - Woodward 345kV CKT 1 (Total Project E&C Cost Shown)	Previously Allocated		\$249,247,072.00
Finney Switching Station - Holcomb 345kV CKT 2 Per GEN-2006-049 Facility Study	Previously Allocated		\$10,507,445.00
Hitchland - Beaver County 345kV CKT 1 Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$226,040,727.00
Mustang - Yoakum 230kV CKT 1 Replace line traps at both terminals	Previously Allocated		\$200,000.00
Nichols - Harrington Mid 230kV CKT 1 Per GEN-2008-051 LOIS: Rebuild approximately 1 mile of 230kV @ 1825 amps	Previously Allocated		\$869,251.00
Nichols - Harrington West 230kV CKT 1 Per GEN-2008-051 LOIS: Rebuild approximately 1 mile of 230kV @ 1825 amps	Previously Allocated		\$869,251.00
Oxy Tap - Yoakum 230kV CKT 1 Replace line traps at both terminals	Previously Allocated		\$200,000.00
Power System Stabilizers (PSS) Install Power System Stabilizers @ Tolc(Units: 1,2) and Jones (Units: 1,2,3,4)	Previously Allocated		\$300,000.00
Thistle - Flat Ridge 138kV CKT 1 Priority Project: Thistle - Flat Ridge 138kV CKT 1 (Total Project E&C Cost Shown.)	Previously Allocated		\$4,727,306.00
Thistle - Wichita 345KV Dbl CKT Priority Project: Thistle - Wichita Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$166,598,000.00
Thistle - Woodward 345KV Dbl CKT Priority Project: Thistle - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$207,782,000.00
Thistle 345/138KV Transformer CKT 1 Priority Project: Thistle 345/138KV Transformer CKT 1 (Total Project E&C Cost Shown.)	Previously Allocated		\$4,379,000.00

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

Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
TUCO Interchange 345/230/13.2KV Autotransformer CKT 2 Balanced Portfolio: TUCO 345/230 kV Transformer CKT 2 (Total Project E&C Cost Shown)	Previously Allocated		\$14,900,907.00
Woodward XFMR 345/138/13.8kV CKT 2 Balanced Portfolio: Woodward 345/138kV Transformer CKT 2 & 50 MVAR Reactor (Total Project E&C Cost Shown).	Previously Allocated		\$15,000,000.00
	Current Study Total	\$5,024,939.11	

GEN-2012-009

GEN-2012-009 Interconnection Costs See Online Diagram.	Current Study	\$0.00	\$0.00
Mustang - Denver North CKT 1 Reconductor approximately 3 miles of 115 kV	Current Study	\$248,290.40	\$3,000,000.00
Mustang - Denver South CKT 1 Reconductor approximately 3 miles of 115 kV	Current Study	\$239,240.04	\$3,000,000.00
Amoco Wasson - Oxy Tap 230kV CKT 1 Replace line traps at both terminals	Previously Allocated		\$200,000.00
Beaver County - Woodward 345kV CKT 1 Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$226,040,727.00
Beaver County 345kV Expansion Beaver County Expansion: Tap & Tie in Hitchland - Woodward 345kV CKT 2	Previously Allocated		\$3,500,000.00
Border - Tuco Interchange 345KV CKT 1 Balanced Portfolio: Tuco - Woodward 345kV CKT 1 (Total Project E&C Cost Shown)	Previously Allocated		\$249,247,072.00
Border - Woodward 345KV CKT 1 Balanced Portfolio: Tuco - Woodward 345kV CKT 1 (Total Project E&C Cost Shown)	Previously Allocated		\$249,247,072.00
Finney Switching Station - Holcomb 345kV CKT 2 Per GEN-2006-049 Facility Study	Previously Allocated		\$10,507,445.00
Hitchland - Beaver County 345kV CKT 1 Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$226,040,727.00
Mustang - Yoakum 230kV CKT 1 Replace line traps at both terminals	Previously Allocated		\$200,000.00
Nichols - Harrington Mid 230kV CKT 1 Per GEN-2008-051 LOIS: Rebuild approximately 1 mile of 230kV @ 1825 amps	Previously Allocated		\$869,251.00
Nichols - Harrington West 230kV CKT 1 Per GEN-2008-051 LOIS: Rebuild approximately 1 mile of 230kV @ 1825 amps	Previously Allocated		\$869,251.00

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

Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
Oxy Tap - Yoakum 230kV CKT 1 Replace line traps at both terminals	Previously Allocated		\$200,000.00
Power System Stabilizers (PSS) Install Power System Stabilizers @ Tolk(Units: 1,2) and Jones (Units: 1,2,3,4)	Previously Allocated		\$300,000.00
Thistle - Flat Ridge 138kV CKT 1 Priority Project: Thistle - Flat Ridge 138kV CKT 1 (Total Project E&C Cost Shown.)	Previously Allocated		\$4,727,306.00
Thistle - Wichita 345KV Dbl CKT Priority Project: Thistle - Wichita Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$166,598,000.00
Thistle - Woodward 345KV Dbl CKT Priority Project: Thistle - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$207,782,000.00
Thistle 345/138KV Transformer CKT 1 Priority Project: Thistle 345/138kV Transformer CKT 1 (Total Project E&C Cost Shown.)	Previously Allocated		\$4,379,000.00
TUCO Interchange 345/230/13.2KV Autotransformer CKT 2 Balanced Portfolio: TUCO 345/230 kV Transformer CKT 2 (Total Project E&C Cost Shown)	Previously Allocated		\$14,900,907.00
Woodward XFMR 345/138/13.8kV CKT 2 Balanced Portfolio: Woodward 345/138kV Transformer CKT 2 & 50 MVAR Reactor (Total Project E&C Cost Shown).	Previously Allocated		\$15,000,000.00
	Current Study Total		\$487,530.44

GEN-2012-010

GEN-2012-010 Interconnection Costs See Online Diagram.	Current Study	\$0.00	\$0.00
Mustang - Denver North CKT 1 Reconductor approximately 3 miles of 115 kV	Current Study	\$248,290.40	\$3,000,000.00
Mustang - Denver South CKT 1 Reconductor approximately 3 miles of 115 kV	Current Study	\$239,240.04	\$3,000,000.00
Amoco Wasson - Oxy Tap 230kV CKT 1 Replace line traps at both terminals	Previously Allocated		\$200,000.00
Beaver County - Woodward 345kV CKT 1 Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$226,040,727.00
Beaver County 345kV Expansion Beaver County Expansion: Tap & Tie in Hitchland - Woodward 345kV CKT 2	Previously Allocated		\$3,500,000.00
Border - Tuco Interchange 345KV CKT 1 Balanced Portfolio: Tuco - Woodward 345kV CKT 1 (Total Project E&C Cost Shown)	Previously Allocated		\$249,247,072.00

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

Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
Border - Woodward 345KV CKT 1 Balanced Portfolio: Tuco - Woodward 345kV CKT 1 (Total Project E&C Cost Shown)	Previously Allocated		\$249,247,072.00
Finney Switching Station - Holcomb 345kV CKT 2 Per GEN-2006-049 Facility Study	Previously Allocated		\$10,507,445.00
Hitchland - Beaver County 345kV CKT 1 Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$226,040,727.00
Mustang - Yoakum 230kV CKT 1 Replace line traps at both terminals	Previously Allocated		\$200,000.00
Nichols - Harrington Mid 230kV CKT 1 Per GEN-2008-051 LOIS: Rebuild approximately 1 mile of 230kV @ 1825 amps	Previously Allocated		\$869,251.00
Nichols - Harrington West 230kV CKT 1 Per GEN-2008-051 LOIS: Rebuild approximately 1 mile of 230kV @ 1825 amps	Previously Allocated		\$869,251.00
Oxy Tap - Yoakum 230kV CKT 1 Replace line traps at both terminals	Previously Allocated		\$200,000.00
Power System Stabilizers (PSS) Install Power System Stabilizers @ Tolk(Units: 1,2) and Jones (Units: 1,2,3,4)	Previously Allocated		\$300,000.00
Thistle - Flat Ridge 138kV CKT 1 Priority Project: Thistle - Flat Ridge 138kV CKT 1 (Total Project E&C Cost Shown.)	Previously Allocated		\$4,727,306.00
Thistle - Wichita 345KV Dbl CKT Priority Project: Thistle - Wichita Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$166,598,000.00
Thistle - Woodward 345KV Dbl CKT Priority Project: Thistle - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$207,782,000.00
Thistle 345/138KV Transformer CKT 1 Priority Project: Thistle 345/138kV Transformer CKT 1 (Total Project E&C Cost Shown.)	Previously Allocated		\$4,379,000.00
TUCO Interchange 345/230/13.2KV Autotransformer CKT 2 Balanced Portfolio: TUCO 345/230 kV Transformer CKT 2 (Total Project E&C Cost Shown)	Previously Allocated		\$14,900,907.00
Woodward XFMR 345/138/13.8kV CKT 2 Balanced Portfolio: Woodward 345/138kV Transformer CKT 2 & 50 MVAR Reactor (Total Project E&C Cost Shown).	Previously Allocated		\$15,000,000.00
	Current Study Total		\$487,530.44

GEN-2012-011

GEN-2012-011 Interconnection Costs See Online Diagram.	Current Study	\$5,000,000.00	\$5,000,000.00
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* Withdrawal of higher queued projects will cause a restudy and may result in higher costs

Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
Beaver County - Buckner 345kV CKT 1 Build approximately 90 miles of 345kV from Beaver County - Gray County @ 3000 amps	Previously Allocated		\$170,209,050.00
Beaver County - Woodward 345kV CKT 1 Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$226,040,727.00
Beaver County 345kV Expansion Beaver County Expansion: Tap & Tie in Hitchland - Woodward 345kV CKT 2	Previously Allocated		\$3,500,000.00
Border - Tuco Interchange 345KV CKT 1 Balanced Portfolio: Tuco - Woodward 345kV CKT 1 (Total Project E&C Cost Shown)	Previously Allocated		\$249,247,072.00
Border - Woodward 345KV CKT 1 Balanced Portfolio: Tuco - Woodward 345kV CKT 1 (Total Project E&C Cost Shown)	Previously Allocated		\$249,247,072.00
Clark - Thistle 345KV Dbl CKT Priority Project: Spearville - Clark - Thistle Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$291,088,130.00
Hitchland 345/230kV Autotransformer CKT 2 Priority Project: Hitchland 345/230kV Autotransformer CKT 2 (Total Project E&C Cost Shown).	Previously Allocated		\$8,883,760.00
Matthewson - Cimarron 345kV CKT 2 Build second 345kV circuit from Matthewson - Cimarron @ 3000 amps	Previously Allocated		\$42,903,753.00
Mullergren - Reno 345kV Dbl CKT Build approximately 92 miles of new Dbl 345kV circuit from Mullergren - Reno @ 3000 amps	Previously Allocated		\$210,887,465.33
Post Rock 345/230/13.8kV Autotransformer CKT 2 DISIS-2010-001 Restudy	Previously Allocated		\$13,749,527.00
Spearville - Clark 345KV Dbl CKT Priority Project: Spearville - Clark - Thistle Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$291,088,130.00
Spearville - Mullergren 345kV Dbl CKT Build approximately 85 miles of new Dbl 345kV circuit from Spearville - Mullergren @ 3000 amps	Previously Allocated		\$196,323,921.67
Spearville 345/115/13.8kV Transformer CKT 1 New 345/115kV Spearville Transformer (Partial Cost allocation)	Previously Allocated		\$3,745,000.00
Tatonga - Matthewson 345kV CKT 2 Build second 345kV circuit from Tatonga - Matthewson @ 3000 amps	Previously Allocated		\$104,260,473.00
Thistle - Wichita 345KV Dbl CKT Priority Project: Thistle - Wichita Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$166,598,000.00
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

Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
TUCO Interchange 345/230/13.2KV Autotransformer CKT 2 Balanced Portfolio: TUCO 345/230 kV Transformer CKT 2 (Total Project E&C Cost Shown)	Previously Allocated		\$14,900,907.00
Woodward XFMR 345/138/13.8kV CKT 2 Balanced Portfolio: Woodward 345/138kV Transformer CKT 2 & 50 MVAR Reactor (Total Project E&C Cost Shown).	Previously Allocated		\$15,000,000.00
	Current Study Total	\$5,000,000.00	
TOTAL CURRENT STUDY COSTS:			\$50,233,040.99

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

F: Cost Allocation per Proposed Study Network Upgrade

Important Note:

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

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

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

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

Appendix F. Cost Allocation by Upgrade

ASGI-2012-006 Interconnection Costs		\$1,000,000.00
See Online Diagram.		
	ASGI-2012-006	\$1,000,000.00
	Total Allocated Costs	\$1,000,000.00
GEN-2012-001 Interconnection Costs		\$7,316,677.00
See Online Diagram.		
	GEN-2012-001	\$7,316,677.00
	Total Allocated Costs	\$7,316,677.00
GEN-2012-002 Interconnection Costs		\$3,616,410.00
See Online Diagram.		
	GEN-2012-002	\$3,616,410.00
	Total Allocated Costs	\$3,616,410.00
GEN-2012-004 Interconnection Costs		\$0.00
See Online Diagram.		
	GEN-2012-004	\$0.00
	Total Allocated Costs	\$0.00
GEN-2012-007 Interconnection Costs		\$12,299,954.00
See Online Diagram.		
	GEN-2012-007	\$12,299,954.00
	Total Allocated Costs	\$12,299,954.00
GEN-2012-008 Interconnection Costs		\$0.00
See Online Diagram.		
	GEN-2012-008	\$0.00
	Total Allocated Costs	\$0.00
GEN-2012-009 Interconnection Costs		\$0.00
See Online Diagram.		
	GEN-2012-009	\$0.00
	Total Allocated Costs	\$0.00
GEN-2012-010 Interconnection Costs		\$0.00
See Online Diagram.		
	GEN-2012-010	\$0.00

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

	Total Allocated Costs	\$0.00
<hr/>		
GEN-2012-011 Interconnection Costs		\$5,000,000.00
See Oneline Diagram.		
	GEN-2012-011	\$5,000,000.00
	Total Allocated Costs	\$5,000,000.00
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Holcomb 345/115/13.8kV Transformer		\$15,000,000.00
Build second 345/115/13.8kV Transformer		
	ASGI-2012-006	\$1,721,099.82
	GEN-2012-002	\$4,185,853.35
	GEN-2012-007	\$9,093,046.83
	Total Allocated Costs	\$15,000,000.00
<hr/>		
Mustang - Denver North CKT 1		\$3,000,000.00
Reconductor approximately 3 miles of 115 kV		
	GEN-2012-008	\$2,503,419.20
	GEN-2012-009	\$248,290.40
	GEN-2012-010	\$248,290.40
	Total Allocated Costs	\$3,000,000.00
<hr/>		
Mustang - Denver South CKT 1		\$3,000,000.00
Reconductor approximately 3 miles of 115 kV		
	GEN-2012-008	\$2,521,519.91
	GEN-2012-009	\$239,240.04
	GEN-2012-010	\$239,240.04
	Total Allocated Costs	\$3,000,000.00
<hr/>		

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

G: Power Flow Analysis (Constraints For Mitigation)

See next page.

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB		TC%LOADING		CONTINGENCY
							(MVA)	TDF	(% MVA)		
FDNS	0	0	23SP	ASGI_12_006	FROM->TO	HOLCOMB (HOLCOMB) 345/115/13.8KV TRANSFORMER CKT 1	336	0.55052	101.4047	G12_002T	115.00 - SCOTT CITY 115KV CKT 1
FDNS	00ASGI_12_006	0	23SP	ASGI_12_006	FROM->TO	HOLCOMB (HOLCOMB) 345/115/13.8KV TRANSFORMER CKT 1	336	0.55052	101.4047	G12_002T	115.00 - SCOTT CITY 115KV CKT 1
FNSL-Blown up	0	0	18WP	G12_001		Non-Converged Contingency	541	0.91282	-	G12_001T	230.00 - GRASSLAND INTERCHANGE 230KV CKT 1
FNSL-Blown up	0	0	18SP	G12_001		Non-Converged Contingency	526	0.91252	-	G12_001T	230.00 - GRASSLAND INTERCHANGE 230KV CKT 1
FNSL-Blown Up	0	0	23SP	G12_001		Non-Converged Contingency	526	0.91124	-	G12_001T	230.00 - GRASSLAND INTERCHANGE 230KV CKT 1
FNSL-Blown up	0	0	13SP	G12_001		Non-Converged Contingency	526	0.89381	-	G12_001T	230.00 - GRASSLAND INTERCHANGE 230KV CKT 1
FNSL-Blown up	0	0	13WP	G12_001		Non-Converged Contingency	541	0.89294	-	G12_001T	230.00 - GRASSLAND INTERCHANGE 230KV CKT 1
FDNS	00NR	0	13SP	G12_001	FROM->TO	GRASSLAND INTERCHANGE (PENN 0105951) 230/115/13.2KV TRANSFORMER CKT 1	100	0.09097	106.2853	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	0	13SP	G12_001	FROM->TO	GRASSLAND INTERCHANGE (PENN 0105951) 230/115/13.2KV TRANSFORMER CKT 1	100	0.09097	103.5931	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	0	18SP	G12_001	FROM->TO	GRASSLAND INTERCHANGE (UPDATE_LATER) 230/115/13.2KV TRANSFORMER CKT 1	100	0.07535	112.1181	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	0	18SP	G12_001	FROM->TO	GRASSLAND INTERCHANGE (UPDATE_LATER) 230/115/13.2KV TRANSFORMER CKT 1	100	0.07535	111.5434	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	0	13SP	G12_001	FROM->TO	HOBBS INTERCHANGE (ME C0482951) 230/115/13.2KV TRANSFORMER CKT 1	150	0.06104	123.8319	HOBBS INTERCHANGE - LEA COUNTY INTERCHANGE 230KV CKT 1	
FDNS	00NR	0	13SP	G12_001	FROM->TO	HOBBS INTERCHANGE (ME C0482951) 230/115/13.2KV TRANSFORMER CKT 1	150	0.06104	122.7204	HOBBS INTERCHANGE - LEA COUNTY INTERCHANGE 230KV CKT 1	
FDNS	06NR	0	13G	G12_001	FROM->TO	HOBBS INTERCHANGE (ME C0482951) 230/115/13.2KV TRANSFORMER CKT 1	150	0.05839	101.5014	HOBBS INTERCHANGE - LEA COUNTY INTERCHANGE 230KV CKT 1	
FDNS	06NR	0	13G	G12_001	FROM->TO	HOBBS INTERCHANGE (ME C0482951) 230/115/13.2KV TRANSFORMER CKT 1	150	0.05839	101.0493	HOBBS INTERCHANGE - LEA COUNTY INTERCHANGE 230KV CKT 1	
FDNS	00NR	0	23SP	G12_001	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	290	0.05314	118.845	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1	
FDNS	00NR	0	23SP	G12_001	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	290	0.05314	109.3488	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1	
FDNS	00NR	0	23SP	G12_001	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	290	0.05196	103.909	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	0	18SP	G12_001	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.05091	123.7025	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1	
FDNS	00NR	0	18SP	G12_001	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.05091	115.1714	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1	
FDNS	00NR	0	18SP	G12_001	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.04869	108.5196	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	0	18SP	G12_001	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.04869	102.4332	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	0	13SP	G12_001	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.04433	117.5644	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1	
FDNS	00NR	0	13SP	G12_001	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.04433	111.2443	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1	
FDNS	00NR	0	13SP	G12_001	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.04138	105.6507	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	0	13SP	G12_001	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.04138	101.1819	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1	
FDNS	00NR	0	13SP	G12_001	TO->FROM	ALLEN SUB - LUBBOCK SOUTH INTERCHANGE 115KV CKT 1	160	0.05288	100.8814	CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1	
FDNS	00NR	0	23SP	G12_001	TO->FROM	ALLEN SUB - LUBBOCK SOUTH INTERCHANGE 115KV CKT 1	160	0.04495	107.9728	CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1	
FDNS	00G12_002	0	13SP	G12_002	FROM->TO	G12_002T 115.00 - SCOTT CITY 115KV CKT 1	198	0.85032	112.0077	HOLCOMB (HOLCOMB) 345/115/13.8KV TRANSFORMER CKT 1	
FDNS	00G12_002	0	13WP	G12_002	FROM->TO	G12_002T 115.00 - SCOTT CITY 115KV CKT 1	198	0.85002	104.2902	HOLCOMB (HOLCOMB) 345/115/13.8KV TRANSFORMER CKT 1	
FDNS	0	0	23SP	G12_002	FROM->TO	HOLCOMB (HOLCOMB) 345/115/13.8KV TRANSFORMER CKT 1	336	0.81824	101.4047	G12_002T 115.00 - SCOTT CITY 115KV CKT 1	
FDNS	00G12_002	0	23SP	G12_002	FROM->TO	HOLCOMB (HOLCOMB) 345/115/13.8KV TRANSFORMER CKT 1	336	0.81823	121.1041	G12_002T 115.00 - SCOTT CITY 115KV CKT 1	
FDNS	00G12_002	0	23SP	G12_002	FROM->TO	HOLCOMB (HOLCOMB) 345/115/13.8KV TRANSFORMER CKT 1	336	0.81823	110.7665	G12_002T 115.00 - SCOTT CITY 115KV CKT 1	
FDNS	00G12_002	0	18SP	G12_002	FROM->TO	G12_002T 115.00 - SCOTT CITY 115KV CKT 1	198	0.8088	105.0091	HOLCOMB (HOLCOMB) 345/115/13.8KV TRANSFORMER CKT 1	
FDNS	00G12_002	0	23SP	G12_002	FROM->TO	G12_002T 115.00 - SCOTT CITY 115KV CKT 1	198	0.80835	124.3947	HOLCOMB (HOLCOMB) 345/115/13.8KV TRANSFORMER CKT 1	
FDNS	00G12_002	0	23SP	G12_002	FROM->TO	HOLCOMB (HOLCOMB) 345/115/13.8KV TRANSFORMER CKT 1	336	0.59469	103.1935	SCOTT CITY - SETAB 115KV CKT 1	
FDNS	00G12_002	0	23SP	G12_002	FROM->TO	HOLCOMB (HOLCOMB) 345/115/13.8KV TRANSFORMER CKT 1	336	0.29026	106.2572	SP- SUNC-14	
FDNS	00G12_002	0	23SP	G12_002	FROM->TO	HOLCOMB (HOLCOMB) 345/115/13.8KV TRANSFORMER CKT 1	336	0.25834	103.3371	FLETCHER - HOLCOMB 115KV CKT 1	
FDNS	0	0	13SP	G12_007	FROM->TO	RUBART 115.00 - SANT T 3 115KV CKT 1	105	1	104.7641	5 HICCOCK - RUBART 115.00 115KV CKT 1	
FDNS	0	0	13WP	G12_007	FROM->TO	RUBART 115.00 - SANT T 3 115KV CKT 1	105	1	114.294	5 HICCOCK - RUBART 115.00 115KV CKT 1	
FDNS	0	0	18SP	G12_007	FROM->TO	RUBART 115.00 - SANT T 3 115KV CKT 1	105	1	104.7671	5 HICCOCK - RUBART 115.00 115KV CKT 1	
FDNS	0	0	18WP	G12_007	FROM->TO	RUBART 115.00 - SANT T 3 115KV CKT 1	105	1	114.286	5 HICCOCK - RUBART 115.00 115KV CKT 1	
FDNS	0	0	23SP	G12_007	FROM->TO	RUBART 115.00 - SANT T 3 115KV CKT 1	105	1	104.7651	5 HICCOCK - RUBART 115.00 115KV CKT 1	
FDNS	00G12_007	0	13SP	G12_007	FROM->TO	RUBART 115.00 - SANT T 3 115KV CKT 1	105	1	104.7641	5 HICCOCK - RUBART 115.00 115KV CKT 1	
FDNS	00G12_007	0	13WP	G12_007	FROM->TO	RUBART 115.00 - SANT T 3 115KV CKT 1	105	1	114.294	5 HICCOCK - RUBART 115.00 115KV CKT 1	
FDNS	00G12_007	0	18SP	G12_007	FROM->TO	RUBART 115.00 - SANT T 3 115KV CKT 1	105	1	104.7671	5 HICCOCK - RUBART 115.00 115KV CKT 1	
FDNS	00G12_007	0	18WP	G12_007	FROM->TO	RUBART 115.00 - SANT T 3 115KV CKT 1	105	1	114.286	5 HICCOCK - RUBART 115.00 115KV CKT 1	
FDNS	00G12_007	0	23SP	G12_007	FROM->TO	RUBART 115.00 - SANT T 3 115KV CKT 1	105	1	104.7651	5 HICCOCK - RUBART 115.00 115KV CKT 1	
FDNS	00NR	0	13SP	G12_007	FROM->TO	RUBART 115.00 - SANT T 3 115KV CKT 1	105	1	104.762	5 HICCOCK - RUBART 115.00 115KV CKT 1	
FDNS	00NR	0	13WP	G12_007	FROM->TO	RUBART 115.00 - SANT T 3 115KV CKT 1	105	1	114.2959	5 HICCOCK - RUBART 115.00 115KV CKT 1	
FDNS	00NR	0	18SP	G12_007	FROM->TO	RUBART 115.00 - SANT T 3 115KV CKT 1	105	1	104.7751	5 HICCOCK - RUBART 115.00 115KV CKT 1	
FDNS	00NR	0	18WP	G12_007	FROM->TO	RUBART 115.00 - SANT T 3 115KV CKT 1	105	1	114.2988	5 HICCOCK - RUBART 115.00 115KV CKT 1	
FDNS	0	0	23SP	G12_007	FROM->TO	HOLCOMB (HOLCOMB) 345/115/13.8KV TRANSFORMER CKT 1	336	0.61039	101.4047	G12_002T 115.00 - SCOTT CITY 115KV CKT 1	
FDNS	00G12_007	0	23SP	G12_007	FROM->TO	HOLCOMB (HOLCOMB) 345/115/13.8KV TRANSFORMER CKT 1	336	0.61039	101.4047	G12_002T 115.00 - SCOTT CITY 115KV CKT 1	
FDNS	0	0	13SP	G12_007	TO->FROM	5 HICCOCK - RUBART 115.00 115KV CKT 1	105	1	106.1039	RUBART 115.00 - SANT T 3 115KV CKT 1	
FDNS	0	0	13WP	G12_007	TO->FROM	5 HICCOCK - RUBART 115.00 115KV CKT 1	105	1	114.941	RUBART 115.00 - SANT T 3 115KV CKT 1	
FDNS	0	0	13WP	G12_007	TO->FROM	5 HICCOCK - RUBART 115.00 115KV CKT 1	105	1	108.5621	PIONEER TAP - SANT T 3 115KV CKT 1	
FDNS	0	0	18SP	G12_007	TO->FROM	5 HICCOCK - RUBART 115.00 115KV CKT 1	105	1	105.586	RUBART 115.00 - SANT T 3 115KV CKT 1	
FDNS	0	0	18WP	G12_007	TO->FROM	5 HICCOCK - RUBART 115.00 115KV CKT 1	105	1	114.9462	RUBART 115.00 - SANT T 3 115KV CKT 1	
FDNS	0	0	18WP	G12_007	TO->FROM	5 HICCOCK - RUBART 115.00 115KV CKT 1	105	1	107.7338	PIONEER TAP - SANT T 3 115KV CKT 1	
FDNS	0	0	23SP	G12_007	TO->FROM	5 HICCOCK - RUBART 115.00 115KV CKT 1	105	1	105.4897	RUBART 115.00 - SANT T 3 115KV CKT 1	
FDNS	00G12_007	0	13SP	G12_007	TO->FROM	5 HICCOCK - RUBART 115.00 115KV CKT 1	105	1	106.1039	RUBART 115.00 - SANT T 3 115KV CKT 1	
FDNS	00G12_007	0	13WP	G12_007	TO->FROM	5 HICCOCK - RUBART 115.00 115KV CKT 1	105	1	114.941	RUBART 115.00 - SANT T 3 115KV CKT 1	
FDNS	00G12_007	0	13WP	G12_007	TO->FROM	5 HICCOCK - RUBART 115.00 115KV CKT 1	105	1	108.5621	PIONEER TAP - SANT T 3 115KV CKT 1	
FDNS	00G12_007	0	18SP	G12_007	TO->FROM	5 HICCOCK - RUBART 115.00 115KV CKT 1	105	1	105.586	RUBART 115.00 - SANT T 3 115KV CKT 1	
FDNS	00G12_007	0	18WP	G12_007	TO->FROM	5 HICCOCK - RUBART 115.00 115KV CKT 1	105	1	114.9462	RUBART 115.00 - SANT T 3 115KV CKT 1	
FDNS	00G12_007	0	18WP	G12_007	TO->FROM	5 HICCOCK - RUBART 115.00 115KV CKT 1	105	1	107.7338	PIONEER TAP - SANT T 3 115KV CKT 1	
FDNS	00G12_007	0	23SP	G12_007	TO->FROM	5 HICCOCK - RUBART 115.00 115KV CKT 1	105	1	105.4897	RUBART 115.00 - SANT T 3 115KV CKT 1	
FDNS	00NR	0	13SP	G12_007	TO->FROM	5 HICCOCK - RUBART 115.00 115KV CKT 1	105	1	106.0854	RUBART 115.00 - SANT T 3 115KV CKT 1	
FDNS	00NR	0	13WP	G12_007	TO->FROM	5 HICCOCK - RUBART 115.00 115KV CKT 1	105	1	114.9541	RUBART 115.00 - SANT T 3 115KV CKT 1	
FDNS	00NR	0	13WP	G12_007	TO->FROM	5 HICCOCK - RUBART 115.00 115KV CKT 1	105	1	108.5801	PIONEER TAP - SANT T 3 115KV CKT 1	
FDNS	00NR	0	18SP	G12_007	TO->FROM	5 HICCOCK - RUBART 115.00 115KV CKT 1	105	1	105.5355	RUBART 115.00 - SANT T 3 115KV CKT 1	
FDNS	00NR	0	18WP	G12_007	TO->FROM	5 HICCOCK - RUBART 115.00 115KV CKT 1	105	1	114.8635	RUBART 115.00 - SANT T 3 115KV CKT 1	

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB		TC%LOADING		CONTINGENCY
							(MVA)	TDF	(% MVA)		
FDNS	00NR	0	18WP	G12_007	TO->FROM	5 HICKOCK - RUBART 115.00 115KV CKT 1	105	1	107.6034	PIONEER TAP - SANT T 3 115KV CKT 1	
FDNS	0	0	13SP	G12_007	TO->FROM	5 HICKOCK - RUBART 115.00 115KV CKT 1	105	0.48612	100.1341	SPP-SUNC-07	
FDNS	00G12_007	0	13SP	G12_007	TO->FROM	5 HICKOCK - RUBART 115.00 115KV CKT 1	105	0.48612	100.1341	SPP-SUNC-07	
FDNS	00NR	0	13SP	G12_007	TO->FROM	5 HICKOCK - RUBART 115.00 115KV CKT 1	105	0.48525	100.8473	SPP-SUNC-07	
FDNS	00NR	0	18SP	G12_007	TO->FROM	5 HICKOCK - RUBART 115.00 115KV CKT 1	105	0.46793	100	SPP-SUNC-07	
FDNS	0	0	23SP	G12_007	TO->FROM	5 HICKOCK - RUBART 115.00 115KV CKT 1	105	0.46758	100	SPP-SUNC-07	
FDNS	00G12_007	0	23SP	G12_007	TO->FROM	5 HICKOCK - RUBART 115.00 115KV CKT 1	105	0.46758	100	SPP-SUNC-07	
FDNS	0	0	13SP	G12_007	TO->FROM	5 HICKOCK - RUBART 115.00 115KV CKT 1	105	0.32071	101.4664	FLETCHER - HOLCOMB 115KV CKT 1	
FDNS	00G12_007	0	13SP	G12_007	TO->FROM	5 HICKOCK - RUBART 115.00 115KV CKT 1	105	0.32071	101.4664	FLETCHER - HOLCOMB 115KV CKT 1	
FDNS	0	0	23SP	G12_007	TO->FROM	5 HICKOCK - RUBART 115.00 115KV CKT 1	105	0.31233	110.0084	FLETCHER - HOLCOMB 115KV CKT 1	
FDNS	00G12_007	0	23SP	G12_007	TO->FROM	5 HICKOCK - RUBART 115.00 115KV CKT 1	105	0.31233	110.0084	FLETCHER - HOLCOMB 115KV CKT 1	
FDNS	00NR	0	13SP	G12_007	TO->FROM	5 HICKOCK - RUBART 115.00 115KV CKT 1	105	0.30828	104.5719	FLETCHER - HOLCOMB 115KV CKT 1	
FDNS	00NR	0	18SP	G12_007	TO->FROM	5 HICKOCK - RUBART 115.00 115KV CKT 1	105	0.30167	108.6865	FLETCHER - HOLCOMB 115KV CKT 1	
FDNS	00NR	2	13SP	G12_007	FROM->TO	RUBART 115.00 - SANT T 3 115KV CKT 1	105	1	104.7622	5 HICKOCK - RUBART 115.00 115KV CKT 1	
FDNS	00NR	2	13WP	G12_007	FROM->TO	RUBART 115.00 - SANT T 3 115KV CKT 1	105	1	114.295	5 HICKOCK - RUBART 115.00 115KV CKT 1	
FDNS	00NR	2	18SP	G12_007	FROM->TO	RUBART 115.00 - SANT T 3 115KV CKT 1	105	1	104.7747	5 HICKOCK - RUBART 115.00 115KV CKT 1	
FDNS	00NR	2	18WP	G12_007	FROM->TO	RUBART 115.00 - SANT T 3 115KV CKT 1	105	1	114.2987	5 HICKOCK - RUBART 115.00 115KV CKT 1	
FDNS	00NR	2	13SP	G12_007	TO->FROM	5 HICKOCK - RUBART 115.00 115KV CKT 1	105	1	106.0962	RUBART 115.00 - SANT T 3 115KV CKT 1	
FDNS	00NR	2	13WP	G12_007	TO->FROM	5 HICKOCK - RUBART 115.00 115KV CKT 1	105	1	114.9584	RUBART 115.00 - SANT T 3 115KV CKT 1	
FDNS	00NR	2	13WP	G12_007	TO->FROM	5 HICKOCK - RUBART 115.00 115KV CKT 1	105	1	108.5774	PIONEER TAP - SANT T 3 115KV CKT 1	
FDNS	00NR	2	18SP	G12_007	TO->FROM	5 HICKOCK - RUBART 115.00 115KV CKT 1	105	1	105.5426	RUBART 115.00 - SANT T 3 115KV CKT 1	
FDNS	00NR	2	18WP	G12_007	TO->FROM	5 HICKOCK - RUBART 115.00 115KV CKT 1	105	1	114.8652	RUBART 115.00 - SANT T 3 115KV CKT 1	
FDNS	00NR	2	18WP	G12_007	TO->FROM	5 HICKOCK - RUBART 115.00 115KV CKT 1	105	1	107.6055	PIONEER TAP - SANT T 3 115KV CKT 1	
FDNS	00NR	2	13SP	G12_007	TO->FROM	5 HICKOCK - RUBART 115.00 115KV CKT 1	105	0.30831	102.4455	FLETCHER - HOLCOMB 115KV CKT 1	
FDNS	00NR	2	18SP	G12_007	TO->FROM	5 HICKOCK - RUBART 115.00 115KV CKT 1	105	0.30192	107.0441	FLETCHER - HOLCOMB 115KV CKT 1	
FNSL-Blown up	0	0	13SP	G12_008		Non-Converged Contingency	526	0.04889	-	G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1	
FNSL-Blown up	00G12_008	0	13SP	G12_008		Non-Converged Contingency	526	0.04889	-	G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1	
FNSL-Blown up	0	0	13WP	G12_008		Non-Converged Contingency	541	0.04812	-	G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1	
FNSL-Blown up	00G12_008	0	13WP	G12_008		Non-Converged Contingency	541	0.04812	-	G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1	
FNSL-Blown up	0	0	18WP	G12_008		Non-Converged Contingency	541	0.04558	-	G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1	
FNSL-Blown up	00G12_008	0	18WP	G12_008		Non-Converged Contingency	541	0.04558	-	G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1	
FNSL-Blown up	0	0	18SP	G12_008		Non-Converged Contingency	526	0.04527	-	G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1	
FNSL-Blown up	00G12_008	0	18SP	G12_008		Non-Converged Contingency	526	0.04527	-	G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1	
FNSL-Blown up	0	0	23SP	G12_008		Non-Converged Contingency	526	0.02739	-	G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1	
FNSL-Blown up	00G12_008	0	23SP	G12_008		Non-Converged Contingency	526	0.02739	-	G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1	
FDNS	0	0	23SP	G12_008	TO->FROM	DENVER CITY INTERCHANGE N. - MUSTANG STATION N. 115KV CKT 1	309	0.39795	104.4032	DENVER CITY INTERCHANGE S. - MUSTANG STATION N. 115KV CKT 2	
FDNS	00G12_008	0	23SP	G12_008	TO->FROM	DENVER CITY INTERCHANGE N. - MUSTANG STATION N. 115KV CKT 1	309	0.39795	104.4032	DENVER CITY INTERCHANGE S. - MUSTANG STATION N. 115KV CKT 2	
FDNS	0	0	23SP	G12_008	TO->FROM	DENVER CITY INTERCHANGE S. - MUSTANG STATION N. 115KV CKT 2	309	0.39294	103.2311	DENVER CITY INTERCHANGE N. - MUSTANG STATION N. 115KV CKT 1	
FDNS	00G12_008	0	23SP	G12_008	TO->FROM	DENVER CITY INTERCHANGE S. - MUSTANG STATION N. 115KV CKT 2	309	0.39294	103.2311	DENVER CITY INTERCHANGE N. - MUSTANG STATION N. 115KV CKT 1	
FNSL-Blown up	0	0	13SP	G12_009		Non-Converged Contingency	526	0.04761	-	G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1	
FNSL-Blown up	00G12_009	0	13SP	G12_009		Non-Converged Contingency	526	0.04761	-	G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1	
FNSL-Blown up	0	0	13WP	G12_009		Non-Converged Contingency	541	0.04684	-	G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1	
FNSL-Blown up	00G12_009	0	13WP	G12_009		Non-Converged Contingency	541	0.04684	-	G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1	
FNSL-Blown up	0	0	18WP	G12_009		Non-Converged Contingency	541	0.0442	-	G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1	
FNSL-Blown up	00G12_009	0	18WP	G12_009		Non-Converged Contingency	541	0.0442	-	G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1	
FNSL-Blown up	0	0	18SP	G12_009		Non-Converged Contingency	526	0.04389	-	G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1	
FNSL-Blown up	00G12_009	0	18SP	G12_009		Non-Converged Contingency	526	0.04389	-	G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1	
FNSL-Blown up	0	0	23SP	G12_009		Non-Converged Contingency	526	0.02672	-	G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1	
FNSL-Blown up	00G12_009	0	23SP	G12_009		Non-Converged Contingency	526	0.02672	-	G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1	
FNSL-Blown up	0	0	13SP	G12_010		Non-Converged Contingency	526	0.04761	-	G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1	
FNSL-Blown up	00G12_010	0	13SP	G12_010		Non-Converged Contingency	526	0.04761	-	G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1	
FNSL-Blown up	0	0	13WP	G12_010		Non-Converged Contingency	541	0.04684	-	G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1	
FNSL-Blown up	00G12_010	0	13WP	G12_010		Non-Converged Contingency	541	0.04684	-	G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1	
FNSL-Blown up	0	0	18WP	G12_010		Non-Converged Contingency	541	0.0442	-	G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1	
FNSL-Blown up	00G12_010	0	18WP	G12_010		Non-Converged Contingency	541	0.0442	-	G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1	
FNSL-Blown up	0	0	18SP	G12_010		Non-Converged Contingency	526	0.04389	-	G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1	
FNSL-Blown up	00G12_010	0	18SP	G12_010		Non-Converged Contingency	526	0.04389	-	G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1	
FNSL-Blown up	0	0	23SP	G12_010		Non-Converged Contingency	526	0.02672	-	G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1	
FNSL-Blown up	00G12_010	0	23SP	G12_010		Non-Converged Contingency	526	0.02672	-	G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV 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
FNLS-Blown up	03ALL		0 13G	G12_001		Non-Converged Contingency	0	0.13391	-	DBL-WICH-THI
FNLS-Blown up	03ALL		0 13G	G12_001		Non-Converged Contingency	0	0.05255	-	DBL-MUL-RENO
FNLS-Blown up	03ALL		0 13G	G12_001		Non-Converged Contingency	0	0.05255	-	DBL-SPRVL-MU
FDNS	00G12_001		0 13SP	G12_001	TO->FROM	ALLEN SUB - LUBBOCK SOUTH INTERCHANGE 115KV CKT 1	160	0.08364	107.2544	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1
FDNS	00G12_001		0 23SP	G12_001	TO->FROM	ALLEN SUB - LUBBOCK SOUTH INTERCHANGE 115KV CKT 1	160	0.05226	107.0899	CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1
FDNS	0		0 23SP	G12_001	TO->FROM	ALLEN SUB - LUBBOCK SOUTH INTERCHANGE 115KV CKT 1	160	0.05226	105.5777	CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1
FDNS	0		0 13SP	G12_001	TO->FROM	ALLEN SUB - LUBBOCK SOUTH INTERCHANGE 115KV CKT 1	160	0.08365	104.287	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1
FDNS	00G12_001		0 13SP	G12_001	TO->FROM	BAILEY COUNTY REC-EARTH INTERCHANGE - PLANT X STATION 115KV CKT 1	160	0.04443	112.605	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	0		0 13SP	G12_001	TO->FROM	BAILEY COUNTY REC-EARTH INTERCHANGE - PLANT X STATION 115KV CKT 1	160	0.04445	110.7561	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.06843	125.5854	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.09175	124.4644	DBL-TGA-MATT
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.09175	118.0402	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.09175	117.3461	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.06768	116.6561	HUNTERS7 345.00 - WOODRING 345KV CKT 1
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.06768	114.1361	HUNTERS7 345.00 - VIOLA 7 345.00 345KV CKT 1
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.07136	109.702	EVANS ENERGY CENTER NORTH - MAIZEW 4 138.00 138KV CKT 1
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.07136	109.7007	MAIZE - MAIZEW 4 138.00 138KV CKT 1
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.07136	109.7004	SPP-WERE-91
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.06768	109.4522	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.07136	109.1936	MAIZE - MAIZEE 4 138.00 138KV CKT 1
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.07136	109.1898	CHISHOLM - MAIZEE 4 138.00 138KV CKT 1
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.07136	109.1898	SPP-WERE-90
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.07062	108.2296	WRTOD400
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.07048	107.6911	HOYT - JEFFREY ENERGY CENTER 345KV CKT 1
FDNS	3		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.0694	107.6142	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.07337	107.3884	SWISSVALE - WEST GARDNER 345KV CKT 1
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.06843	107.3364	BASE CASE
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.08292	105.5698	EMPORIA ENERGY CENTER - WICHITA 345KV CKT 1
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.07187	105.4871	WICHITA (WICHT12X) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.0707	105.4251	HOYT - STRANGER CREEK 345KV CKT 1
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.07325	105.1782	AXTELL - POST ROCK 345KV CKT 1
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.06901	104.0251	EVANS ENERGY CENTER SOUTH - LAKERIDGE 138KV CKT 1
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.07119	103.7433	WICHITA (WICHT11X) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.06901	103.6092	SPP-WERE-32
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.0713	103.4327	G12-11T 345.00 - POST ROCK 345KV CKT 1
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.06901	103.3178	HOOVER NORTH - LAKERIDGE 138KV CKT 1
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.07393	103.2496	EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.06876	102.5331	45TH ST4 138.00 - EVANS ENERGY CENTER SOUTH 138KV CKT 1
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.06876	102.4583	45TH ST4 138.00 - COWSKIN 138KV CKT 1
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.0713	101.4748	G11-17T 345.00 - G12-11T 345.00 345KV CKT 1
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.06101	101.2835	BENTON - WOLF CREEK 345KV CKT 1
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.07276	101.1613	MINGO - RED WILLOW 345KV CKT 1
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.07392	101.0558	RENO COUNTY - SUMMIT 345KV CKT 1
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.0725	100.9882	MATTHEWSON 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.0725	100.9882	MATTHEWSON 345.00 - TATONGA7 345.00 345KV CKT 2
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.06876	100.7723	CENTENNIAL - COWSKIN 138KV CKT 1
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.06876	100.3991	SPP-WERE-28
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.06551	100.2868	ROSE HILL - WOLF CREEK 345KV CKT 1
FDNS	3		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.09286	100.1568	DBL-TGA-MATT
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.06876	100.1417	CENTENNIAL - WACO 138KV CKT 1
FDNS	03ALL		0 13G	G12_001	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.06843	99.9	GEN542956 2-LACYGNE UNIT #2
FDNS	03ALL		0 13G	G12_001	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.03375	144.4144	DBL-TGA-MATT
FDNS	03ALL		0 13G	G12_001	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.03375	133.4973	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	03ALL		0 13G	G12_001	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.03375	132.4184	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	3		0 13G	G12_001	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.03401	126.5225	DBL-TGA-MATT
FDNS	3		0 13G	G12_001	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.03401	114.7482	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	3		0 13G	G12_001	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.03401	113.911	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	03ALL		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03375	258.4594	DBL-TGA-MATT
FDNS	03ALL		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03375	238.9626	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	03ALL		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03375	237.003	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	3		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03401	223.2844	DBL-TGA-MATT
FDNS	3		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03401	201.4452	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	3		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03401	199.9126	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	04ALL		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03418	168.1444	DBL-TGA-MATT
FDNS	03ALL		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03225	167.0499	SPP-AEPW-32
FDNS	03ALL		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03147	164.8301	SPP-SWPS-01
FDNS	03ALL		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03225	164.5211	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	4		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03421	158.1711	DBL-TGA-MATT
FDNS	06ALL		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03393	150.7676	DBL-TGA-MATT
FDNS	04ALL		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03418	148.3027	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	04ALL		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03418	146.8676	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	3		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03243	146.1432	SPP-AEPW-32
FDNS	06G12_001		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03399	145.9063	DBL-TGA-MATT
FDNS	6		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03399	145.5735	DBL-TGA-MATT
FDNS	3		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03165	144.0108	SPP-SWPS-01
FDNS	3		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03243	143.7775	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	4		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03421	138.1983	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	4		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03421	136.8095	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	06ALL		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03393	130.8138	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	06ALL		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03393	129.411	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	14		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0342	126.9189	DBL-TGA-MATT
FDNS	06G12_001		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03399	125.7849	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	6		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03399	125.4511	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	14ALL		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03424	125.3188	DBL-TGA-MATT
FDNS	06G12_001		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03399	124.4003	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	6		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03399	124.0562	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	04ALL		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03255	111.2419	SPP-AEPW-32
FDNS	04ALL		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03177	109.1127	SPP-SWPS-01
FDNS	04ALL		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03255	108.9431	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	14		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0342	106.857	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	14		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0342	105.5334	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	14ALL		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03424	105.2617	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	06ALL		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03235	105.0628	SPP-AEPW-32
FDNS	4		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03258	104.7985	SPP-AEPW-32
FDNS	14ALL		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03424	103.9408	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	06ALL		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03235	102.6759	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	4		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0318	102.6667	SPP-SWPS-01
FDNS	4		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03258	102.5117	OKLAUNION - TUCO INTERCHANGE 345KV CKT 1
FDNS	06ALL		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03157	102.2231	SPP-SWPS-01
FDNS	06G12_001		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0324	100.6628	SPP-AEPW-32
FDNS	6		0 13G	G12_001	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03241	100.3518	SPP-AEPW-32
FDNS	00G12_001		0 13SP	G12_001	FROM->TO	GRASSLAND INTERCHANGE (PENN 0105951) 230/115/13.2KV TRANSFORMER CKT 1	100	0.0982	111.7183	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_001		0 13SP	G12_001	FROM->TO	GRASSLAND INTERCHANGE (PENN 0105951) 230/115/13.2KV TRANSFORMER CKT 1	100	0.0982	108.9856	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0		0 13SP	G12_001	FROM->TO	GRASSLAND INTERCHANGE (PENN 0105951) 230/115/13.2KV TRANSFORMER CKT 1	100	0.09821	106.6831	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0		0 13SP	G12_001	FROM->TO	GRASSLAND INTERCHANGE (PENN 0105951) 230/115/13.2KV TRANSFORMER CKT 1	100	0.09821	104.0351	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_001		0 18SP	G12_001	FROM->TO	GRASSLAND INTERCHANGE (UPDATE_LATER) 230/115/13.2KV TRANSFORMER CKT 1	100	0.08443	117.6712	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_001		0 18SP	G12_001	FROM->TO	GRASSLAND INTERCHANGE (UPDATE_LATER) 230/115/13.2KV TRANSFORMER CKT 1	100	0.08443	117.1434	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	0		0 18SP	G12_001	FROM->TO	GRASSLAND INTERCHANGE (UPDATE_LATER) 230/115/13.2KV TRANSFORMER CKT 1	100	0.08443	113.6924	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0		0 18SP	G12_001	FROM->TO	GRASSLAND INTERCHANGE (UPDATE_LATER) 230/115/13.2KV TRANSFORMER CKT 1	100	0.08443	113.0487	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_001		0 18SP	G12_001	FROM->TO	GRASSLAND INTERCHANGE (UPDATE_LATER) 230/115/13.2KV TRANSFORMER CKT 1	100	0.08156	104.3654	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	00G12_001		0 18SP	G12_001	FROM->TO	GRASSLAND INTERCHANGE (UPDATE_LATER) 230/115/13.2KV TRANSFORMER CKT 1	100	0.08156	103.7343	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	0		0 18SP	G12_001	FROM->TO	GRASSLAND INTERCHANGE (UPDATE_LATER) 230/115/13.2KV TRANSFORMER CKT 1	100	0.08156	100.0647	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	03ALL		0 13G	G12_001	FROM->TO	HOBBS INTERCHANGE (ME C0482951) 230/115/13.2KV TRANSFORMER CKT 1	150	0.08403	114.3668	HOBBS INTERCHANGE - LEA COUNTY INTERCHANGE 230KV CKT 1
FDNS	3		0 13G	G12_001	FROM->TO	HOBBS INTERCHANGE (ME C0482951) 230/115/13.2KV TRANSFORMER CKT 1	150	0.08434	113.9824	HOBBS INTERCHANGE - LEA COUNTY INTERCHANGE 230KV CKT 1
FDNS	03ALL		0 13G	G12_001	FROM->TO	HOBBS INTERCHANGE (ME C0482951) 230/115/13.2KV TRANSFORMER CKT 1	150	0.08403	113.8523	HOBBS INTERCHANGE - LEA COUNTY INTERCHANGE 230KV CKT 1
FDNS	04ALL		0 13G	G12_001	FROM->TO	HOBBS INTERCHANGE (ME C0482951) 230/115/13.2KV TRANSFORMER CKT 1	150	0.08476	113.4757	HOBBS INTERCHANGE - LEA COUNTY INTERCHANGE 230KV CKT 1
FDNS	3		0 13G	G12_001	FROM->TO	HOBBS INTERCHANGE (ME C0482951) 230/115/13.2KV TRANSFORMER CKT 1	150	0.08434	113.4697	HOBBS INTERCHANGE - LEA COUNTY INTERCHANGE 230KV CKT 1
FDNS	4		0 13G	G12_001	FROM->TO	HOBBS INTERCHANGE (ME C0482951) 230/115/13.2KV TRANSFORMER CKT 1	150	0.08489	113.2848	HOBBS INTERCHANGE - LEA COUNTY INTERCHANGE 230KV CKT 1
FDNS	14ALL		0 13G	G12_001	FROM->TO	HOBBS INTERCHANGE (ME C0482951) 230/115/13.2KV TRANSFORMER CKT 1	150	0.08513	113.1405	HOBBS INTERCHANGE - LEA COUNTY INTERCHANGE 230KV CKT 1
FDNS	14		0 13G	G12_001	FROM->TO	HOBBS INTERCHANGE (ME C0482951) 230/115/13.2KV TRANSFORMER CKT 1	150	0.08516	113.0005	HOBBS INTERCHANGE - LEA COUNTY INTERCHANGE 230KV CKT 1
FDNS	04ALL		0 13G	G12_001	FROM->TO	HOBBS INTERCHANGE (ME C0482951) 230/115/13.2KV TRANSFORMER CKT 1	150	0.08476	112.9656	HOBBS INTERCHANGE - LEA COUNTY INTERCHANGE 230KV CKT 1
FDNS	4		0 13G	G12_001	FROM->TO	HOBBS INTERCHANGE (ME C0482951) 230/115/13.2KV TRANSFORMER CKT 1	150	0.08489	112.7755	HOBBS INTERCHANGE - LEA COUNTY INTERCHANGE 230KV CKT 1
FDNS	14ALL		0 13G	G12_001	FROM->TO	HOBBS INTERCHANGE (ME C0482951) 230/115/13.2KV TRANSFORMER CKT 1	150	0.08513	112.6319	HOBBS INTERCHANGE - LEA COUNTY INTERCHANGE 230KV CKT 1
FDNS	14		0 13G	G12_001	FROM->TO	HOBBS INTERCHANGE (ME C0482951) 230/115/13.2KV TRANSFORMER CKT 1	150	0.08516	112.4927	HOBBS INTERCHANGE - LEA COUNTY INTERCHANGE 230KV CKT 1
FDNS	00G12_001		0 13SP	G12_001	FROM->TO	HOBBS INTERCHANGE (ME C0482951) 230/115/13.2KV TRANSFORMER CKT 1	150	0.08782	105.3061	HOBBS INTERCHANGE - LEA COUNTY INTERCHANGE 230KV CKT 1
FDNS	00G12_001		0 13SP	G12_001	FROM->TO	HOBBS INTERCHANGE (ME C0482951) 230/115/13.2KV TRANSFORMER CKT 1	150	0.08782	104.364	HOBBS INTERCHANGE - LEA COUNTY INTERCHANGE 230KV CKT 1
FDNS	06G12_001		0 13G	G12_001	FROM->TO	HOBBS INTERCHANGE (ME C0482951) 230/115/13.2KV TRANSFORMER CKT 1	150	0.08518	103.3277	HOBBS INTERCHANGE - LEA COUNTY INTERCHANGE 230KV CKT 1
FDNS	06G12_001		0 13G	G12_001	FROM->TO	HOBBS INTERCHANGE (ME C0482951) 230/115/13.2KV TRANSFORMER CKT 1	150	0.08518	102.8669	HOBBS INTERCHANGE - LEA COUNTY INTERCHANGE 230KV CKT 1
FDNS	6		0 13G	G12_001	FROM->TO	HOBBS INTERCHANGE (ME C0482951) 230/115/13.2KV TRANSFORMER CKT 1	150	0.08518	102.5849	HOBBS INTERCHANGE - LEA COUNTY INTERCHANGE 230KV CKT 1
FDNS	6		0 13G	G12_001	FROM->TO	HOBBS INTERCHANGE (ME C0482951) 230/115/13.2KV TRANSFORMER CKT 1	150	0.08518	102.1277	HOBBS INTERCHANGE - LEA COUNTY INTERCHANGE 230KV CKT 1
FDNS	0		0 13SP	G12_001	FROM->TO	HOBBS INTERCHANGE (ME C0482951) 230/115/13.2KV TRANSFORMER CKT 1	150	0.08781	102.0393	HOBBS INTERCHANGE - LEA COUNTY INTERCHANGE 230KV CKT 1
FDNS	0		0 13SP	G12_001	FROM->TO	HOBBS INTERCHANGE (ME C0482951) 230/115/13.2KV TRANSFORMER CKT 1	150	0.08781	101.1273	HOBBS INTERCHANGE - LEA COUNTY INTERCHANGE 230KV CKT 1
FDNS	00G12_001		0 18SP	G12_001	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.07756	128.0006	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	0		0 18SP	G12_001	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.07756	126.3124	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	00G12_001		0 13SP	G12_001	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.06821	124.1005	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	0		0 13SP	G12_001	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.06822	122.3889	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	00G12_001		0 18SP	G12_001	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.07756	119.1335	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	00G12_001		0 23SP	G12_001	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	290	0.07116	118.0031	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	0		0 18SP	G12_001	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.07756	117.6075	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00G12_001		0 13SP	G12_001	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.06821	117.4788	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	0		0 23SP	G12_001	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	290	0.07116	116.8674	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	0		0 13SP	G12_001	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.06822	115.9283	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	00G12_001		0 18SP	G12_001	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.08196	113.1165	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_001		0 13SP	G12_001	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.07257	112.4821	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0		0 18SP	G12_001	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.08197	111.2943	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0		0 13SP	G12_001	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.07259	110.8312	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_001		0 23SP	G12_001	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	290	0.07116	108.7389	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	00G12_001		0 13SP	G12_001	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.07257	107.8527	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0		0 23SP	G12_001	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	290	0.07116	107.6881	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	00G12_001		0 18SP	G12_001	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.08196	106.7439	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0		0 13SP	G12_001	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.07259	106.2788	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0		0 18SP	G12_001	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.08197	105.0653	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_001		0 13SP	G12_001	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.08572	100.3375	GRASSLAND INTERCHANGE (PENN 0105951) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_001		0 23SP	G12_001	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	290	0.07522	100.0741	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_001		0 13SP	G12_001	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.05554	129.6606	ALLEN SUB - LUBBOCK SOUTH INTERCHANGE 115KV CKT 1
FDNS	0		0 13SP	G12_001	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.05557	126.9495	ALLEN SUB - LUBBOCK SOUTH INTERCHANGE 115KV CKT 1
FDNS	00G12_001		0 13SP	G12_001	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.0319	117.5307	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_001		0 13SP	G12_001	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.0786	116.581	JONES STATION - TUCO INTERCHANGE 230KV CKT 1
FDNS	0		0 13SP	G12_001	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.03193	115.6328	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_001		0 13SP	G12_001	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.05554	114.5168	ALLEN SUB - SOUTH PLAINS REC-QUAKER 115KV CKT 1
FDNS	0		0 13SP	G12_001	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.07863	112.9	JONES STATION - TUCO INTERCHANGE 230KV CKT 1
FDNS	0		0 13SP	G12_001	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.05557	111.9548	ALLEN SUB - SOUTH PLAINS REC-QUAKER 115KV CKT 1
FDNS	00G12_001		0 13SP	G12_001	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.03267	109.8131	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	00G12_001		0 13SP	G12_001	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.05554	109.4148	SOUTH PLAINS REC-QUAKER - South Plains REC-Frankford Sub 115KV CKT 1
FDNS	0		0 13SP	G12_001	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.03269	108.0215	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	00G12_001		0 13SP	G12_001	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.03292	106.9026	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0		0 13SP	G12_001	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.05557	106.8337	SOUTH PLAINS REC-QUAKER - South Plains REC-Frankford Sub 115KV CKT 1
FDNS	0		0 13SP	G12_001	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.03295	105.1244	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_001		0 13SP	G12_001	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.03123	105.0286	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	00G12_001		0 13SP	G12_001	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.05554	104.2245	MURPHY SUB - South Plains REC-Frankford Sub 115KV CKT 1
FDNS	00G12_001		0 13SP	G12_001	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.03031	103.9664	LUBBOCK POWER & LIGHT-MILWAUKEE (M-E C0681251) 230/69/13.5KV TRANSFORMER CKT 1
FDNS	00G12_001		0 13SP	G12_001	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.03031	103.9613	LUBBOCK POWER & LIGHT-MILWAUKEE - LUBBOCK POWER & LIGHT-VICKSBURG 69KV CKT 1
FDNS	00G12_001		0 13SP	G12_001	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.10462	103.6043	G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1
FDNS	00G12_001		0 13SP	G12_001	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.03233	103.4572	POTTER COUNTY INTERCHANGE - S-RANDLCO 230.00 230KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	0		0 13SP	G12_001	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.03126	103.2488	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	00G12_001		0 13SP	G12_001	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.03233	102.5681	PLANT X STATION - S-RANDLCO 230.00 230KV CKT 1
FDNS	00G12_001		0 13SP	G12_001	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.03312	102.2846	GRASSLAND INTERCHANGE (PENN 0105951) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0		0 13SP	G12_001	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.03034	102.2605	LUBBOCK POWER & LIGHT-MILWAUKEE (M-E C0681251) 230/69/13.5KV TRANSFORMER CKT 1
FDNS	0		0 13SP	G12_001	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.03034	102.2604	LUBBOCK POWER & LIGHT-MILWAUKEE - LUBBOCK POWER & LIGHT-VICKSBURG 69KV CKT 1
FDNS	0		0 13SP	G12_001	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.05557	101.6573	MURPHY SUB - South Plains REC-Frankford Sub 115KV CKT 1
FDNS	0		0 13SP	G12_001	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.03236	101.6364	POTTER COUNTY INTERCHANGE - S-RANDLCO 230.00 230KV CKT 1
FDNS	00G12_001		0 13SP	G12_001	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.03159	101.1202	TOLK STATION WEST - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	00G12_001		0 13SP	G12_001	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.03312	100.8048	GRASSLAND INTERCHANGE - LYNN COUNTY INTERCHANGE 115KV CKT 1
FDNS	0		0 13SP	G12_001	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.03236	100.7586	PLANT X STATION - S-RANDLCO 230.00 230KV CKT 1
FNSL	0		0 13SP	G12_001	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.03314	100.5397	GRASSLAND INTERCHANGE (PENN 0105951) 230/115/13.2KV TRANSFORMER CKT 1
FNSL-Blown up	03ALL		0 13G	G12_002		Non-Converged Contingency	0	0.14879	-	DBL-THIS-CLR
FNSL-Blown up	03ALL		0 13G	G12_002		Non-Converged Contingency	0	0.13539	-	DBL-WICH-THI
FNSL-Blown up	03ALL		0 13G	G12_002		Non-Converged Contingency	0	0.12444	-	DBL-MUL-RENO
FNSL-Blown up	03ALL		0 13G	G12_002		Non-Converged Contingency	0	0.12444	-	DBL-SPRVL-MU
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.11247	125.5854	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.13741	124.4644	DBL-TGA-MATT
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.13741	118.0402	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.13741	117.3461	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.13549	116.6561	HUNTERS7 345.00 - WOODRING 345KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.13549	114.1361	HUNTERS7 345.00 - VIOLA 7 345.00 345KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.11864	109.702	EVANS ENERGY CENTER NORTH - MAIZEW 4 138.00 138KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.11864	109.7007	MAIZE - MAIZEW 4 138.00 138KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.11864	109.7004	SPP-WERE-91
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.13549	109.4522	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.11864	109.1936	MAIZE - MAIZEE 4 138.00 138KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.11864	109.1898	CHISHOLM - MAIZEE 4 138.00 138KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.11864	109.1898	SPP-WERE-90
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.11564	108.2296	WRTOD400
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.11545	107.6911	HOYT - JEFFREY ENERGY CENTER 345KV CKT 1
FDNS	3		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.11344	107.6142	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.12027	107.3884	SWISSVALE - WEST GARDNER 345KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.11247	107.3364	BASE CASE
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.12144	105.5698	EMPORIA ENERGY CENTER - WICHITA 345KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.11674	105.4871	WICHITA (WICHT12X) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.11588	105.4251	HOYT - STRANGER CREEK 345KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.11623	105.1782	AXTELL - POST ROCK 345KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.11407	104.0251	EVANS ENERGY CENTER SOUTH - LAKERIDGE 138KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.11159	103.7433	WICHITA (WICHT11X) 345/138/13.8KV TRANSFORMER CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.11407	103.6092	SPP-WERE-32
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.11418	103.4327	G12-11T 345.00 - POST ROCK 345KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.11407	103.3178	HOOVER NORTH - LAKERIDGE 138KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.11817	103.2496	EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.11358	102.5331	45TH ST4 138.00 - EVANS ENERGY CENTER SOUTH 138KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.11358	102.4583	45TH ST4 138.00 - COWSKIN 138KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.11418	101.4748	G11-17T 345.00 - G12-11T 345.00 345KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.1058	101.2835	BENTON - WOLF CREEK 345KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.1299	101.1613	MINGO - RED WILLOW 345KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.11751	101.0558	RENO COUNTY - SUMMIT 345KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.11682	100.9882	MATTHEWSON 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.11682	100.9882	MATTHEWSON 345.00 - TATONGA7 345.00 345KV CKT 2
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.11358	100.7723	CENTENNIAL - COWSKIN 138KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.11358	100.3991	SPP-WERE-28

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB		TC%LOADING		CONTINGENCY
							(MVA)	TDF	(% MVA)		
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.11093	100.2868		ROSE HILL - WOLF CREEK 345KV CKT 1
FDNS	3		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.13853	100.1568		DBL-TGA-MATT
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.11358	100.1417		CENTENNIAL - WACO 138KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.11247	99.9		GEN542956 2-LACYGNE UNIT #2
FDNS	03ALL		0 13G	G12_002	TO->FROM	CHISHOLM - MAIZEE 4 138.00 138KV CKT 1	382	0.04016	121.7567		BENTON - WICHITA 345KV CKT 1
FDNS	3		0 13G	G12_002	TO->FROM	CHISHOLM - MAIZEE 4 138.00 138KV CKT 1	382	0.04043	105.2079		BENTON - WICHITA 345KV CKT 1
FDNS	03ALL		0 13G	G12_002	FROM->TO	EVANS ENERGY CENTER NORTH - MAIZEW 4 138.00 138KV CKT 1	382	0.04016	124.4793		BENTON - WICHITA 345KV CKT 1
FDNS	3		0 13G	G12_002	FROM->TO	EVANS ENERGY CENTER NORTH - MAIZEW 4 138.00 138KV CKT 1	382	0.04043	107.9269		BENTON - WICHITA 345KV CKT 1
FDNS	03ALL		0 13G	G12_002	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.04467	144.4144		DBL-TGA-MATT
FDNS	03ALL		0 13G	G12_002	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.04467	133.4973		G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	03ALL		0 13G	G12_002	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.04467	132.4184		G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	3		0 13G	G12_002	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.04493	126.5225		DBL-TGA-MATT
FDNS	3		0 13G	G12_002	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.04493	114.7482		G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	3		0 13G	G12_002	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.04493	113.911		G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	03ALL		0 13G	G12_002	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.03122	110.3413		WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	03ALL		0 13G	G12_002	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.03304	109.2399		IODINE - WOODWARD EHV 138KV CKT 1
FDNS	03ALL		0 13G	G12_002	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.03304	108.692		DEWEY - IODINE 138KV CKT 1
FDNS	03ALL		0 13G	G12_002	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.03122	103.1185		WOODWARD - WOODWARD 69KV CKT 1
FDNS	3		0 13G	G12_002	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.03429	101.5588		DBL-WICH-THI
FDNS	03ALL		0 13G	G12_002	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.03055	100.385		MATTHEWSON 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	03ALL		0 13G	G12_002	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.03055	100.385		MATTHEWSON 345.00 - TATONGA7 345.00 345KV CKT 2
FDNS	03ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04467	258.4594		DBL-TGA-MATT
FDNS	03ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04467	238.9626		G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04467	237.003		G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	3		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04493	223.2844		DBL-TGA-MATT
FDNS	3		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04493	201.4452		G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	3		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04493	199.9126		G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03122	193.9306		WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03304	192.0669		IODINE - WOODWARD EHV 138KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03304	191.0468		DEWEY - IODINE 138KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03122	180.8261		WOODWARD - WOODWARD 69KV CKT 1
FDNS	3		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03429	177.4499		DBL-WICH-THI
FDNS	03ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03055	175.1277		MATTHEWSON 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03055	175.1277		MATTHEWSON 345.00 - TATONGA7 345.00 345KV CKT 2
FDNS	3		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0314	171.8966		WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03018	171.6184		HUNTERS7 345.00 - WOODRING 345KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03018	170.0461		HUNTERS7 345.00 - VIOLA 7 345.00 345KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03009	168.7805		BORDER 7345.00 - TUCCO INTERCHANGE 345KV CKT 1
FDNS	3		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03323	168.766		IODINE - WOODWARD EHV 138KV CKT 1
FDNS	04ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04509	168.1444		DBL-TGA-MATT
FDNS	3		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03323	167.7621		DEWEY - IODINE 138KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03018	167.187		VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03009	166.6479		BORDER 7345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03155	166.0899		MINGO - RED WILLOW 345KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03034	165.5617		POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03083	164.6472		MINGO - SETAB 345KV CKT 1
FDNS	03ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03034	164.0461		SPP-SWPS-04
FDNS	03ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03034	163.9321		Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1
FDNS	3		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0314	159.1496		WOODWARD - WOODWARD 69KV CKT 1
FDNS	04G12_002		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04512	158.7573		DBL-TGA-MATT
FDNS	4		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04513	158.1711		DBL-TGA-MATT
FDNS	3		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03073	153.3504		MATTHEWSON 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	3		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03073	153.3504		MATTHEWSON 345.00 - TATONGA7 345.00 345KV CKT 2
FDNS	06ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04485	150.7676		DBL-TGA-MATT

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB		TC%LOADING		CONTINGENCY
							(MVA)	TDF	(% MVA)		
FDNS	3		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03034	149.4573	HUNTERS7 345.00 - WOODRING 345KV CKT 1	
FDNS	04ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04509	148.3027	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1	
FDNS	3		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03034	148.0032	HUNTERS7 345.00 - VIOLA 7 345.00 345KV CKT 1	
FDNS	3		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03024	147.3799	BORDER 7345.00 - TUCO INTERCHANGE 345KV CKT 1	
FDNS	04ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04509	146.8676	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1	
FDNS	6		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04491	145.5735	DBL-TGA-MATT	
FDNS	3		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03024	145.4149	BORDER 7345.00 - WOODWARD DISTRICT EHV 345KV CKT 1	
FDNS	3		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03034	144.9599	VIOLA 7 345.00 - WICHITA 345KV CKT 1	
FDNS	3		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0305	144.0888	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	
FDNS	3		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0305	142.8028	SPP-SWPS-04	
FDNS	3		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03173	142.7646	MINGO - RED WILLOW 345KV CKT 1	
FDNS	3		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0305	142.6465	Hitchland Interchange - POTTER COUNTY INTERCHANGE 345KV CKT 1	
FDNS	3		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03101	142.5266	MINGO - SETAB 345KV CKT 1	
FDNS	04G12_002		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04512	138.7503	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1	
FDNS	4		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04513	138.1983	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1	
FDNS	04G12_002		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04512	137.3606	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1	
FDNS	4		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04513	136.8095	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1	
FDNS	04ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0315	133.91	WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1	
FDNS	06ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04485	130.8138	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1	
FDNS	06ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04485	129.411	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1	
FDNS	04ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03333	128.6064	IODINE - WOODWARD EHV 138KV CKT 1	
FDNS	04ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03333	127.6039	DEWEY - IODINE 138KV CKT 1	
FDNS	04G12_002		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03152	127.258	WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1	
FDNS	14		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04511	126.9189	DBL-TGA-MATT	
FDNS	4		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03152	126.8565	WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1	
FDNS	6		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04491	125.4511	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1	
FDNS	14ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04515	125.3188	DBL-TGA-MATT	
FDNS	04ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03447	125.0108	DBL-WICH-THI	
FDNS	6		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04491	124.0562	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1	
FDNS	04G12_002		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03335	121.5871	IODINE - WOODWARD EHV 138KV CKT 1	
FDNS	04ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0315	121.5437	WOODWARD - WOODWARD 69KV CKT 1	
FDNS	4		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03335	120.9803	IODINE - WOODWARD EHV 138KV CKT 1	
FDNS	04G12_002		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03335	120.5956	DEWEY - IODINE 138KV CKT 1	
FDNS	4		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03335	119.9725	DEWEY - IODINE 138KV CKT 1	
FDNS	06ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03136	118.9635	WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1	
FDNS	04G12_002		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03451	117.731	DBL-WICH-THI	
FDNS	4		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03451	117.3161	DBL-WICH-THI	
FDNS	04ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03083	116.5014	MATTHEWSON 345.00 - TATONGA7 345.00 345KV CKT 1	
FDNS	04ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03083	116.5014	MATTHEWSON 345.00 - TATONGA7 345.00 345KV CKT 2	
FDNS	6		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03139	115.9325	WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1	
FDNS	04G12_002		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03152	114.9497	WOODWARD - WOODWARD 69KV CKT 1	
FDNS	4		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03152	114.5671	WOODWARD - WOODWARD 69KV CKT 1	
FDNS	06ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03318	113.1736	IODINE - WOODWARD EHV 138KV CKT 1	
FDNS	04ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03041	113.1532	HUNTERS7 345.00 - WOODRING 345KV CKT 1	
FDNS	06ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03318	112.1835	DEWEY - IODINE 138KV CKT 1	
FDNS	04ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03041	111.7146	HUNTERS7 345.00 - VIOLA 7 345.00 345KV CKT 1	
FDNS	04ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03029	111.6749	BORDER 7345.00 - TUCO INTERCHANGE 345KV CKT 1	
FDNS	04ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03005	111.447	DBL-MUL-RENO	
FDNS	04ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03005	111.3516	DBL-SPRVL-MU	
FDNS	06ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03433	110.6849	DBL-WICH-THI	
FDNS	04G12_002		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03085	110.0484	MATTHEWSON 345.00 - TATONGA7 345.00 345KV CKT 1	

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB		TC%LOADING		CONTINGENCY
							(MVA)	TDF	(% MVA)		
FDNS	04G12_002		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03085	110.0484	MATTHEWSON 345.00 - TATONGA7 345.00 345KV CKT 2	
FDNS	6		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03321	109.7182	IODINE - WOODWARD EHV 138KV CKT 1	
FDNS	4		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03085	109.6707	MATTHEWSON 345.00 - TATONGA7 345.00 345KV CKT 1	
FDNS	4		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03085	109.6707	MATTHEWSON 345.00 - TATONGA7 345.00 345KV CKT 2	
FDNS	04ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03029	109.6561	BORDER 7345.00 - WOODWARD DISTRICT EHV 345KV CKT 1	
FDNS	04ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03357	109.1924	BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1	
FDNS	04ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03057	108.9103	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	
FDNS	6		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03321	108.7175	DEWEY - IODINE 138KV CKT 1	
FDNS	04ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03041	108.682	VIOLA 7 345.00 - WICHITA 345KV CKT 1	
FDNS	04ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03183	108.538	MINGO - RED WILLOW 345KV CKT 1	
FDNS	04ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03057	107.6796	SPP-SWPS-04	
FDNS	6		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03438	106.9409	DBL-WICH-THI	
FDNS	14		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04511	106.857	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1	
FDNS	06ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03136	106.7693	WOODWARD - WOODWARD 69KV CKT 1	
FDNS	04G12_002		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03042	106.498	HUNTERS7 345.00 - WOODRING 345KV CKT 1	
FDNS	4		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03043	106.1127	HUNTERS7 345.00 - WOODRING 345KV CKT 1	
FDNS	14		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04511	105.5334	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1	
FDNS	04G12_002		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0303	105.3403	BORDER 7345.00 - TUCO INTERCHANGE 345KV CKT 1	
FDNS	14ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04515	105.2617	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1	
FDNS	04G12_002		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03008	105.0947	DBL-MUL-RENO	
FDNS	04G12_002		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03042	105.0876	HUNTERS7 345.00 - VIOLA 7 345.00 345KV CKT 1	
FDNS	04G12_002		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03008	105.0331	DBL-SPRVL-MU	
FDNS	4		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0303	104.9769	BORDER 7345.00 - TUCO INTERCHANGE 345KV CKT 1	
FDNS	4		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03008	104.7244	DBL-MUL-RENO	
FDNS	4		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03043	104.7108	HUNTERS7 345.00 - VIOLA 7 345.00 345KV CKT 1	
FDNS	4		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03008	104.6624	DBL-SPRVL-MU	
FDNS	14		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0315	104.1203	WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1	
FDNS	14ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04515	103.9408	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1	
FDNS	6		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03139	103.7993	WOODWARD - WOODWARD 69KV CKT 1	
FDNS	04G12_002		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0303	103.3136	BORDER 7345.00 - WOODWARD DISTRICT EHV 345KV CKT 1	
FDNS	04G12_002		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03359	103.2703	BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1	
FDNS	14ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03152	103.022	WOODWARD (WOODWRD2) 138/69/13.2KV TRANSFORMER CKT 1	
FDNS	4		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03359	102.9653	BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1	
FDNS	4		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0303	102.9495	BORDER 7345.00 - WOODWARD DISTRICT EHV 345KV CKT 1	
FDNS	04G12_002		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03058	102.5805	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	
FDNS	06ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03069	102.4902	MATTHEWSON 345.00 - TATONGA7 345.00 345KV CKT 1	
FDNS	06ALL		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03069	102.4902	MATTHEWSON 345.00 - TATONGA7 345.00 345KV CKT 2	
FDNS	4		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03058	102.217	POTTER COUNTY INTERCHANGE (WAUK 90343-A) 345/230/13.2KV TRANSFORMER CKT 1	
FDNS	04G12_002		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03186	102.083	MINGO - RED WILLOW 345KV CKT 1	
FDNS	04G12_002		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03042	102.0629	VIOLA 7 345.00 - WICHITA 345KV CKT 1	
FDNS	4		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03186	101.7685	MINGO - RED WILLOW 345KV CKT 1	
FDNS	4		0 13G	G12_002	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03043	101.6835	VIOLA 7 345.00 - WICHITA 345KV CKT 1	
FDNS	03ALL		0 13G	G12_002	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.03518	113.4545	AXTELL - POST ROCK 345KV CKT 1	
FDNS	04ALL		0 13G	G12_002	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.03615	110.1007	AXTELL - POST ROCK 345KV CKT 1	
FDNS	04ALL		0 13G	G12_002	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.04336	109.3461	DBL-SPRVL-MU	
FDNS	04ALL		0 13G	G12_002	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.04336	109.3222	DBL-MUL-RENO	
FDNS	04ALL		0 13G	G12_002	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.03736	104.0599	DBL-WICH-THI	
FDNS	04ALL		0 13G	G12_002	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.03839	103.2829	DBL-THIS-CLR	
FDNS	04ALL		0 13G	G12_002	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.03839	100.2693	DBL-SPRVL-CL	
FDNS	04ALL		0 13G	G12_002	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.03116	100.2609	GEN532652 1-JEFFREY ENERGY CENTER UNIT 2	
FDNS	04ALL		0 13G	G12_002	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.03116	100.2607	GEN532653 1-JEFFREY ENERGY CENTER UNIT 3	
FDNS	04ALL		0 13G	G12_002	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.03757	100.2021	CIRCLE - MULLERGREEN 230KV CKT 1	
FDNS	04ALL		0 13G	G12_002	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.03116	100.073	GEN532651 1-JEFFREY ENERGY CENTER UNIT 1	
FDNS	3		0 13G	G12_002	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.04284	100	DBL-SPRVL-MU	

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB		TC%LOADING		CONTINGENCY
							(MVA)	TDF	(% MVA)		
FDNS	03ALL		0 13G	G12_002	FROM->TO	WICHITA (WICHT12X) 345/138/13.8KV TRANSFORMER CKT 1	440	0.04028	111.0362	BENTON - WICHITA 345KV CKT 1	
FDNS	03ALL		0 13G	G12_002	FROM->TO	WICHITA (WICHT12X) 345/138/13.8KV TRANSFORMER CKT 1	440	0.04028	111.0217	BENTON - WICHITA 345KV CKT 1	
FDNS	03ALL		0 13G	G12_002	TO->FROM	WOODWARD - WOODWARD EHV 138KV CKT 1	287	0.03777	121.2325	DBL-TGA-MATT	
FDNS	03ALL		0 13G	G12_002	TO->FROM	WOODWARD - WOODWARD EHV 138KV CKT 1	287	0.03777	112.1181	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1	
FDNS	03ALL		0 13G	G12_002	TO->FROM	WOODWARD - WOODWARD EHV 138KV CKT 1	287	0.03777	111.2725	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1	
FDNS	3		0 13G	G12_002	TO->FROM	WOODWARD - WOODWARD EHV 138KV CKT 1	287	0.03799	103.9262	DBL-TGA-MATT	
FDNS	03ALL		0 13G	G12_002	TO->FROM	WOODWARD - WOODWARD EHV 138KV CKT 1	287	0.03291	103.5287	WOODWARD - WOODWARD EHV 138KV CKT 2	
FDNS	0		0 13SP	G12_008	TO->FROM	ALLEN SUB - LUBBOCK SOUTH INTERCHANGE 115KV CKT 1	160	0.04046	104.287	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	
FDNS	00G12_008		0 13SP	G12_008	TO->FROM	ALLEN SUB - LUBBOCK SOUTH INTERCHANGE 115KV CKT 1	160	0.04046	104.287	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	
FDNS	0		0 13SP	G12_008	TO->FROM	BAILEY COUNTY REC-EARTH INTERCHANGE - PLANT X STATION 115KV CKT 1	160	0.05557	110.7561	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1	
FDNS	00G12_008		0 13SP	G12_008	TO->FROM	BAILEY COUNTY REC-EARTH INTERCHANGE - PLANT X STATION 115KV CKT 1	160	0.05557	110.7561	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1	
FDNS	0		0 18SP	G12_008	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03408	126.3124	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1	
FDNS	00G12_008		0 18SP	G12_008	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03408	126.3124	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1	
FDNS	0		0 13SP	G12_008	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.0301	122.3889	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1	
FDNS	00G12_008		0 13SP	G12_008	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.0301	122.3889	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1	
FDNS	0		0 18SP	G12_008	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03408	117.6075	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1	
FDNS	00G12_008		0 18SP	G12_008	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03408	117.6075	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1	
FDNS	0		0 13SP	G12_008	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.0301	115.9283	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1	
FDNS	00G12_008		0 13SP	G12_008	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.0301	115.9283	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1	
FDNS	0		0 18SP	G12_008	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03535	111.2943	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1	
FDNS	00G12_008		0 18SP	G12_008	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03535	111.2943	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1	
FDNS	0		0 13SP	G12_008	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03107	110.8312	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1	
FDNS	00G12_008		0 13SP	G12_008	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03107	110.8312	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1	
FDNS	0		0 13SP	G12_008	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03107	106.2788	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1	
FDNS	00G12_008		0 13SP	G12_008	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03107	106.2788	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1	
FDNS	0		0 18SP	G12_008	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03535	105.0653	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1	
FDNS	00G12_008		0 18SP	G12_008	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03535	105.0653	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1	
FDNS	0		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.10115	127.0596	CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1	
FDNS	00G12_008		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.10115	127.0596	CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1	
FDNS	0		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.1235	126.9495	ALLEN SUB - LUBBOCK SOUTH INTERCHANGE 115KV CKT 1	
FDNS	00G12_008		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.1235	126.9495	ALLEN SUB - LUBBOCK SOUTH INTERCHANGE 115KV CKT 1	
FDNS	0		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.12504	124.839	BASE CASE	
FDNS	00G12_008		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.12504	124.839	BASE CASE	
FDNS	0		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.14333	116.437	TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1	
FDNS	00G12_008		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.14333	116.437	TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1	
FDNS	0		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.12806	115.6328	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	
FDNS	00G12_008		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.12806	115.6328	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	
FDNS	0		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.14832	112.9	JONES STATION - TUCO INTERCHANGE 230KV CKT 1	
FDNS	00G12_008		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.14832	112.9	JONES STATION - TUCO INTERCHANGE 230KV CKT 1	
FDNS	0		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.1235	111.9548	ALLEN SUB - SOUTH PLAINS REC-QUAKER 115KV CKT 1	
FDNS	00G12_008		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.1235	111.9548	ALLEN SUB - SOUTH PLAINS REC-QUAKER 115KV CKT 1	

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	0		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.12669	108.0215	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	00G12_008		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.12669	108.0215	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	0		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.1235	106.8337	SOUTH PLAINS REC-QUAKER - South Plains REC-Frankford Sub 115KV CKT 1
FDNS	00G12_008		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.1235	106.8337	SOUTH PLAINS REC-QUAKER - South Plains REC-Frankford Sub 115KV CKT 1
FDNS	0		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.12672	105.1244	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_008		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.12672	105.1244	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.13115	103.2488	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	00G12_008		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.13115	103.2488	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	0		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11005	103.1897	STANTON SUB - TUCO INTERCHANGE 115KV CKT 1
FDNS	00G12_008		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11005	103.1897	STANTON SUB - TUCO INTERCHANGE 115KV CKT 1
FDNS	0		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.1262	102.2605	LUBBOCK POWER & LIGHT-MILWAUKEE (M-E C0681251) 230/69/13.5KV TRANSFORMER CKT 1
FDNS	00G12_008		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.1262	102.2605	LUBBOCK POWER & LIGHT-MILWAUKEE (M-E C0681251) 230/69/13.5KV TRANSFORMER CKT 1
FDNS	0		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.1262	102.2604	LUBBOCK POWER & LIGHT-MILWAUKEE - LUBBOCK POWER & LIGHT-VICKSBURG 69KV CKT 1
FDNS	00G12_008		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.1262	102.2604	LUBBOCK POWER & LIGHT-MILWAUKEE - LUBBOCK POWER & LIGHT-VICKSBURG 69KV CKT 1
FDNS	0		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.1235	101.6573	MURPHY SUB - South Plains REC-Frankford Sub 115KV CKT 1
FDNS	00G12_008		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.1235	101.6573	MURPHY SUB - South Plains REC-Frankford Sub 115KV CKT 1
FDNS	0		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.13254	101.6364	POTTER COUNTY INTERCHANGE - S-RANDLCO 230.00 230KV CKT 1
FDNS	00G12_008		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.13254	101.6364	POTTER COUNTY INTERCHANGE - S-RANDLCO 230.00 230KV CKT 1
FDNS	0		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.12523	101.3595	SPP-SWPS-V49
FDNS	00G12_008		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.12523	101.3595	SPP-SWPS-V49
FDNS	0		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.13254	100.7586	PLANT X STATION - S-RANDLCO 230.00 230KV CKT 1
FDNS	00G12_008		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.13254	100.7586	PLANT X STATION - S-RANDLCO 230.00 230KV CKT 1
FDNS	0		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.12627	100.5966	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_008		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.12627	100.5966	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.12638	100.5767	SPP-SWPS-25
FDNS	00G12_008		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.12638	100.5767	SPP-SWPS-25
FNSL	0		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.12539	100.5397	GRASSLAND INTERCHANGE (PENN 0105951) 230/115/13.2KV TRANSFORMER CKT 1
FNSL	00G12_008		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.12539	100.5397	GRASSLAND INTERCHANGE (PENN 0105951) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.13478	100.0932	SPP-SWPS-V55
FDNS	00G12_008		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.13478	100.0932	SPP-SWPS-V55
FDNS	0		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.12751	100	CUNNINGHAM STATION - EDDY COUNTY INTERCHANGE 230KV CKT 1
FDNS	0		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.12647	100	HALE CO INTERCHANGE - PLANT X STATION 115KV CKT 1
FDNS	00G12_008		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.12751	100	CUNNINGHAM STATION - EDDY COUNTY INTERCHANGE 230KV CKT 1
FDNS	00G12_008		0 13SP	G12_008	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.12647	100	HALE CO INTERCHANGE - PLANT X STATION 115KV CKT 1
FDNS	0		0 13SP	G12_009	TO->FROM	ALLEN SUB - LUBBOCK SOUTH INTERCHANGE 115KV CKT 1	160	0.03973	104.287	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1
FDNS	00G12_009		0 13SP	G12_009	TO->FROM	ALLEN SUB - LUBBOCK SOUTH INTERCHANGE 115KV CKT 1	160	0.03973	104.287	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1
FDNS	0		0 13SP	G12_009	TO->FROM	BAILEY COUNTY REC-EARTH INTERCHANGE - PLANT X STATION 115KV CKT 1	160	0.05582	110.7561	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	00G12_009		0 13SP	G12_009	TO->FROM	BAILEY COUNTY REC-EARTH INTERCHANGE - PLANT X STATION 115KV CKT 1	160	0.05582	110.7561	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	0		0 23SP	G12_009	TO->FROM	DENVER CITY INTERCHANGE N. - MUSTANG STATION N. 115KV CKT 1	309	0.1062	104.4032	DENVER CITY INTERCHANGE S. - MUSTANG STATION N. 115KV CKT 2

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00G12_009		0 23SP	G12_009	TO->FROM	DENVER CITY INTERCHANGE N. - MUSTANG STATION N. 115KV CKT 1	309	0.1062	104.4032	DENVER CITY INTERCHANGE S. - MUSTANG STATION N. 115KV CKT 2
FDNS	0		0 23SP	G12_009	TO->FROM	DENVER CITY INTERCHANGE S. - MUSTANG STATION N. 115KV CKT 2	309	0.10448	103.2311	DENVER CITY INTERCHANGE N. - MUSTANG STATION N. 115KV CKT 1
FDNS	00G12_009		0 23SP	G12_009	TO->FROM	DENVER CITY INTERCHANGE S. - MUSTANG STATION N. 115KV CKT 2	309	0.10448	103.2311	DENVER CITY INTERCHANGE N. - MUSTANG STATION N. 115KV CKT 1
FDNS	0		0 18SP	G12_009	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03577	126.3124	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	00G12_009		0 18SP	G12_009	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03577	126.3124	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	0		0 13SP	G12_009	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.0321	122.3889	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	00G12_009		0 13SP	G12_009	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.0321	122.3889	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	0		0 18SP	G12_009	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03577	117.6075	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	00G12_009		0 18SP	G12_009	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03577	117.6075	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	0		0 13SP	G12_009	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.0321	115.9283	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	00G12_009		0 13SP	G12_009	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.0321	115.9283	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	0		0 18SP	G12_009	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03706	111.2943	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_009		0 18SP	G12_009	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03706	111.2943	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0		0 13SP	G12_009	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03311	110.8312	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_009		0 13SP	G12_009	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03311	110.8312	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0		0 13SP	G12_009	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03311	106.2788	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_009		0 13SP	G12_009	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03311	106.2788	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0		0 18SP	G12_009	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03706	105.0653	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_009		0 18SP	G12_009	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03706	105.0653	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.09185	127.0596	CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1
FDNS	00G12_009		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.09185	127.0596	CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1
FDNS	0		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11416	126.9495	ALLEN SUB - LUBBOCK SOUTH INTERCHANGE 115KV CKT 1
FDNS	00G12_009		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11416	126.9495	ALLEN SUB - LUBBOCK SOUTH INTERCHANGE 115KV CKT 1
FDNS	0		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11454	124.839	BASE CASE
FDNS	00G12_009		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11454	124.839	BASE CASE
FDNS	0		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.13348	116.437	TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1
FDNS	00G12_009		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.13348	116.437	TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1
FDNS	0		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11783	115.6328	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_009		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11783	115.6328	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.13763	112.9	JONES STATION - TUCO INTERCHANGE 230KV CKT 1
FDNS	00G12_009		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.13763	112.9	JONES STATION - TUCO INTERCHANGE 230KV CKT 1
FDNS	0		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11416	111.9548	ALLEN SUB - SOUTH PLAINS REC-QUAKER 115KV CKT 1
FDNS	00G12_009		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11416	111.9548	ALLEN SUB - SOUTH PLAINS REC-QUAKER 115KV CKT 1
FDNS	0		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11622	108.0215	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	00G12_009		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11622	108.0215	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	0		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11416	106.8337	SOUTH PLAINS REC-QUAKER - South Plains REC-Frankford Sub 115KV CKT 1
FDNS	00G12_009		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11416	106.8337	SOUTH PLAINS REC-QUAKER - South Plains REC-Frankford Sub 115KV CKT 1
FDNS	0		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11626	105.1244	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00G12_009		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11626	105.1244	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.12072	103.2488	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	00G12_009		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.12072	103.2488	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	0		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.10058	103.1897	STANTON SUB - TUCO INTERCHANGE 115KV CKT 1
FDNS	00G12_009		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.10058	103.1897	STANTON SUB - TUCO INTERCHANGE 115KV CKT 1
FDNS	0		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11572	102.2605	LUBBOCK POWER & LIGHT-MILWAUKEE (M-E C0681251) 230/69/13.5KV TRANSFORMER CKT 1
FDNS	00G12_009		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11572	102.2605	LUBBOCK POWER & LIGHT-MILWAUKEE (M-E C0681251) 230/69/13.5KV TRANSFORMER CKT 1
FDNS	0		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11572	102.2604	LUBBOCK POWER & LIGHT-MILWAUKEE - LUBBOCK POWER & LIGHT-VICKSBURG 69KV CKT 1
FDNS	00G12_009		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11572	102.2604	LUBBOCK POWER & LIGHT-MILWAUKEE - LUBBOCK POWER & LIGHT-VICKSBURG 69KV CKT 1
FDNS	0		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11416	101.6573	MURPHY SUB - South Plains REC-Frankford Sub 115KV CKT 1
FDNS	00G12_009		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11416	101.6573	MURPHY SUB - South Plains REC-Frankford Sub 115KV CKT 1
FDNS	0		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.12211	101.6364	POTTER COUNTY INTERCHANGE - S-RANDLCO 230.00 230KV CKT 1
FDNS	00G12_009		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.12211	101.6364	POTTER COUNTY INTERCHANGE - S-RANDLCO 230.00 230KV CKT 1
FDNS	0		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11458	101.3595	SPP-SWPS-V49
FDNS	00G12_009		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11458	101.3595	SPP-SWPS-V49
FDNS	0		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.12211	100.7586	PLANT X STATION - S-RANDLCO 230.00 230KV CKT 1
FDNS	00G12_009		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.12211	100.7586	PLANT X STATION - S-RANDLCO 230.00 230KV CKT 1
FDNS	0		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11586	100.5966	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_009		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11586	100.5966	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11592	100.5767	SPP-SWPS-25
FDNS	00G12_009		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11592	100.5767	SPP-SWPS-25
FNSL	0		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.1149	100.5397	GRASSLAND INTERCHANGE (PENN 0105951) 230/115/13.2KV TRANSFORMER CKT 1
FNSL	00G12_009		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.1149	100.5397	GRASSLAND INTERCHANGE (PENN 0105951) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.12045	100.0932	SPP-SWPS-V55
FDNS	00G12_009		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.12045	100.0932	SPP-SWPS-V55
FDNS	0		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11691	100	CUNNINGHAM STATION - EDDY COUNTY INTERCHANGE 230KV CKT 1
FDNS	0		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11602	100	HALE CO INTERCHANGE - PLANT X STATION 115KV CKT 1
FDNS	00G12_009		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11691	100	CUNNINGHAM STATION - EDDY COUNTY INTERCHANGE 230KV CKT 1
FDNS	00G12_009		0 13SP	G12_009	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11602	100	HALE CO INTERCHANGE - PLANT X STATION 115KV CKT 1
FDNS	0		0 23SP	G12_009	FROM->TO	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2	150	0.0515	101.8191	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_009		0 23SP	G12_009	FROM->TO	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2	150	0.0515	101.8191	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0		0 18SP	G12_009	FROM->TO	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2	150	0.05856	101.3171	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_009		0 18SP	G12_009	FROM->TO	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2	150	0.05856	101.3171	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0		0 13SP	G12_010	TO->FROM	ALLEN SUB - LUBBOCK SOUTH INTERCHANGE 115KV CKT 1	160	0.03973	104.287	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1
FDNS	00G12_010		0 13SP	G12_010	TO->FROM	ALLEN SUB - LUBBOCK SOUTH INTERCHANGE 115KV CKT 1	160	0.03973	104.287	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1
FDNS	0		0 13SP	G12_010	TO->FROM	BAILEY COUNTY REC-EARTH INTERCHANGE - PLANT X STATION 115KV CKT 1	160	0.05582	110.7561	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	00G12_010		0 13SP	G12_010	TO->FROM	BAILEY COUNTY REC-EARTH INTERCHANGE - PLANT X STATION 115KV CKT 1	160	0.05582	110.7561	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	0		0 23SP	G12_010	TO->FROM	DENVER CITY INTERCHANGE N. - MUSTANG STATION N. 115KV CKT 1	309	0.1062	104.4032	DENVER CITY INTERCHANGE S. - MUSTANG STATION N. 115KV CKT 2
FDNS	00G12_010		0 23SP	G12_010	TO->FROM	DENVER CITY INTERCHANGE N. - MUSTANG STATION N. 115KV CKT 1	309	0.1062	104.4032	DENVER CITY INTERCHANGE S. - MUSTANG STATION N. 115KV CKT 2

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	0	0	23SP	G12_010	TO->FROM	DENVER CITY INTERCHANGE S. - MUSTANG STATION N. 115KV CKT 2	309	0.10448	103.2311	DENVER CITY INTERCHANGE N. - MUSTANG STATION N. 115KV CKT 1
FDNS	00G12_010	0	23SP	G12_010	TO->FROM	DENVER CITY INTERCHANGE S. - MUSTANG STATION N. 115KV CKT 2	309	0.10448	103.2311	DENVER CITY INTERCHANGE N. - MUSTANG STATION N. 115KV CKT 1
FDNS	0	0	18SP	G12_010	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03577	126.3124	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	00G12_010	0	18SP	G12_010	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03577	126.3124	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	0	0	13SP	G12_010	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.0321	122.3889	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	00G12_010	0	13SP	G12_010	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.0321	122.3889	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	0	0	18SP	G12_010	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03577	117.6075	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	00G12_010	0	18SP	G12_010	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03577	117.6075	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	0	0	13SP	G12_010	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.0321	115.9283	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	00G12_010	0	13SP	G12_010	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.0321	115.9283	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	0	0	18SP	G12_010	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03706	111.2943	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_010	0	18SP	G12_010	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03706	111.2943	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0	0	13SP	G12_010	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03311	110.8312	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_010	0	13SP	G12_010	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03311	110.8312	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0	0	13SP	G12_010	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03311	106.2788	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_010	0	13SP	G12_010	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03311	106.2788	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0	0	18SP	G12_010	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03706	105.0653	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_010	0	18SP	G12_010	FROM->TO	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1	252	0.03706	105.0653	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.09185	127.0596	CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1
FDNS	00G12_010	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.09185	127.0596	CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV CKT 1
FDNS	0	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11416	126.9495	ALLEN SUB - LUBBOCK SOUTH INTERCHANGE 115KV CKT 1
FDNS	00G12_010	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11416	126.9495	ALLEN SUB - LUBBOCK SOUTH INTERCHANGE 115KV CKT 1
FDNS	0	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11454	124.839	BASE CASE
FDNS	00G12_010	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11454	124.839	BASE CASE
FDNS	0	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.13348	116.437	TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1
FDNS	00G12_010	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.13348	116.437	TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1
FDNS	0	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11783	115.6328	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_010	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11783	115.6328	LUBBOCK SOUTH INTERCHANGE (ABB LLM60043) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.13763	112.9	JONES STATION - TUCO INTERCHANGE 230KV CKT 1
FDNS	00G12_010	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.13763	112.9	JONES STATION - TUCO INTERCHANGE 230KV CKT 1
FDNS	0	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11416	111.9548	ALLEN SUB - SOUTH PLAINS REC-QUAKER 115KV CKT 1
FDNS	00G12_010	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11416	111.9548	ALLEN SUB - SOUTH PLAINS REC-QUAKER 115KV CKT 1
FDNS	0	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11622	108.0215	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	00G12_010	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11622	108.0215	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	0	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11416	106.8337	SOUTH PLAINS REC-QUAKER - South Plains REC-Frankford Sub 115KV CKT 1
FDNS	00G12_010	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11416	106.8337	SOUTH PLAINS REC-QUAKER - South Plains REC-Frankford Sub 115KV CKT 1
FDNS	0	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11626	105.1244	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_010	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11626	105.1244	LUBBOCK EAST INTERCHANGE (ENRCO 136162) 230/115/13.2KV TRANSFORMER CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	0	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.12072	103.2488	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	00G12_010	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.12072	103.2488	DEAF SMITH COUNTY INTERCHANGE - PLANT X STATION 230KV CKT 1
FDNS	0	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.10058	103.1897	STANTON SUB - TUCCO INTERCHANGE 115KV CKT 1
FDNS	00G12_010	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.10058	103.1897	STANTON SUB - TUCCO INTERCHANGE 115KV CKT 1
FDNS	0	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11572	102.2605	LUBBOCK POWER & LIGHT-MILWAUKEE (M-E C0681251) 230/69/13.5KV TRANSFORMER CKT 1
FDNS	00G12_010	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11572	102.2605	LUBBOCK POWER & LIGHT-MILWAUKEE (M-E C0681251) 230/69/13.5KV TRANSFORMER CKT 1
FDNS	0	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11572	102.2604	LUBBOCK POWER & LIGHT-MILWAUKEE - LUBBOCK POWER & LIGHT-VICKSBURG 69KV CKT 1
FDNS	00G12_010	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11572	102.2604	LUBBOCK POWER & LIGHT-MILWAUKEE - LUBBOCK POWER & LIGHT-VICKSBURG 69KV CKT 1
FDNS	0	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11416	101.6573	MURPHY SUB - South Plains REC-Frankford Sub 115KV CKT 1
FDNS	00G12_010	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11416	101.6573	MURPHY SUB - South Plains REC-Frankford Sub 115KV CKT 1
FDNS	0	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.12211	101.6364	POTTER COUNTY INTERCHANGE - S-RANDLCO 230.00 230KV CKT 1
FDNS	00G12_010	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.12211	101.6364	POTTER COUNTY INTERCHANGE - S-RANDLCO 230.00 230KV CKT 1
FDNS	0	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11458	101.3595	SPP-SWPS-V49
FDNS	00G12_010	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11458	101.3595	SPP-SWPS-V49
FDNS	0	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.12211	100.7586	PLANT X STATION - S-RANDLCO 230.00 230KV CKT 1
FDNS	00G12_010	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.12211	100.7586	PLANT X STATION - S-RANDLCO 230.00 230KV CKT 1
FDNS	0	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11586	100.5966	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_010	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11586	100.5966	PLANT X STATION (WH ALM20171) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11592	100.5767	SPP-SWPS-25
FDNS	00G12_010	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11592	100.5767	SPP-SWPS-25
FNSL	0	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.1149	100.5397	GRASSLAND INTERCHANGE (PENN 0105951) 230/115/13.2KV TRANSFORMER CKT 1
FNSL	00G12_010	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.1149	100.5397	GRASSLAND INTERCHANGE (PENN 0105951) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.12045	100.0932	SPP-SWPS-V55
FDNS	00G12_010	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.12045	100.0932	SPP-SWPS-V55
FDNS	0	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11691	100	CUNNINGHAM STATION - EDDY COUNTY INTERCHANGE 230KV CKT 1
FDNS	0	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11602	100	HALE CO INTERCHANGE - PLANT X STATION 115KV CKT 1
FDNS	00G12_010	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11691	100	CUNNINGHAM STATION - EDDY COUNTY INTERCHANGE 230KV CKT 1
FDNS	00G12_010	0	13SP	G12_010	FROM->TO	WOLFFORTH INTERCHANGE - YUMA INTERCHANGE 115KV CKT 1	154	0.11602	100	HALE CO INTERCHANGE - PLANT X STATION 115KV CKT 1
FDNS	0	0	23SP	G12_010	FROM->TO	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2	150	0.0515	101.8191	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_010	0	23SP	G12_010	FROM->TO	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2	150	0.0515	101.8191	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	0	0	18SP	G12_010	FROM->TO	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2	150	0.05856	101.3171	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1
FDNS	00G12_010	0	18SP	G12_010	FROM->TO	YOAKUM COUNTY INTERCHANGE (PENN C010585) 230/115/13.2KV TRANSFORMER CKT 2	150	0.05856	101.3171	YOAKUM COUNTY INTERCHANGE (GE M100899) 230/115/13.2KV TRANSFORMER CKT 1
FNSL-Blown up	03ALL	0	13G	G12_011		Non-Converged Contingency	0	0.21559	-	DBL-THIS-CLR
FNSL-Blown up	03ALL	0	13G	G12_011		Non-Converged Contingency	0	0.13724	-	DBL-MUL-RENO
FNSL-Blown up	03ALL	0	13G	G12_011		Non-Converged Contingency	0	0.13724	-	DBL-SPRVL-MU
FNSL-Blown up	03ALL	0	13G	G12_011		Non-Converged Contingency	0	0.1086	-	DBL-WICH-THI
FDNS	03ALL	0	13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.12483	125.5854	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	03ALL	0	13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.14332	124.4644	DBL-TGA-MATT
FDNS	03ALL	0	13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.14332	118.0402	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	03ALL	0	13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.14332	117.3461	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	03ALL	0	13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.15517	116.6561	HUNTERS7 345.00 - WOODRING 345KV CKT 1
FDNS	03ALL	0	13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.15517	114.1361	HUNTERS7 345.00 - VIOLA 7 345.00 345KV CKT 1
FDNS	03ALL	0	13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.13205	109.702	EVANS ENERGY CENTER NORTH - MAIZEW 4 138.00 138KV CKT 1
FDNS	03ALL	0	13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.13205	109.7007	MAIZE - MAIZEW 4 138.00 138KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB		TC%LOADING		CONTINGENCY
							(MVA)	TDF	(% MVA)		
FDNS	03ALL		0 13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.13205	109.7004	SPP-WERE-91	
FDNS	03ALL		0 13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.15517	109.4522	VIOLA 7 345.00 - WICHITA 345KV CKT 1	
FDNS	03ALL		0 13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.13205	109.1936	MAIZE - MAIZEE 4 138.00 138KV CKT 1	
FDNS	03ALL		0 13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.13205	109.1898	CHISHOLM - MAIZEE 4 138.00 138KV CKT 1	
FDNS	03ALL		0 13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.13205	109.1898	SPP-WERE-90	
FDNS	03ALL		0 13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.12946	108.2296	WRTOD400	
FDNS	03G12_011		0 13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.12591	108.0409	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1	
FDNS	03ALL		0 13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.12919	107.6911	HOYT - JEFFREY ENERGY CENTER 345KV CKT 1	
FDNS	3		0 13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.1258	107.6142	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1	
FDNS	03ALL		0 13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.13469	107.3884	SWISSVALE - WEST GARDNER 345KV CKT 1	
FDNS	03ALL		0 13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.12483	107.3364	BASE CASE	
FDNS	03ALL		0 13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.13055	105.5698	EMPORIA ENERGY CENTER - WICHITA 345KV CKT 1	
FDNS	03ALL		0 13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.12915	105.4871	WICHITA (WICHT12X) 345/138/13.8KV TRANSFORMER CKT 1	
FDNS	03ALL		0 13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.1296	105.4251	HOYT - STRANGER CREEK 345KV CKT 1	
FDNS	03ALL		0 13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.15368	105.1782	AXTELL - POST ROCK 345KV CKT 1	
FDNS	03ALL		0 13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.12682	104.0251	EVANS ENERGY CENTER SOUTH - LAKERIDGE 138KV CKT 1	
FDNS	03ALL		0 13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.1283	103.7433	WICHITA (WICHT11X) 345/138/13.8KV TRANSFORMER CKT 1	
FDNS	03ALL		0 13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.12682	103.6092	SPP-WERE-32	
FDNS	03ALL		0 13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.15624	103.4327	G12-11T 345.00 - POST ROCK 345KV CKT 1	
FDNS	03ALL		0 13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.12682	103.3178	HOOVER NORTH - LAKERIDGE 138KV CKT 1	
FDNS	03ALL		0 13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.13108	103.2496	EMPORIA ENERGY CENTER - SWISSVALE 345KV CKT 1	
FDNS	03ALL		0 13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.12627	102.5331	45TH ST4 138.00 - EVANS ENERGY CENTER SOUTH 138KV CKT 1	
FDNS	03ALL		0 13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.12627	102.4583	45TH ST4 138.00 - COWSKIN 138KV CKT 1	
FDNS	03ALL		0 13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.08788	101.4748	G11-17T 345.00 - G12-11T 345.00 345KV CKT 1	
FDNS	03ALL		0 13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.11849	101.2835	BENTON - WOLF CREEK 345KV CKT 1	
FDNS	03ALL		0 13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.12538	101.1613	MINGO - RED WILLOW 345KV CKT 1	
FDNS	03ALL		0 13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.12699	101.0558	RENO COUNTY - SUMMIT 345KV CKT 1	
FDNS	03ALL		0 13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.12806	100.9882	MATTHEWSON 345.00 - TATONGA7 345.00 345KV CKT 1	
FDNS	03ALL		0 13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.12806	100.9882	MATTHEWSON 345.00 - TATONGA7 345.00 345KV CKT 2	
FDNS	03ALL		0 13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.12627	100.7723	CENTENNIAL - COWSKIN 138KV CKT 1	
FDNS	03G12_011		0 13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.14457	100.6488	DBL-TGA-MATT	
FDNS	03ALL		0 13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.12627	100.3991	SPP-WERE-28	
FDNS	03ALL		0 13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.12375	100.2868	ROSE HILL - WOLF CREEK 345KV CKT 1	
FDNS	3		0 13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.14444	100.1568	DBL-TGA-MATT	
FDNS	03ALL		0 13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.12627	100.1417	CENTENNIAL - WACO 138KV CKT 1	
FDNS	03ALL		0 13G	G12_011	TO->FROM	BENTON - WICHITA 345KV CKT 1	932	0.12483	99.9	GEN542956 2-LACYGNE UNIT #2	
FDNS	03ALL		0 13G	G12_011	TO->FROM	CHISHOLM - MAIZEE 4 138.00 138KV CKT 1	382	0.04541	121.7567	BENTON - WICHITA 345KV CKT 1	
FDNS	03G12_011		0 13G	G12_011	TO->FROM	CHISHOLM - MAIZEE 4 138.00 138KV CKT 1	382	0.04573	105.5753	BENTON - WICHITA 345KV CKT 1	
FDNS	3		0 13G	G12_011	TO->FROM	CHISHOLM - MAIZEE 4 138.00 138KV CKT 1	382	0.04569	105.2079	BENTON - WICHITA 345KV CKT 1	
FDNS	03G12_011		0 13G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	319	0.07214	100.7977	DBL-SPRVL-MU	
FDNS	03G12_011		0 13G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	319	0.07214	100.2147	DBL-MUL-RENO	
FDNS	03ALL		0 13G	G12_011	FROM->TO	EVANS ENERGY CENTER NORTH - MAIZEW 4 138.00 138KV CKT 1	382	0.04541	124.4793	BENTON - WICHITA 345KV CKT 1	
FDNS	03G12_011		0 13G	G12_011	FROM->TO	EVANS ENERGY CENTER NORTH - MAIZEW 4 138.00 138KV CKT 1	382	0.04573	108.2949	BENTON - WICHITA 345KV CKT 1	
FDNS	3		0 13G	G12_011	FROM->TO	EVANS ENERGY CENTER NORTH - MAIZEW 4 138.00 138KV CKT 1	382	0.04569	107.9269	BENTON - WICHITA 345KV CKT 1	
FDNS	03ALL		0 13G	G12_011	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.03428	144.4144	DBL-TGA-MATT	
FDNS	03ALL		0 13G	G12_011	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.03428	133.4973	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1	
FDNS	03ALL		0 13G	G12_011	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.03428	132.4184	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1	
FDNS	03G12_011		0 13G	G12_011	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.03459	126.8738	DBL-TGA-MATT	
FDNS	3		0 13G	G12_011	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.03454	126.5225	DBL-TGA-MATT	
FDNS	03G12_011		0 13G	G12_011	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.03459	115.1152	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1	
FDNS	3		0 13G	G12_011	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.03454	114.7482	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1	
FDNS	03G12_011		0 13G	G12_011	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.03459	114.2793	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1	
FDNS	3		0 13G	G12_011	FROM->TO	FPL SWITCH - MOORELAND 138KV CKT 1	287	0.03454	113.911	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1	
FDNS	03ALL		0 13G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03428	258.4594	DBL-TGA-MATT	
FDNS	03ALL		0 13G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03428	238.9626	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1	
FDNS	03ALL		0 13G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03428	237.003	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1	
FDNS	03G12_011		0 13G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03459	223.9158	DBL-TGA-MATT	
FDNS	3		0 13G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03454	223.2844	DBL-TGA-MATT	
FDNS	03G12_011		0 13G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03459	202.1139	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1	

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB		TC%LOADING		CONTINGENCY	
							(MVA)	TDF	(% MVA)			
FDNS	3		0 13G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03454	201.4452	G11_051T	345.00 - TATONGA7	345.00 345KV CKT 1
FDNS	03G12_011		0 13G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03459	200.5874	G11_051T	345.00 - WOODWARD DISTRICT EHV 345KV CKT 1	
FDNS	3		0 13G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03454	199.9126	G11_051T	345.00 - WOODWARD DISTRICT EHV 345KV CKT 1	
FDNS	04ALL		0 13G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0347	168.1444	DBL-TGA-MATT		
FDNS	4		0 13G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03473	158.1711	DBL-TGA-MATT		
FDNS	06ALL		0 13G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03446	150.7676	DBL-TGA-MATT		
FDNS	04ALL		0 13G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0347	148.3027	G11_051T	345.00 - TATONGA7	345.00 345KV CKT 1
FDNS	04ALL		0 13G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0347	146.8676	G11_051T	345.00 - WOODWARD DISTRICT EHV 345KV CKT 1	
FDNS	6		0 13G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03452	145.5735	DBL-TGA-MATT		
FDNS	4		0 13G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03473	138.1983	G11_051T	345.00 - TATONGA7	345.00 345KV CKT 1
FDNS	4		0 13G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03473	136.8095	G11_051T	345.00 - WOODWARD DISTRICT EHV 345KV CKT 1	
FDNS	06ALL		0 13G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03446	130.8138	G11_051T	345.00 - TATONGA7	345.00 345KV CKT 1
FDNS	06ALL		0 13G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03446	129.411	G11_051T	345.00 - WOODWARD DISTRICT EHV 345KV CKT 1	
FDNS	14		0 13G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03472	126.9189	DBL-TGA-MATT		
FDNS	6		0 13G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03452	125.4511	G11_051T	345.00 - TATONGA7	345.00 345KV CKT 1
FDNS	14ALL		0 13G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03476	125.3188	DBL-TGA-MATT		
FDNS	6		0 13G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03452	124.0562	G11_051T	345.00 - WOODWARD DISTRICT EHV 345KV CKT 1	
FDNS	14		0 13G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03472	106.857	G11_051T	345.00 - TATONGA7	345.00 345KV CKT 1
FDNS	14		0 13G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03472	105.5334	G11_051T	345.00 - WOODWARD DISTRICT EHV 345KV CKT 1	
FDNS	14ALL		0 13G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03476	105.2617	G11_051T	345.00 - TATONGA7	345.00 345KV CKT 1
FDNS	14ALL		0 13G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03476	103.9408	G11_051T	345.00 - WOODWARD DISTRICT EHV 345KV CKT 1	
FDNS	03ALL		0 13G	G12_011	TO->FROM	KNOLL - N HAYS3 115.00 115KV CKT 1	99	0.06004	105.0187	KNOLL 230 - POSTROCK6	230.00 230KV CKT 1	
FDNS	03ALL		0 13G	G12_011	FROM->TO	MOUNDRIDGE (MOUND10X) 138/115/13.8KV TRANSFORMER CKT 1	110	0.03536	170.7382	RENO COUNTY - WICHITA 345KV CKT 1		
FDNS	03ALL		0 13G	G12_011	FROM->TO	MOUNDRIDGE (MOUND10X) 138/115/13.8KV TRANSFORMER CKT 1	110	0.03536	170.1687	RENO COUNTY - WICHITA 345KV CKT 1		
FDNS	03G12_011		0 13G	G12_011	FROM->TO	MOUNDRIDGE (MOUND10X) 138/115/13.8KV TRANSFORMER CKT 1	110	0.03556	141.6915	RENO COUNTY - WICHITA 345KV CKT 1		
FDNS	03G12_011		0 13G	G12_011	FROM->TO	MOUNDRIDGE (MOUND10X) 138/115/13.8KV TRANSFORMER CKT 1	110	0.03556	141.3607	RENO COUNTY - WICHITA 345KV CKT 1		
FDNS	3		0 13G	G12_011	FROM->TO	MOUNDRIDGE (MOUND10X) 138/115/13.8KV TRANSFORMER CKT 1	110	0.03552	140.4127	RENO COUNTY - WICHITA 345KV CKT 1		
FDNS	3		0 13G	G12_011	FROM->TO	MOUNDRIDGE (MOUND10X) 138/115/13.8KV TRANSFORMER CKT 1	110	0.03552	140.0865	RENO COUNTY - WICHITA 345KV CKT 1		
FDNS	04ALL		0 13G	G12_011	FROM->TO	MOUNDRIDGE (MOUND10X) 138/115/13.8KV TRANSFORMER CKT 1	110	0.03561	123.1707	RENO COUNTY - WICHITA 345KV CKT 1		
FDNS	04ALL		0 13G	G12_011	FROM->TO	MOUNDRIDGE (MOUND10X) 138/115/13.8KV TRANSFORMER CKT 1	110	0.03561	123.0959	RENO COUNTY - WICHITA 345KV CKT 1		
FDNS	4		0 13G	G12_011	FROM->TO	MOUNDRIDGE (MOUND10X) 138/115/13.8KV TRANSFORMER CKT 1	110	0.03561	107.428	RENO COUNTY - WICHITA 345KV CKT 1		
FDNS	4		0 13G	G12_011	FROM->TO	MOUNDRIDGE (MOUND10X) 138/115/13.8KV TRANSFORMER CKT 1	110	0.03561	107.2678	RENO COUNTY - WICHITA 345KV CKT 1		
FDNS	03ALL		0 13G	G12_011	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	355.3	0.08337	129.5547	G12-11T	345.00 - POST ROCK 345KV CKT 1	
FDNS	03G12_011		0 13G	G12_011	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	355.3	0.08325	107.2733	G12-11T	345.00 - POST ROCK 345KV CKT 1	
FDNS	3		0 13G	G12_011	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	355.3	0.0833	106.3484	G12-11T	345.00 - POST ROCK 345KV CKT 1	
FDNS	03ALL		0 13G	G12_011	TO->FROM	N HAYS3 115.00 - VINE STREET 115KV CKT 1	99	0.06004	109.8981	KNOLL 230 - POSTROCK6	230.00 230KV CKT 1	
FDNS	03ALL		0 13G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.13357	113.4545	AXTELL - POST ROCK 345KV CKT 1		
FDNS	04ALL		0 13G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.04153	113.1592	KNOLL 230 - POSTROCK6	230.00 230KV CKT 1	
FDNS	04ALL		0 13G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.13453	110.1007	AXTELL - POST ROCK 345KV CKT 1		
FDNS	04ALL		0 13G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.11155	109.3461	DBL-SPRVL-MU		
FDNS	04ALL		0 13G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.11155	109.3222	DBL-MUL-RENO		
FDNS	04ALL		0 13G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.11684	104.7202	MULLERGREN - SOUTH HAYS 230KV CKT 1		
FDNS	04ALL		0 13G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.10314	104.0599	DBL-WICH-THI		
FDNS	04ALL		0 13G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.10855	103.2829	DBL-THIS-CLR		
FDNS	03G12_011		0 13G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.11111	101.2553	DBL-SPRVL-MU		
FDNS	03G12_011		0 13G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.11111	101.0473	DBL-MUL-RENO		
FDNS	04ALL		0 13G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.10855	100.2693	DBL-SPRVL-CL		
FDNS	04ALL		0 13G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.09813	100.2609	GEN532652 1-JEFFREY ENERGY CENTER UNIT 2		
FDNS	04ALL		0 13G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.09813	100.2607	GEN532653 1-JEFFREY ENERGY CENTER UNIT 3		
FDNS	04ALL		0 13G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.10673	100.2021	CIRCLE - MULLERGREN 230KV CKT 1		
FDNS	04ALL		0 13G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.09813	100.073	GEN532651 1-JEFFREY ENERGY CENTER UNIT 1		
FDNS	3		0 13G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.11103	100	DBL-SPRVL-MU		
FDNS	03ALL		0 13G	G12_011	FROM->TO	WICHITA (WICHT12X) 345/138/13.8KV TRANSFORMER CKT 1	440	0.04315	111.0362	BENTON - WICHITA 345KV CKT 1		
FDNS	03ALL		0 13G	G12_011	FROM->TO	WICHITA (WICHT12X) 345/138/13.8KV TRANSFORMER CKT 1	440	0.04315	111.0217	BENTON - WICHITA 345KV CKT 1		

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

See next page.

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FNSL-Blown up	0		1 18SP	ASGI_12_006		HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 &JEFFREY ENERGY CENTER - MORRIS COUNTY 345KV CKT 1	0	0.03124	-	BASE CASE
FNSL-Blown up	00ASGI_12_006		1 18SP	ASGI_12_006		HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 &JEFFREY ENERGY CENTER - MORRIS COUNTY 345KV CKT 1	0	0.03124	-	BASE CASE
FNSL-Blown up	0		1 13WP	ASGI_12_006		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.05554	-	BASE CASE
FNSL-Blown up	0		1 18WP	ASGI_12_006		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.05476	-	BASE CASE
FNSL-Blown up	00ASGI_12_006		1 13WP	ASGI_12_006		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.05554	-	BASE CASE
FNSL-Blown up	00ASGI_12_006		1 18WP	ASGI_12_006		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.05476	-	BASE CASE
FNSL-Blown up	0		1 23SP	G12_001		CUNNINGHAM STATION - EDDY COUNTY INTERCHANGE 230KV CKT 1 &CUNNINGHAM STATION - POTASH JUNCTION INTERCHANGE 230KV CKT 1	0	0.03856	-	BASE CASE
FNSL-Blown up	00G12_001		1 23SP	G12_001		CUNNINGHAM STATION - EDDY COUNTY INTERCHANGE 230KV CKT 1 &CUNNINGHAM STATION - POTASH JUNCTION INTERCHANGE 230KV CKT 1	0	0.03855	-	BASE CASE
FNSL-Blown up	3		1 13G	G12_001		G11-17T 345.00 - SPEARVILLE 345KV CKT 1 &G11-17T 345.00 - G11_017_1 345.00 345KV CKT 1	0	0.04245	-	BASE CASE
FNSL-Blown up	03ALL		1 13G	G12_001		G11-17T 345.00 - SPEARVILLE 345KV CKT 1 &G11-17T 345.00 - G11_017_1 345.00 345KV CKT 1	0	0.04193	-	BASE CASE
FNSL-Blown up	03ALL		1 13G	G12_001		G11-17T 345.00 - SPEARVILLE 345KV CKT 1 &G11-17T 345.00 - G12-11T 345.00 345KV CKT 1	0	0.08386	-	BASE CASE
FNSL-Blown up	00NR		1 23SP	G12_001		G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1 & G12_001T 230.00 - G12_001_1 230.00 230KV CKT 1	0	1.901	-	BASE CASE
FNSL-Blown up	0		1 13SP	G12_001		G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1 &G12_001T 230.00 - G12_001_1 230.00 230KV CKT 1	0	1.89381	-	BASE CASE
FNSL-Blown up	0		1 13WP	G12_001		G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1 &G12_001T 230.00 - G12_001_1 230.00 230KV CKT 1	0	1.89293	-	BASE CASE
FNSL-Blown up	0		1 18SP	G12_001		G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1 &G12_001T 230.00 - G12_001_1 230.00 230KV CKT 1	0	1.91252	-	BASE CASE
FNSL-Blown up	0		1 18WP	G12_001		G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1 &G12_001T 230.00 - G12_001_1 230.00 230KV CKT 1	0	1.91282	-	BASE CASE
FNSL-Blown up	0		1 23SP	G12_001		G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1 &G12_001T 230.00 - G12_001_1 230.00 230KV CKT 1	0	1.91124	-	BASE CASE
FNSL-Blown up	00G12_001		1 13SP	G12_001		G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1 &G12_001T 230.00 - G12_001_1 230.00 230KV CKT 1	0	1.89379	-	BASE CASE
FNSL-Blown up	00G12_001		1 13WP	G12_001		G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1 &G12_001T 230.00 - G12_001_1 230.00 230KV CKT 1	0	1.89294	-	BASE CASE
FNSL-Blown up	00G12_001		1 18SP	G12_001		G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1 &G12_001T 230.00 - G12_001_1 230.00 230KV CKT 1	0	1.91251	-	BASE CASE
FNSL-Blown up	00G12_001		1 18WP	G12_001		G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1 &G12_001T 230.00 - G12_001_1 230.00 230KV CKT 1	0	1.91283	-	BASE CASE
FNSL-Blown up	00G12_001		1 23SP	G12_001		G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1 &G12_001T 230.00 - G12_001_1 230.00 230KV CKT 1	0	1.91124	-	BASE CASE
FNSL-Blown up	00NR		1 13SP	G12_001		G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1 &G12_001T 230.00 - G12_001_1 230.00 230KV CKT 1	0	1.8768	-	BASE CASE
FNSL-Blown up	00NR		1 13WP	G12_001		G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1 &G12_001T 230.00 - G12_001_1 230.00 230KV CKT 1	0	1.87829	-	BASE CASE
FNSL-Blown up	00NR		1 18SP	G12_001		G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1 &G12_001T 230.00 - G12_001_1 230.00 230KV CKT 1	0	1.8956	-	BASE CASE
FNSL-Blown up	00NR		1 18WP	G12_001		G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1 &G12_001T 230.00 - G12_001_1 230.00 230KV CKT 1	0	1.90014	-	BASE CASE
FNSL-Blown up	06NR		1 13G	G12_001		G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1 &G12_001T 230.00 - G12_001_1 230.00 230KV CKT 1	0	1.87191	-	BASE CASE
FNSL-Blown up	03ALL		1 13G	G12_001		MULGREN7 345.00 - RENO COUNTY 345KV CKT 1 &MULGREN7 345.00 - RENO COUNTY 345KV CKT 2	0	0.05254	-	BASE CASE
FNSL-Blown up	03ALL		1 13G	G12_001		MULGREN7 345.00 - SPEARVILLE 345KV CKT 1 &MULGREN7 345.00 - SPEARVILLE 345KV CKT 2	0	0.05254	-	BASE CASE
FNSL-Blown up	03ALL		1 13G	G12_001		THISTLE7 345.00 - WICHITA 345KV CKT 1 &THISTLE7 345.00 - WICHITA 345KV CKT 2	0	0.13386	-	BASE CASE
FDNS	00NR		1 23SP	G12_001	FROM->TO	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	250	0.03055	113.3233	HITCHLAND INTERCHANGE - OCHILTREE 230KV CKT 1 &G11_012T 230.00 - HITCHLAND INTERCHANGE 230KV CKT 1
FDNS	00NR		1 23SP	G12_001	FROM->TO	HITCHLAND INTERCHANGE (H TP80148301) 230/115/13.2KV TRANSFORMER CKT 1	250	0.03055	109.253	HITCHLAND INTERCHANGE - OCHILTREE 230KV CKT 1 &G11_012T 230.00 - HITCHLAND INTERCHANGE 230KV CKT 1
FDNS	00NR		1 23SP	G12_001	FROM->TO	JONES STATION - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1	502	0.10576	111.5311	Jones Station Bus#2 - LUBBOCK SOUTH INTERCHANGE 230KV CKT 2 &Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	00NR		1 18SP	G12_001	FROM->TO	JONES STATION - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1	502	0.12532	107.5468	Jones Station Bus#2 - LUBBOCK SOUTH INTERCHANGE 230KV CKT 2 &Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00NR		1 13SP	G12_001	FROM->TO	JONES STATION - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1	502	0.30881	105.6699	Jones Station Bus#2 - LUBBOCK SOUTH INTERCHANGE 230KV CKT 2 & Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	00G12_001		1 13SP	G12_001	FROM->TO	JONES STATION - TUCO INTERCHANGE 230KV CKT 1	351	0.52667	102.6432	JONES STATION - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1 & Jones Station Bus#2 - LUBBOCK SOUTH INTERCHANGE 230KV CKT 2
FDNS	00NR		1 23SP	G12_001	FROM->TO	Jones Station Bus#2 - LUBBOCK SOUTH INTERCHANGE 230KV CKT 2	351	0.2245	126.1951	JONES STATION - TUCO INTERCHANGE 230KV CKT 1 & JONES STATION - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1
FDNS	00G12_001		1 23SP	G12_001	FROM->TO	Jones Station Bus#2 - LUBBOCK SOUTH INTERCHANGE 230KV CKT 2	351	0.2634	116.6044	JONES STATION - TUCO INTERCHANGE 230KV CKT 1 & JONES STATION - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1
FDNS	0		1 23SP	G12_001	FROM->TO	Jones Station Bus#2 - LUBBOCK SOUTH INTERCHANGE 230KV CKT 2	351	0.26341	112.4637	JONES STATION - TUCO INTERCHANGE 230KV CKT 1 & JONES STATION - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1
FDNS	00NR		1 23SP	G12_001	FROM->TO	Jones Station Bus#2 - LUBBOCK SOUTH INTERCHANGE 230KV CKT 2	351	0.0592	109.9342	JONES STATION - LUBBOCK SOUTH INTERCHANGE 230KV CKT 1 & LUBBOCK SOUTH INTERCHANGE - WOLFFORTH INTERCHANGE 230KV CKT 1
FDNS	00NR		1 23SP	G12_001	TO->FROM	LUBBOCK EAST INTERCHANGE - LUBBOCK SOUTH INTERCHANGE 115KV CKT 1	160	0.08676	120.4151	Jones Station Bus#2 - LUBBOCK POWER & LIGHT-HOLLY PLANT 230KV CKT 1 & Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	00NR		1 18SP	G12_001	TO->FROM	LUBBOCK EAST INTERCHANGE - LUBBOCK SOUTH INTERCHANGE 115KV CKT 1	160	0.08859	111.0392	Jones Station Bus#2 - LUBBOCK POWER & LIGHT-HOLLY PLANT 230KV CKT 1 & Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	00NR		1 13SP	G12_001	TO->FROM	LUBBOCK EAST INTERCHANGE - LUBBOCK SOUTH INTERCHANGE 115KV CKT 1	160	0.09353	106.4526	Jones Station Bus#2 - LUBBOCK POWER & LIGHT-HOLLY PLANT 230KV CKT 1 & Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FDNS	00NR		1 23SP	G12_001	TO->FROM	LUBBOCK EAST INTERCHANGE - LUBBOCK SOUTH INTERCHANGE 115KV CKT 1	160	0.08109	105.8497	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1 & GRASSLAND INTERCHANGE - Jones Station Bus#2 230KV CKT 1
FDNS	00NR		1 23SP	G12_001	TO->FROM	LUBBOCK EAST INTERCHANGE - LUBBOCK SOUTH INTERCHANGE 115KV CKT 1	160	0.08413	105.5527	Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1 & JONES STATION - Jones Station Bus#2 230KV CKT 1
FDNS	00NR		1 23SP	G12_001	TO->FROM	LUBBOCK EAST INTERCHANGE - LUBBOCK SOUTH INTERCHANGE 115KV CKT 1	160	0.07846	103.071	Jones Station Bus#2 - LUBBOCK SOUTH INTERCHANGE 230KV CKT 2 & Jones Station Bus#2 - LUBBOCK EAST INTERCHANGE 230KV CKT 1
FNSL-Blown up	03ALL		1 13G	G12_002		CLARKCOUNTY7345.00 - SPEARVILLE 345KV CKT 1 & CLARKCOUNTY7345.00 - G11_023_1 345.00 345KV CKT 1	0	0.07414	-	BASE CASE
FNSL-Blown up	3		1 13G	G12_002		CLARKCOUNTY7345.00 - SPEARVILLE 345KV CKT 1 & CLARKCOUNTY7345.00 - G11-008 345.00 345KV CKT 1	0	0.07471	-	BASE CASE
FNSL-Blown up	03ALL		1 13G	G12_002		CLARKCOUNTY7345.00 - SPEARVILLE 345KV CKT 1 & CLARKCOUNTY7345.00 - G11-008 345.00 345KV CKT 1	0	0.07414	-	BASE CASE
FNSL-Blown up	03ALL		1 13G	G12_002		CLARKCOUNTY7345.00 - SPEARVILLE 345KV CKT 1 & G05-12 345.00 - SPEARVILLE 345KV CKT 1	0	0.07414	-	BASE CASE
FNSL-Blown up	03ALL		1 13G	G12_002		CLARKCOUNTY7345.00 - SPEARVILLE 345KV CKT 2 & CLARKCOUNTY7345.00 - G11_023_1 345.00 345KV CKT 1	0	0.07414	-	BASE CASE
FNSL-Blown up	3		1 13G	G12_002		CLARKCOUNTY7345.00 - SPEARVILLE 345KV CKT 2 & CLARKCOUNTY7345.00 - G11-008 345.00 345KV CKT 1	0	0.07471	-	BASE CASE
FNSL-Blown up	03ALL		1 13G	G12_002		CLARKCOUNTY7345.00 - SPEARVILLE 345KV CKT 2 & CLARKCOUNTY7345.00 - G11-008 345.00 345KV CKT 1	0	0.07414	-	BASE CASE
FNSL-Blown up	03ALL		1 13G	G12_002		CLARKCOUNTY7345.00 - SPEARVILLE 345KV CKT 2 & G05-12 345.00 - SPEARVILLE 345KV CKT 1	0	0.07414	-	BASE CASE
FNSL-Blown up	03ALL		1 13G	G12_002		CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 1 & CLARKCOUNTY7345.00 - G11_023_1 345.00 345KV CKT 1	0	0.07414	-	BASE CASE
FNSL-Blown up	3		1 13G	G12_002		CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 1 & CLARKCOUNTY7345.00 - G11-008 345.00 345KV CKT 1	0	0.07471	-	BASE CASE
FNSL-Blown up	03ALL		1 13G	G12_002		CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 1 & CLARKCOUNTY7345.00 - G11-008 345.00 345KV CKT 1	0	0.07414	-	BASE CASE
FNSL-Blown up	03ALL		1 13G	G12_002		CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 1 & CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 2	0	0.14829	-	BASE CASE
FNSL-Blown up	03ALL		1 13G	G12_002		CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 2 & CLARKCOUNTY7345.00 - G11_023_1 345.00 345KV CKT 1	0	0.07414	-	BASE CASE
FNSL-Blown up	3		1 13G	G12_002		CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 2 & CLARKCOUNTY7345.00 - G11-008 345.00 345KV CKT 1	0	0.07471	-	BASE CASE
FNSL-Blown up	03ALL		1 13G	G12_002		CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 2 & CLARKCOUNTY7345.00 - G11-008 345.00 345KV CKT 1	0	0.07414	-	BASE CASE
FNSL-Blown up	04ALL		1 13G	G12_002		EAST MANHATTAN - NORTHWEST MANHATTAN 230KV CKT 1 & ELM CREEK - NORTHWEST MANHATTAN 230KV CKT 1	0	0.03184	-	BASE CASE
FNSL-Blown up	03ALL		1 13G	G12_002		G11-17T 345.00 - SPEARVILLE 345KV CKT 1 & G11-17T 345.00 - G12-11T 345.00 345KV CKT 1	0	0.05164	-	BASE CASE
FNSL-Blown up	04ALL		1 13G	G12_002		HOLCOMB - SETAB 345KV CKT 1 & MINGO - SETAB 345KV CKT 1	0	0.52917	-	BASE CASE
FNSL-Blown up	4		1 13G	G12_002		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 & G08-92 230.00 - KNOLL 230 230KV CKT 1	0	0.03106	-	BASE CASE
FNSL-Blown up	04ALL		1 13G	G12_002		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 & G08-92 230.00 - KNOLL 230 230KV CKT 1	0	0.03101	-	BASE CASE
FNSL-Blown up	04G12_002		1 13G	G12_002		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 & G08-92 230.00 - KNOLL 230 230KV CKT 1	0	0.03106	-	BASE CASE
FNSL-Blown up	4		1 13G	G12_002		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 & SMKYP1 6 230.00 - SMOKYHL6 230.00 230KV CKT 1	0	0.03106	-	BASE CASE

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FNSL-Blown up	04ALL		1 13G	G12_002		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 &SMKYP1 6 230.00 - SMOKYHL6 230.00 230KV CKT 1	0	0.03101	-	BASE CASE
FNSL-Blown up	4		1 13G	G12_002		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 &SMKYP2 6 230.00 - SMOKYHL6 230.00 230KV CKT 1	0	0.03106	-	BASE CASE
FNSL-Blown up	04ALL		1 13G	G12_002		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 &SMKYP2 6 230.00 - SMOKYHL6 230.00 230KV CKT 1	0	0.03101	-	BASE CASE
FNSL-Blown up	04G12_002		1 13G	G12_002		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 &SMKYP2 6 230.00 - SMOKYHL6 230.00 230KV CKT 1	0	0.03106	-	BASE CASE
FNSL-Blown up	0		1 13WP	G12_002		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.05947	-	BASE CASE
FNSL-Blown up	0		1 18WP	G12_002		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.0574	-	BASE CASE
FNSL-Blown up	4		1 13G	G12_002		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.06212	-	BASE CASE
FNSL-Blown up	6		1 13G	G12_002		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.06211	-	BASE CASE
FNSL-Blown up	00G12_002		1 13WP	G12_002		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.05946	-	BASE CASE
FNSL-Blown up	00G12_002		1 18WP	G12_002		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.05739	-	BASE CASE
FNSL-Blown up	04ALL		1 13G	G12_002		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.06201	-	BASE CASE
FNSL-Blown up	04G12_002		1 13G	G12_002		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.06211	-	BASE CASE
FNSL-Blown up	06ALL		1 13G	G12_002		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.06201	-	BASE CASE
FNSL-Blown up	14ALL		1 13G	G12_002		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.06226	-	BASE CASE
FNSL-Blown up	03ALL		1 13G	G12_002		MULGREN7 345.00 - RENO COUNTY 345KV CKT 1 &MULGREN7 345.00 - RENO COUNTY 345KV CKT 2	0	0.1245	-	BASE CASE
FNSL-Blown up	03ALL		1 13G	G12_002		MULGREN7 345.00 - SPEARVILLE 345KV CKT 1 &MULGREN7 345.00 - SPEARVILLE 345KV CKT 2	0	0.1245	-	BASE CASE
FNSL-Blown up	4		1 13G	G12_002		SMKYP1 6 230.00 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.03106	-	BASE CASE
FNSL-Blown up	6		1 13G	G12_002		SMKYP1 6 230.00 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.03105	-	BASE CASE
FNSL-Blown up	04ALL		1 13G	G12_002		SMKYP1 6 230.00 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.03101	-	BASE CASE
FNSL-Blown up	04G12_002		1 13G	G12_002		SMKYP1 6 230.00 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.03106	-	BASE CASE
FNSL-Blown up	4		1 13G	G12_002		SMKYP2 6 230.00 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.03106	-	BASE CASE
FNSL-Blown up	04ALL		1 13G	G12_002		SMKYP2 6 230.00 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.03101	-	BASE CASE
FNSL-Blown up	04G12_002		1 13G	G12_002		SMKYP2 6 230.00 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.03106	-	BASE CASE
FNSL-Blown up	03ALL		1 13G	G12_002		THISTLE7 345.00 - WICHITA 345KV CKT 1 &THISTLE7 345.00 - WICHITA 345KV CKT 2	0	0.13581	-	BASE CASE
FDNS	4		1 13G	G12_002	TO->FROM	DOBSON - GANO 3 115.00 115KV CKT 1	198	0.59359	100.3281	HOLCOMB - SETAB 345KV CKT 1 &MINGO - SETAB 345KV CKT 1
FDNS	4		1 13G	G12_002	FROM->TO	G12_002T 115.00 - PILE 115KV CKT 1	198	0.59359	101.2148	HOLCOMB - SETAB 345KV CKT 1 &MINGO - SETAB 345KV CKT 1
FDNS	4		1 13G	G12_002	TO->FROM	GANO 3 115.00 - PILE 115KV CKT 1	198	0.59359	100.3799	HOLCOMB - SETAB 345KV CKT 1 &MINGO - SETAB 345KV CKT 1
FDNS	00NR		1 13SP	G12_004	TO->FROM	DIANA - WELSH 345KV CKT 1	1059	0.04841	103.5158	DIANA - WELSH 345KV CKT 2 &WELSH - WILKES 345KV CKT 1
FDNS	00NR		1 13SP	G12_004	TO->FROM	DIANA - WELSH 345KV CKT 2	1059	0.04828	103.2608	DIANA - WELSH 345KV CKT 1 &WELSH - WILKES 345KV CKT 1
FNSL-Blown up	00NR		1 23SP	G12_007		G11-17T 345.00 - SPEARVILLE 345KV CKT 1 &G11-17T 345.00 - G12-011T 345.00 345KV CKT 1	0	0.03521	-	BASE CASE
FNSL-Blown up	0		1 18SP	G12_007		HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 &JEFFREY ENERGY CENTER - MORRIS COUNTY 345KV CKT 1	0	0.03036	-	BASE CASE
FNSL-Blown up	00G12_007		1 18SP	G12_007		HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 &JEFFREY ENERGY CENTER - MORRIS COUNTY 345KV CKT 1	0	0.03036	-	BASE CASE
FNSL-Blown up	0		1 13WP	G12_007		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.05509	-	BASE CASE
FNSL-Blown up	0		1 18WP	G12_007		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.05431	-	BASE CASE
FNSL-Blown up	00G12_007		1 18WP	G12_007		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.05431	-	BASE CASE
FNSL-Blown up	00NR		1 13SP	G12_007		MIDW-CATD02B	0	0.04136	-	BASE CASE
FNSL-Blown up	00NR		1 23SP	G12_007		MIDW-CATD02B	0	0.03025	-	BASE CASE
FNSL-Blown up	0		1 23SP	G12_008		CUNNINGHAM STATION - EDDY COUNTY INTERCHANGE 230KV CKT 1 &CUNNINGHAM STATION - POTASH JUNCTION INTERCHANGE 230KV CKT 1	0	0.08439	-	BASE CASE

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00G12_008		1 18SP	G12_008	FROM->TO	MUSTANG STATION N. - SEAGRAVES INTERCHANGE 115KV CKT 1	160	0.20673	116.8979	OXYBRU_TP 6230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	0		1 23SP	G12_008	FROM->TO	MUSTANG STATION N. - SEAGRAVES INTERCHANGE 115KV CKT 1	160	0.19792	113.6558	AMOCO WASSON SWITCHING STATION - MUSTANG STATION 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	00G12_008		1 23SP	G12_008	FROM->TO	MUSTANG STATION N. - SEAGRAVES INTERCHANGE 115KV CKT 1	160	0.19792	113.6558	AMOCO WASSON SWITCHING STATION - MUSTANG STATION 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	0		1 13SP	G12_008	FROM->TO	MUSTANG STATION N. - SEAGRAVES INTERCHANGE 115KV CKT 1	160	0.2066	111.5726	OXYBRU_TP 6230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	00G12_008		1 13SP	G12_008	FROM->TO	MUSTANG STATION N. - SEAGRAVES INTERCHANGE 115KV CKT 1	160	0.2066	111.5726	OXYBRU_TP 6230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	0		1 23SP	G12_008	FROM->TO	MUSTANG STATION N. - SEAGRAVES INTERCHANGE 115KV CKT 1	160	0.19792	107.9479	OXYBRU_TP 6230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	00G12_008		1 23SP	G12_008	FROM->TO	MUSTANG STATION N. - SEAGRAVES INTERCHANGE 115KV CKT 1	160	0.19792	107.9479	OXYBRU_TP 6230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	0		1 18SP	G12_008	TO->FROM	ODC TAP - SHELL CO2 GAS SUB 115KV CKT 1	160	0.26965	126.5588	AMOCO WASSON SWITCHING STATION - MUSTANG STATION 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	00G12_008		1 18SP	G12_008	TO->FROM	ODC TAP - SHELL CO2 GAS SUB 115KV CKT 1	160	0.26965	126.5588	AMOCO WASSON SWITCHING STATION - MUSTANG STATION 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	0		1 13SP	G12_008	TO->FROM	ODC TAP - SHELL CO2 GAS SUB 115KV CKT 1	160	0.26972	122.6284	AMOCO WASSON SWITCHING STATION - MUSTANG STATION 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	00G12_008		1 13SP	G12_008	TO->FROM	ODC TAP - SHELL CO2 GAS SUB 115KV CKT 1	160	0.26972	122.6284	AMOCO WASSON SWITCHING STATION - MUSTANG STATION 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	0		1 18SP	G12_008	TO->FROM	ODC TAP - SHELL CO2 GAS SUB 115KV CKT 1	160	0.26965	116.9834	OXYBRU_TP 6230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	00G12_008		1 18SP	G12_008	TO->FROM	ODC TAP - SHELL CO2 GAS SUB 115KV CKT 1	160	0.26965	116.9834	OXYBRU_TP 6230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	0		1 13SP	G12_008	TO->FROM	ODC TAP - SHELL CO2 GAS SUB 115KV CKT 1	160	0.26972	113.5056	OXYBRU_TP 6230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	00G12_008		1 13SP	G12_008	TO->FROM	ODC TAP - SHELL CO2 GAS SUB 115KV CKT 1	160	0.26972	113.5056	OXYBRU_TP 6230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	0		1 23SP	G12_008	TO->FROM	ODC TAP - SHELL CO2 GAS SUB 115KV CKT 1	160	0.26178	110.0097	AMOCO WASSON SWITCHING STATION - MUSTANG STATION 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	00G12_008		1 23SP	G12_008	TO->FROM	ODC TAP - SHELL CO2 GAS SUB 115KV CKT 1	160	0.26178	110.0097	AMOCO WASSON SWITCHING STATION - MUSTANG STATION 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	0		1 13WP	G12_008	TO->FROM	ODC TAP - SHELL CO2 GAS SUB 115KV CKT 1	169	0.26992	103.799	AMOCO WASSON SWITCHING STATION - MUSTANG STATION 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	00G12_008		1 13WP	G12_008	TO->FROM	ODC TAP - SHELL CO2 GAS SUB 115KV CKT 1	169	0.26992	103.799	AMOCO WASSON SWITCHING STATION - MUSTANG STATION 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	0		1 23SP	G12_008	TO->FROM	ODC TAP - SHELL CO2 GAS SUB 115KV CKT 1	160	0.26178	100.7189	OXYBRU_TP 6230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	00G12_008		1 23SP	G12_008	TO->FROM	ODC TAP - SHELL CO2 GAS SUB 115KV CKT 1	160	0.26178	100.7189	OXYBRU_TP 6230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	0		1 13SP	G12_008	TO->FROM	PLANT X STATION - TOLK STATION WEST 230KV CKT 1	502	0.26271	100.2958	PLANT X STATION - TOLK STATION EAST 230KV CKT 2 & TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1
FDNS	00G12_008		1 13SP	G12_008	TO->FROM	PLANT X STATION - TOLK STATION WEST 230KV CKT 1	502	0.26271	100.2958	PLANT X STATION - TOLK STATION EAST 230KV CKT 2 & TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1
FNSL-Blown up	0		1 23SP	G12_009		CUNNINGHAM STATION - EDDY COUNTY INTERCHANGE 230KV CKT 1 & CUNNINGHAM STATION - POTASH JUNCTION INTERCHANGE 230KV CKT 1	0	0.08307	-	BASE CASE
FNSL-Blown up	00G12_009		1 23SP	G12_009		CUNNINGHAM STATION - EDDY COUNTY INTERCHANGE 230KV CKT 1 & CUNNINGHAM STATION - POTASH JUNCTION INTERCHANGE 230KV CKT 1	0	0.08307	-	BASE CASE
FNSL-Blown up	0		1 13SP	G12_009		G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1 & G12_001T 230.00 - G12_001_1 230.00 230KV CKT 1	0	0.04761	-	BASE CASE
FNSL-Blown up	0		1 13WP	G12_009		G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1 & G12_001T 230.00 - G12_001_1 230.00 230KV CKT 1	0	0.04684	-	BASE CASE
FNSL-Blown up	0		1 18SP	G12_009		G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1 & G12_001T 230.00 - G12_001_1 230.00 230KV CKT 1	0	0.04389	-	BASE CASE
FNSL-Blown up	0		1 18WP	G12_009		G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1 & G12_001T 230.00 - G12_001_1 230.00 230KV CKT 1	0	0.0442	-	BASE CASE
FNSL-Blown up	00G12_009		1 13SP	G12_009		G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1 & G12_001T 230.00 - G12_001_1 230.00 230KV CKT 1	0	0.04761	-	BASE CASE
FNSL-Blown up	00G12_009		1 13WP	G12_009		G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1 & G12_001T 230.00 - G12_001_1 230.00 230KV CKT 1	0	0.04684	-	BASE CASE
FNSL-Blown up	00G12_009		1 18SP	G12_009		G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1 & G12_001T 230.00 - G12_001_1 230.00 230KV CKT 1	0	0.04389	-	BASE CASE
FNSL-Blown up	00G12_009		1 18WP	G12_009		G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1 & G12_001T 230.00 - G12_001_1 230.00 230KV CKT 1	0	0.0442	-	BASE CASE
FDNS	0		1 18SP	G12_009	TO->FROM	ARCO WILLARD TAP - Bennett Sub 115KV CKT 1	160	0.26267	102.6796	AMOCO WASSON SWITCHING STATION - MUSTANG STATION 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00G12_009		1 18SP	G12_009	TO->FROM	ODC TAP - SHELL CO2 GAS SUB 115KV CKT 1	160	0.26267	126.5588	AMOCO WASSON SWITCHING STATION - MUSTANG STATION 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	0		1 13SP	G12_009	TO->FROM	ODC TAP - SHELL CO2 GAS SUB 115KV CKT 1	160	0.26275	122.6284	AMOCO WASSON SWITCHING STATION - MUSTANG STATION 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	00G12_009		1 13SP	G12_009	TO->FROM	ODC TAP - SHELL CO2 GAS SUB 115KV CKT 1	160	0.26275	122.6284	AMOCO WASSON SWITCHING STATION - MUSTANG STATION 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	0		1 18SP	G12_009	TO->FROM	ODC TAP - SHELL CO2 GAS SUB 115KV CKT 1	160	0.26267	116.9834	OXYBRU_TP 6230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	00G12_009		1 18SP	G12_009	TO->FROM	ODC TAP - SHELL CO2 GAS SUB 115KV CKT 1	160	0.26267	116.9834	OXYBRU_TP 6230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	0		1 13SP	G12_009	TO->FROM	ODC TAP - SHELL CO2 GAS SUB 115KV CKT 1	160	0.26275	113.5056	OXYBRU_TP 6230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	00G12_009		1 13SP	G12_009	TO->FROM	ODC TAP - SHELL CO2 GAS SUB 115KV CKT 1	160	0.26275	113.5056	OXYBRU_TP 6230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	0		1 23SP	G12_009	TO->FROM	ODC TAP - SHELL CO2 GAS SUB 115KV CKT 1	160	0.25423	110.0097	AMOCO WASSON SWITCHING STATION - MUSTANG STATION 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	00G12_009		1 23SP	G12_009	TO->FROM	ODC TAP - SHELL CO2 GAS SUB 115KV CKT 1	160	0.25423	110.0097	AMOCO WASSON SWITCHING STATION - MUSTANG STATION 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	0		1 13WP	G12_009	TO->FROM	ODC TAP - SHELL CO2 GAS SUB 115KV CKT 1	169	0.26295	103.799	AMOCO WASSON SWITCHING STATION - MUSTANG STATION 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	00G12_009		1 13WP	G12_009	TO->FROM	ODC TAP - SHELL CO2 GAS SUB 115KV CKT 1	169	0.26295	103.799	AMOCO WASSON SWITCHING STATION - MUSTANG STATION 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	0		1 23SP	G12_009	TO->FROM	ODC TAP - SHELL CO2 GAS SUB 115KV CKT 1	160	0.25423	100.7189	OXYBRU_TP 6230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	00G12_009		1 23SP	G12_009	TO->FROM	ODC TAP - SHELL CO2 GAS SUB 115KV CKT 1	160	0.25423	100.7189	OXYBRU_TP 6230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	0		1 13SP	G12_009	TO->FROM	PLANT X STATION - TOLK STATION WEST 230KV CKT 1	502	0.26872	100.2958	PLANT X STATION - TOLK STATION EAST 230KV CKT 2 & TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1
FDNS	00G12_009		1 13SP	G12_009	TO->FROM	PLANT X STATION - TOLK STATION WEST 230KV CKT 1	502	0.26872	100.2958	PLANT X STATION - TOLK STATION EAST 230KV CKT 2 & TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1
FNSL-Blown up	0		1 23SP	G12_010		CUNNINGHAM STATION - EDDY COUNTY INTERCHANGE 230KV CKT 1 & CUNNINGHAM STATION - POTASH JUNCTION INTERCHANGE 230KV CKT 1	0	0.08307	-	BASE CASE
FNSL-Blown up	00G12_010		1 23SP	G12_010		CUNNINGHAM STATION - EDDY COUNTY INTERCHANGE 230KV CKT 1 & CUNNINGHAM STATION - POTASH JUNCTION INTERCHANGE 230KV CKT 1	0	0.08307	-	BASE CASE
FNSL-Blown up	0		1 13SP	G12_010		G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1 & G12_001T 230.00 - G12_001_1 230.00 230KV CKT 1	0	0.04761	-	BASE CASE
FNSL-Blown up	0		1 13WP	G12_010		G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1 & G12_001T 230.00 - G12_001_1 230.00 230KV CKT 1	0	0.04684	-	BASE CASE
FNSL-Blown up	0		1 18SP	G12_010		G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1 & G12_001T 230.00 - G12_001_1 230.00 230KV CKT 1	0	0.04389	-	BASE CASE
FNSL-Blown up	0		1 18WP	G12_010		G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1 & G12_001T 230.00 - G12_001_1 230.00 230KV CKT 1	0	0.0442	-	BASE CASE
FNSL-Blown up	00G12_010		1 13SP	G12_010		G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1 & G12_001T 230.00 - G12_001_1 230.00 230KV CKT 1	0	0.04761	-	BASE CASE
FNSL-Blown up	00G12_010		1 13WP	G12_010		G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1 & G12_001T 230.00 - G12_001_1 230.00 230KV CKT 1	0	0.04684	-	BASE CASE
FNSL-Blown up	00G12_010		1 18SP	G12_010		G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1 & G12_001T 230.00 - G12_001_1 230.00 230KV CKT 1	0	0.04389	-	BASE CASE
FNSL-Blown up	00G12_010		1 18WP	G12_010		G12_001T 230.00 - GRASSLAND INTERCHANGE 230KV CKT 1 & G12_001T 230.00 - G12_001_1 230.00 230KV CKT 1	0	0.0442	-	BASE CASE
FDNS	0		1 18SP	G12_010	TO->FROM	ARCO WILLARD TAP - Bennett Sub 115KV CKT 1	160	0.26267	102.6796	AMOCO WASSON SWITCHING STATION - MUSTANG STATION 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	00G12_010		1 18SP	G12_010	TO->FROM	ARCO WILLARD TAP - Bennett Sub 115KV CKT 1	160	0.26267	102.6796	AMOCO WASSON SWITCHING STATION - MUSTANG STATION 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	0		1 13SP	G12_010	TO->FROM	ARCO WILLARD TAP - Bennett Sub 115KV CKT 1	160	0.26275	100.4061	AMOCO WASSON SWITCHING STATION - MUSTANG STATION 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	00G12_010		1 13SP	G12_010	TO->FROM	ARCO WILLARD TAP - Bennett Sub 115KV CKT 1	160	0.26275	100.4061	AMOCO WASSON SWITCHING STATION - MUSTANG STATION 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	0		1 18SP	G12_010	TO->FROM	Bennett Sub - ODC TAP 115KV CKT 1	154	0.26267	121.6158	AMOCO WASSON SWITCHING STATION - MUSTANG STATION 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	00G12_010		1 18SP	G12_010	TO->FROM	Bennett Sub - ODC TAP 115KV CKT 1	154	0.26267	121.6158	AMOCO WASSON SWITCHING STATION - MUSTANG STATION 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	0		1 13SP	G12_010	TO->FROM	Bennett Sub - ODC TAP 115KV CKT 1	154	0.26275	117.6528	AMOCO WASSON SWITCHING STATION - MUSTANG STATION 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	00G12_010		1 13SP	G12_010	TO->FROM	Bennett Sub - ODC TAP 115KV CKT 1	154	0.26275	117.6528	AMOCO WASSON SWITCHING STATION - MUSTANG STATION 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	0		1 18SP	G12_010	TO->FROM	Bennett Sub - ODC TAP 115KV CKT 1	154	0.26267	111.8507	OXYBRU_TP 6230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	00G12_010		1 23SP	G12_010	TO->FROM	ODC TAP - SHELL CO2 GAS SUB 115KV CKT 1	160	0.25423	110.0097	AMOCO WASSON SWITCHING STATION - MUSTANG STATION 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	0		1 13WP	G12_010	TO->FROM	ODC TAP - SHELL CO2 GAS SUB 115KV CKT 1	169	0.26295	103.799	AMOCO WASSON SWITCHING STATION - MUSTANG STATION 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	00G12_010		1 13WP	G12_010	TO->FROM	ODC TAP - SHELL CO2 GAS SUB 115KV CKT 1	169	0.26295	103.799	AMOCO WASSON SWITCHING STATION - MUSTANG STATION 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	0		1 23SP	G12_010	TO->FROM	ODC TAP - SHELL CO2 GAS SUB 115KV CKT 1	160	0.25423	100.7189	OXYBRU_TP 6230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	00G12_010		1 23SP	G12_010	TO->FROM	ODC TAP - SHELL CO2 GAS SUB 115KV CKT 1	160	0.25423	100.7189	OXYBRU_TP 6230.00 - YOAKUM COUNTY INTERCHANGE 230KV CKT 1 & MUSTANG STATION - YOAKUM COUNTY INTERCHANGE 230KV CKT 1
FDNS	0		1 13SP	G12_010	TO->FROM	PLANT X STATION - TOLK STATION WEST 230KV CKT 1	502	0.26872	100.2958	PLANT X STATION - TOLK STATION EAST 230KV CKT 2 & TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1
FDNS	00G12_010		1 13SP	G12_010	TO->FROM	PLANT X STATION - TOLK STATION WEST 230KV CKT 1	502	0.26872	100.2958	PLANT X STATION - TOLK STATION EAST 230KV CKT 2 & TOLK STATION EAST - TUCO INTERCHANGE 230KV CKT 1
FNSL-Blown up	03ALL		1 13G	G12_011		BKR-CPR-3310	0	0.03443	-	BASE CASE
FNSL-Blown up	03ALL		1 13G	G12_011		CLARKCOUNTY7345.00 - SPEARVILLE 345KV CKT 1 & CLARKCOUNTY7345.00 - G11_023_1 345.00 345KV CKT 1	0	0.1078	-	BASE CASE
FNSL-Blown up	3		1 13G	G12_011		CLARKCOUNTY7345.00 - SPEARVILLE 345KV CKT 1 & CLARKCOUNTY7345.00 - G11-008 345.00 345KV CKT 1	0	0.10836	-	BASE CASE
FNSL-Blown up	03ALL		1 13G	G12_011		CLARKCOUNTY7345.00 - SPEARVILLE 345KV CKT 1 & CLARKCOUNTY7345.00 - G11-008 345.00 345KV CKT 1	0	0.1078	-	BASE CASE
FNSL-Blown up	03G12_011		1 13G	G12_011		CLARKCOUNTY7345.00 - SPEARVILLE 345KV CKT 1 & CLARKCOUNTY7345.00 - G11-008 345.00 345KV CKT 1	0	0.10846	-	BASE CASE
FNSL-Blown up	03ALL		1 13G	G12_011		CLARKCOUNTY7345.00 - SPEARVILLE 345KV CKT 1 & G05-12 345.00 - SPEARVILLE 345KV CKT 1	0	0.1078	-	BASE CASE
FNSL-Blown up	03ALL		1 13G	G12_011		CLARKCOUNTY7345.00 - SPEARVILLE 345KV CKT 2 & CLARKCOUNTY7345.00 - G11_023_1 345.00 345KV CKT 1	0	0.1078	-	BASE CASE
FNSL-Blown up	3		1 13G	G12_011		CLARKCOUNTY7345.00 - SPEARVILLE 345KV CKT 2 & CLARKCOUNTY7345.00 - G11-008 345.00 345KV CKT 1	0	0.10836	-	BASE CASE
FNSL-Blown up	03ALL		1 13G	G12_011		CLARKCOUNTY7345.00 - SPEARVILLE 345KV CKT 2 & CLARKCOUNTY7345.00 - G11-008 345.00 345KV CKT 1	0	0.1078	-	BASE CASE
FNSL-Blown up	03G12_011		1 13G	G12_011		CLARKCOUNTY7345.00 - SPEARVILLE 345KV CKT 2 & CLARKCOUNTY7345.00 - G11-008 345.00 345KV CKT 1	0	0.10846	-	BASE CASE
FNSL-Blown up	03ALL		1 13G	G12_011		CLARKCOUNTY7345.00 - SPEARVILLE 345KV CKT 2 & G05-12 345.00 - SPEARVILLE 345KV CKT 1	0	0.1078	-	BASE CASE
FNSL-Blown up	03ALL		1 13G	G12_011		CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 1 & CLARKCOUNTY7345.00 - G11_023_1 345.00 345KV CKT 1	0	0.1078	-	BASE CASE
FNSL-Blown up	3		1 13G	G12_011		CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 1 & CLARKCOUNTY7345.00 - G11-008 345.00 345KV CKT 1	0	0.10836	-	BASE CASE
FNSL-Blown up	03ALL		1 13G	G12_011		CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 1 & CLARKCOUNTY7345.00 - G11-008 345.00 345KV CKT 1	0	0.1078	-	BASE CASE
FNSL-Blown up	03G12_011		1 13G	G12_011		CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 1 & CLARKCOUNTY7345.00 - G11-008 345.00 345KV CKT 1	0	0.10846	-	BASE CASE
FNSL-Blown up	03ALL		1 13G	G12_011		CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 2 & CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 2	0	0.2156	-	BASE CASE
FNSL-Blown up	03ALL		1 13G	G12_011		CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 2 & CLARKCOUNTY7345.00 - G11_023_1 345.00 345KV CKT 1	0	0.1078	-	BASE CASE
FNSL-Blown up	3		1 13G	G12_011		CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 2 & CLARKCOUNTY7345.00 - G11-008 345.00 345KV CKT 1	0	0.10836	-	BASE CASE
FNSL-Blown up	03ALL		1 13G	G12_011		CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 2 & CLARKCOUNTY7345.00 - G11-008 345.00 345KV CKT 1	0	0.1078	-	BASE CASE
FNSL-Blown up	03G12_011		1 13G	G12_011		CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 2 & CLARKCOUNTY7345.00 - G11-008 345.00 345KV CKT 1	0	0.10846	-	BASE CASE
FNSL-Blown up	04ALL		1 13G	G12_011		EAST MANHATTAN - NORTHWEST MANHATTAN 230KV CKT 1 & ELM CREEK - NORTHWEST MANHATTAN 230KV CKT 1	0	0.03517	-	BASE CASE
FNSL-Blown up	4		1 13G	G12_011		HAYS WIND - SOUTH HAYS 230KV CKT 1 & MULLERGREN - SOUTH HAYS 230KV CKT 1	0	0.10347	-	BASE CASE
FNSL-Blown up	04ALL		1 13G	G12_011		HAYS WIND - SOUTH HAYS 230KV CKT 1 & MULLERGREN - SOUTH HAYS 230KV CKT 1	0	0.1035	-	BASE CASE
FNSL-Blown up	0		1 13SP	G12_011		HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 & JEFFREY ENERGY CENTER - MORRIS COUNTY 345KV CKT 1	0	0.03899	-	BASE CASE
FNSL-Blown up	0		1 18SP	G12_011		HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 & JEFFREY ENERGY CENTER - MORRIS COUNTY 345KV CKT 1	0	0.04227	-	BASE CASE
FNSL-Blown up	00G12_011		1 13SP	G12_011		HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 & JEFFREY ENERGY CENTER - MORRIS COUNTY 345KV CKT 1	0	0.0388	-	BASE CASE
FNSL-Blown up	00G12_011		1 18SP	G12_011		HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 & JEFFREY ENERGY CENTER - MORRIS COUNTY 345KV CKT 1	0	0.04219	-	BASE CASE
FNSL-Blown up	00G12_011		1 23SP	G12_011		HOYT - JEFFREY ENERGY CENTER 345KV CKT 1 & JEFFREY ENERGY CENTER - MORRIS COUNTY 345KV CKT 1	0	0.04254	-	BASE CASE

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FNSL-Blown up	4		1 13G	G12_011		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 &G08-92 230.00 - KNOLL 230 230KV CKT 1	0	0.09819	-	BASE CASE
FNSL-Blown up	04ALL		1 13G	G12_011		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 &G08-92 230.00 - KNOLL 230 230KV CKT 1	0	0.09813	-	BASE CASE
FNSL-Blown up	4		1 13G	G12_011		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 &SMKYP1 6 230.00 - SMOKYHL6 230.00 230KV CKT 1	0	0.09819	-	BASE CASE
FNSL-Blown up	00G12_011		1 13WP	G12_011		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 &SMKYP1 6 230.00 - SMOKYHL6 230.00 230KV CKT 1	0	0.09682	-	BASE CASE
FNSL-Blown up	04ALL		1 13G	G12_011		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 &SMKYP1 6 230.00 - SMOKYHL6 230.00 230KV CKT 1	0	0.09813	-	BASE CASE
FNSL-Blown up	4		1 13G	G12_011		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 &SMKYP2 6 230.00 - SMOKYHL6 230.00 230KV CKT 1	0	0.09819	-	BASE CASE
FNSL-Blown up	04ALL		1 13G	G12_011		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 &SMKYP2 6 230.00 - SMOKYHL6 230.00 230KV CKT 1	0	0.09813	-	BASE CASE
FNSL-Blown up	0		1 13WP	G12_011		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.19367	-	BASE CASE
FNSL-Blown up	0		1 18WP	G12_011		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.19202	-	BASE CASE
FNSL-Blown up	4		1 13G	G12_011		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.19637	-	BASE CASE
FNSL-Blown up	6		1 13G	G12_011		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.19636	-	BASE CASE
FNSL-Blown up	00G12_011		1 13WP	G12_011		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.19364	-	BASE CASE
FNSL-Blown up	00G12_011		1 18WP	G12_011		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.19199	-	BASE CASE
FNSL-Blown up	04ALL		1 13G	G12_011		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.19626	-	BASE CASE
FNSL-Blown up	06ALL		1 13G	G12_011		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.19626	-	BASE CASE
FNSL-Blown up	14ALL		1 13G	G12_011		KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.19651	-	BASE CASE
FNSL-Blown up	0		1 23SP	G12_011		MIDW-CATD02B	0	0.20871	-	BASE CASE
FNSL-Blown up	6		1 13G	G12_011		MIDW-CATD02B	0	0.20905	-	BASE CASE
FNSL-Blown up	14		1 13G	G12_011		MIDW-CATD02B	0	0.20895	-	BASE CASE
FNSL-Blown up	00G12_011		1 13SP	G12_011		MIDW-CATD02B	0	0.20927	-	BASE CASE
FNSL-Blown up	03G12_011		1 13G	G12_011		MIDW-CATD02B	0	0.21007	-	BASE CASE
FNSL-Blown up	06ALL		1 13G	G12_011		MIDW-CATD02B	0	0.20911	-	BASE CASE
FNSL-Blown up	14ALL		1 13G	G12_011		MIDW-CATD02B	0	0.20897	-	BASE CASE
FNSL-Blown up	03ALL		1 13G	G12_011		MULGREN7 345.00 - RENO COUNTY 345KV CKT 1 &MULGREN7 345.00 - RENO COUNTY 345KV CKT 2	0	0.13724	-	BASE CASE
FNSL-Blown up	03ALL		1 13G	G12_011		MULGREN7 345.00 - SPEARVILLE 345KV CKT 1 &MULGREN7 345.00 - SPEARVILLE 345KV CKT 2	0	0.13724	-	BASE CASE
FNSL-Blown up	4		1 13G	G12_011		MULLERGREIN - SOUTH HAYS 230KV CKT 1 &G09-08 230.00 - SOUTH HAYS 230KV CKT 1	0	0.10347	-	BASE CASE
FNSL-Blown up	04ALL		1 13G	G12_011		MULLERGREIN - SOUTH HAYS 230KV CKT 1 &G09-08 230.00 - SOUTH HAYS 230KV CKT 1	0	0.1035	-	BASE CASE
FNSL-Blown up	4		1 13G	G12_011		SMKYP1 6 230.00 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.09819	-	BASE CASE
FNSL-Blown up	6		1 13G	G12_011		SMKYP1 6 230.00 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.09818	-	BASE CASE
FNSL-Blown up	00G12_011		1 18WP	G12_011		SMKYP1 6 230.00 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.09599	-	BASE CASE
FNSL-Blown up	04ALL		1 13G	G12_011		SMKYP1 6 230.00 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.09813	-	BASE CASE
FNSL-Blown up	4		1 13G	G12_011		SMKYP2 6 230.00 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.09819	-	BASE CASE
FNSL-Blown up	04ALL		1 13G	G12_011		SMKYP2 6 230.00 - SMOKYHL6 230.00 230KV CKT 1 &SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	0	0.09813	-	BASE CASE
FNSL-Blown up	03ALL		1 13G	G12_011		THISTLE7 345.00 - WICHITA 345KV CKT 1 &THISTLE7 345.00 - WICHITA 345KV CKT 2	0	0.10858	-	BASE CASE
FDNS	04ALL		1 13G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.20871	106.7404	BUCKNER7 345.00 - SPEARVILLE 345KV CKT 1 &G11-17T 345.00 - SPEARVILLE 345KV CKT 1
FDNS	04ALL		1 13G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.20973	106.1106	MULGREN7 345.00 - SPEARVILLE 345KV CKT 1 &G11-17T 345.00 - SPEARVILLE 345KV CKT 1
FDNS	04ALL		1 13G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.20973	106.1106	MULGREN7 345.00 - SPEARVILLE 345KV CKT 2 &G11-17T 345.00 - SPEARVILLE 345KV CKT 1
FDNS	04ALL		1 13G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.20994	104.7586	CLARKCOUNTY7345.00 - SPEARVILLE 345KV CKT 1 &G11-17T 345.00 - SPEARVILLE 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FDNS	04ALL	1	13G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.20994	104.7586	CLARKCOUNTY7345.00 - SPEARVILLE 345KV CKT 2 &G11-17T 345.00 - SPEARVILLE 345KV CKT 1
FDNS	04ALL	1	13G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.20976	104.5701	G11-17T 345.00 - SPEARVILLE 345KV CKT 1 &G05-12 345.00 - SPEARVILLE 345KV CKT 1
FDNS	04ALL	1	13G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.20976	104.5603	G11-17T 345.00 - SPEARVILLE 345KV CKT 1 &G06-06 345.00 - SPEARVILLE 345KV CKT 1
FDNS	04ALL	1	13G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.20976	104.5582	G11-17T 345.00 - SPEARVILLE 345KV CKT 1 &G10-15 345.00 - SPEARVILLE 345KV CKT 1
FDNS	04ALL	1	13G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.20976	104.5578	G11-17T 345.00 - SPEARVILLE 345KV CKT 1 &G08-124 345.00 - SPEARVILLE 345KV CKT 1
FDNS	04ALL	1	13G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.20976	104.5569	G11-17T 345.00 - SPEARVILLE 345KV CKT 1 &G11_016_1 345.00 - SPEARVILLE 345KV CKT 1
FDNS	04ALL	1	13G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.20976	102.1078	G11-17T 345.00 - SPEARVILLE 345KV CKT 1 &G10_061_1 345.00 - G11-17T 345.00 345KV CKT 1
FDNS	04ALL	1	13G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	319	0.20976	100.4951	G11-17T 345.00 - SPEARVILLE 345KV CKT 1 &G11-17T 345.00 - G11_017_1 345.00 345KV CKT 1

J: Group 3 Dynamic Stability Analysis Report

See next page.



***Definitive Interconnection System
Impact Study for Generation
Interconnection Requests
DISIS-2012-001-1
Group 3***

***SPP Generation
Interconnection Studies***

DISIS-2012-001-1 Group 3

February 2013

Executive Summary

A transient stability restudy has been performed by the Southwest Power Pool (SPP) to analyze the interconnection requests in the Definitive Interconnection System Impact Study (DISIS) 2012-001-1 for Group 3 in the Spearville, Oklahoma area. This restudy was performed due to a project withdrawal in Group 3 subsequent to the DISIS-2012-001 that was posted on July 26, 2012.

This restudy evaluated three (3) Interconnection Requests:

1. GEN-2012-007,
2. GEN-2012-011, and
3. ASGI-2012-006 (formerly, GEN-2012-003)

The results of the stability analysis determined that for the addition of the DISIS-2012-001-1 Group 3 interconnection requests, the transmission system was found to remain stable for both summer and winter peak conditions. The study showed that the following lines are not required for stability:

1. Rubart to Amoco 115kV, ckt 1
2. G11-017 to Post Rock 345kV, ckt 2

The power factor analysis that was performed for Group 3 in DISIS-2012-001 remains valid. Therefore, a power factor analysis was not done for this study.

Should any previously queued projects that were included in this restudy withdraw from the queue, then this System Impact Study may have to be revised to determine the impacts of these Interconnection Customers' projects on transmission facilities.

1.0 Introduction

A transient stability restudy has been performed by the Southwest Power Pool (SPP) to analyze the interconnection requests in the Definitive Interconnection System Impact Study (DISIS) 2012-001-1 for Group 3 in the Spearville, Oklahoma area. This restudy was performed due to a project withdrawal in Group 3 subsequent to the DISIS-2012-001 that was posted on July 26, 2012.

2.0 Purpose

The purpose of this Definitive Interconnection System Impact Study (DISIS) is to evaluate the impact of the proposed interconnection on the reliability of the Transmission System. Table 1 below lists the requests that were analyzed in this restudy.

Two seasonal base cases were used in the restudy to analyze the stability impacts of the proposed generation facilities. A 2014 summer peak case and a 2014 winter peak case were modified to include the prior queued projects shown in Table 2. These two study cases differ from the two study cases used in the DISIS-2012-001 in that the following lines are not in the current study cases:

1. Rubart to Amoco 115kV, ckt 1
2. G11-017 to Post Rock 345kV, ckt 2

Contingencies were developed to verify that these two lines are no longer required for stability.

Should any of the previously queued projects listed in Table 2 withdraw, then this System Impact Study may require a re-study of this request at the expense of the customer.

Table 1: DISIS-2012-001 Interconnection Request Table

Request	Size (MW)	PSS/E Model	Point of Interconnection
GEN-2012-007	96 Summer 120 Winter	GENSAL	Rubart 115kV (562116)
GEN-2012-011	200	GE 1.6MW	Tap on Spearville – Post Rock 345kV line (G11-017 POI, 562334)
ASGI-2012-006 (formerly, GEN-2012-003)	20.74 Summer 21.21 Winter	GENSAL	Tap on Rolla – Hugoton 69kV (562114)

Table 2: DISIS-2012-001 Prior Queued Request Table

Request	Size (MW)	PSS/E Model	Point of Interconnection
GEN-2001-039A	104	GE 1.6MW	Shooting Star 115kV (539763)
GEN-2002-025A	150	GE 1.5 MW	Spearville 230kV (539695)
GEN-2004-014	154.5	GE 1.5 MW	Spearville 230kV (539695)
GEN-2005-012	250.7	Siemens 2.3MW	Spearville 345kV (531469)
GEN-2006-006	205.5	GE 1.5 MW	Spearville 345kV (531469)
GEN-2006-021	100	Clipper 2.5MW	Flat Ridge 138kV (539638)
GEN-2006-022	150	Clipper 2.5MW	Pratt 115kV (539687)

Request	Size (MW)	PSS/E Model	Point of Interconnection
GEN-2007-038	200	Clipper 2.5MW	Spearville 345kV (531469)
GEN-2007-040	200.1	Siemens 2.3MW	Buckner 345kV (531501)
GEN-2008-018	405	GE 1.5 MW	Finney 345kV (523853)
GEN-2008-079	98.9	Siemens 2.3MW	Tap on Cudahy – Fort Dodge 115kV line (560229)
GEN-2008-124	200.1	Siemens 2.3MW	Spearville 345kV (531469)
GEN-2010-009	165.6	Siemens 2.3MW	Buckner 345kV (531501)
GEN-2010-015	200.1	Siemens 2.3MW	Spearville 345kV (531469)
GEN-2010-029	450	Vestas V90 1.8MW	Spearville 345kV (531469)
GEN-2010-045	197.8	Siemens 2.3MW	Buckner 345kV (531501)
GEN-2010-061	179.4	Siemens 2.3MW	Tap on Spearville – Post Rock 345kV line (G11-017 POI, 560242)
GEN-2011-008	600	GE 1.6MW	Clark County 345kV (539800)
GEN-2011-016	200.1	Siemens 2.3MW	Spearville 345kV (531469)
GEN-2011-017	299	Siemens 2.3MW	Tap on Spearville – Post Rock 345kV line (G11-017 POI, 560242)
GEN-2011-023	299	Siemens 2.3MW	Clark County 345kV (539800)
GEN-2011-043	149.5	Siemens 2.3MW	Thistle 345kV (539801)
GEN-2011-044	149.5	Siemens 2.3MW	Thistle 345kV (539801)

3.0 Facilities

3.1 Interconnection Facility

The interconnection facilities for each of the projects in Table 1 are shown in Figures 1 through 3.

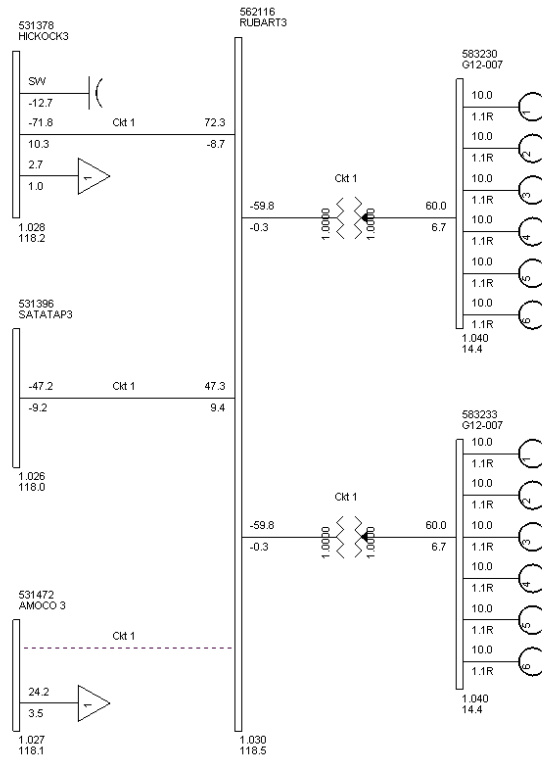


Figure 1: GEN-2012-007 Facility One-line Diagram

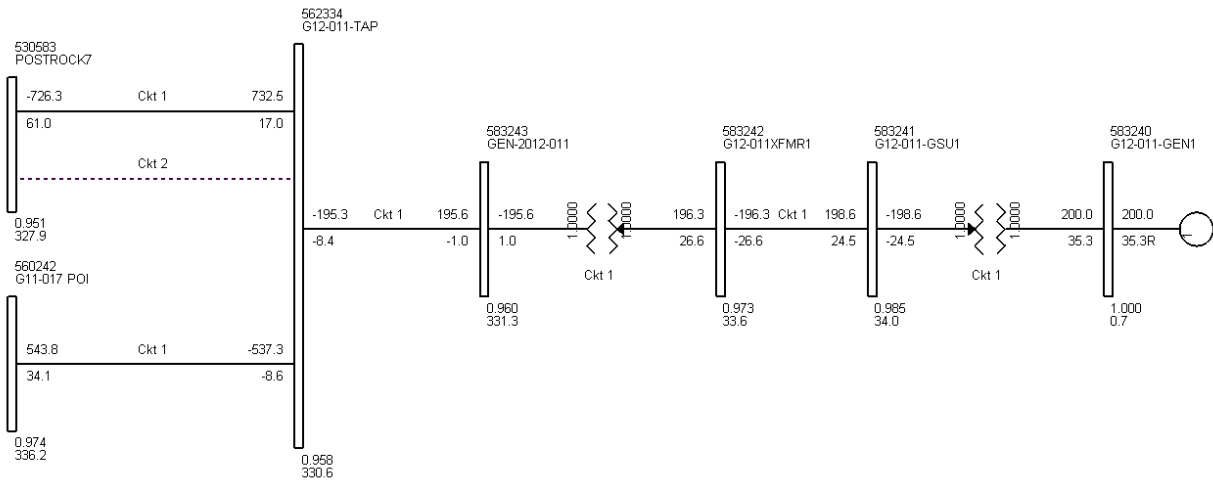


Figure 2: GEN-2012-011 Facility One-line Diagram

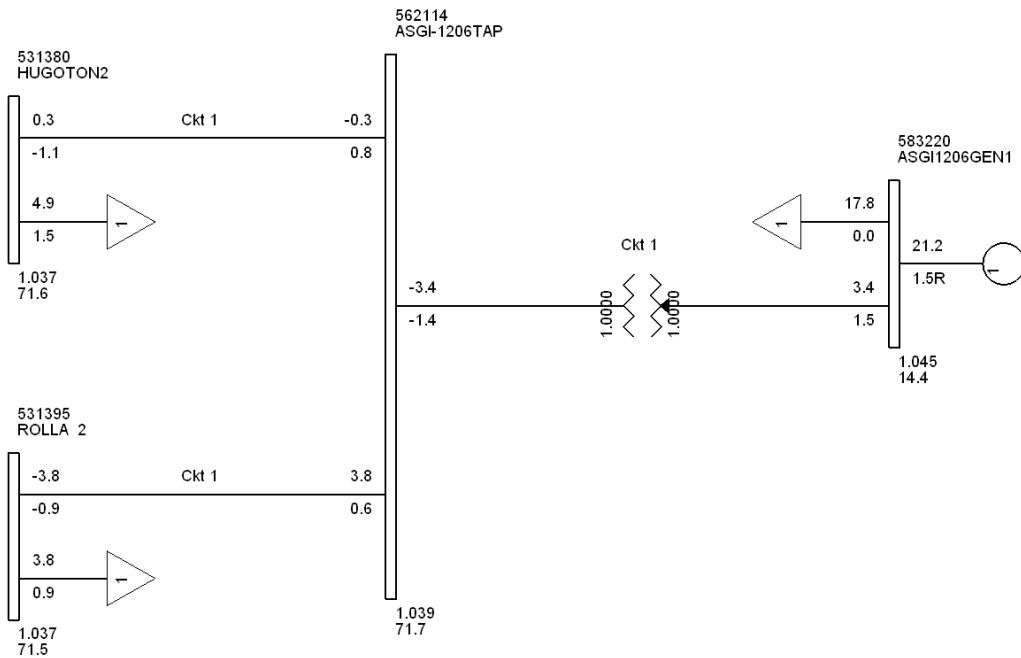


Figure 3: ASGI-2012-006 Facility One-line Diagram

4.0 Stability Study Analysis

Fifteen (15) contingencies were considered for the transient stability simulations. These contingencies included three phase faults and single phase line faults at locations defined by SPP. Single-phase line faults were simulated by applying a fault impedance to the positive sequence network at the fault location to represent the effect of the negative and zero sequence networks on the positive sequence network. The fault impedance was computed to give a positive sequence voltage at the specified fault location of approximately 60% of pre-fault voltage. This method is in agreement with SPP current practice. The faults that were defined and simulated are listed in Table 3 below. The faults were simulated on both the summer peak and the winter peak models.

In this restudy SPP monitored the generators and transmission lines in Areas 520, 524, 525, 526, 531, 534, 536, 640, 645, 650, and 652.

Table 3: Contingency List

Cont. No.	Cont. Name	Description
1	FLT01_3PH	3 phase fault on the Rubart (562116) to Hickock (531378) 115 kV line, near Rubart. a. Apply fault at the Rubart 115kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
2	FLT02_1PH	Single phase fault and sequence like previous

3	FLT03_3PH	3 phase fault on the Rubart (562116) to Sata Tap (531396) 115 kV line, near Rubart. a. Apply fault at the Rubart 115kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
4	FLT04_1PH	<i>Single phase fault and sequence like previous</i>
5	FLT05_3PH	3 phase fault on the Hickock (531378) to Pioneer (531391) 115 kV line, near Hickock. a. Apply fault at the Hickock 115kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
6	FLT06_1PH	<i>Single phase fault and sequence like previous</i>
7	FLT07_3PH	3 phase fault on the Hickock (531378) to Amoco (531472) 115 kV line, near Hickock. a. Apply fault at the Hickock 115kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
8	FLT08_1PH	<i>Single phase fault and sequence like previous</i>
9	FLT09_3PH	3 phase fault on the Sata Tap (531396) to Pioneer Tap (531392) 115 kV line, near Sata Tap. a. Apply fault at the Sata Tap 115kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
10	FLT10_1PH	<i>Single phase fault and sequence like previous</i>
11	FLT11_3PH	3 phase fault on the Pioneer Tap (531392) to Plymell (531393) 115 kV line, near Pioneer Tap. a. Apply fault at the Pioneer Tap 115kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
12	FLT12_1PH	<i>Single phase fault and sequence like previous</i>
13	FLT13_3PH	3 phase fault on the Hickock (531378) 115kV to Hickock (531377) 69kV to Hickock (531250) 13.8kV three winding transformer, near Hickock 115kV. a. Apply fault at the Hickock 115kV bus. b. Clear fault after 5 cycles by clearing the fault and tripping the faulted three winding transformer.
14	FLT53_3PH	3 phase fault on the Woodward (515375) to G11-051-Tap (562075) 345kV line, near Woodward. a. Apply fault at the Woodward 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
15	FLT79_3PH	3 phase fault on the Postrock (530583) to G12-011-POI (562334) 345kV line, near Postrock. a. Apply fault at the Postrock 345kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.

5.0 Simulation Results

All faults were run for both summer and winter cases and no tripping occurred in this study, and the transmission system remained stable.

Table 4 summarizes the results for all faults. Complete sets of plots for summer and winter cases are available on request.

Based on the dynamic results, with all network upgrades in service, all the requests in Group 3 did not cause any stability problems and remained stable for all faults studied.

Table 4: Contingency Simulation Results

Cont. No.	Cont. Name	Description	Summer	Winter
1	FLT01_3PH	3 phase fault on the Rubart (562116) to Hickock (531378) 115 kV line, near Rubart.	STABLE	STABLE
2	FLT02_1PH	<i>Single phase fault and sequence like previous</i>	STABLE	STABLE
3	FLT03_3PH	3 phase fault on the Rubart (562116) to Sata Tap (531396) 115 kV line, near Rubart.	STABLE	STABLE
4	FLT04_1PH	<i>Single phase fault and sequence like previous</i>	STABLE	STABLE
5	FLT05_3PH	3 phase fault on the Hickock (531378) to Pioneer (531391) 115 kV line, near Hickock.	STABLE	STABLE
6	FLT06_1PH	<i>Single phase fault and sequence like previous</i>	STABLE	STABLE
7	FLT07_3PH	3 phase fault on the Hickock (531378) to Amoco (531472) 115 kV line, near Hickock	STABLE	STABLE
8	FLT08_1PH	<i>Single phase fault and sequence like previous</i>	STABLE	STABLE
9	FLT09_3PH	3 phase fault on the Sata Tap (531396) to Pioneer Tap (531392) 115 kV line, near Sata Tap.	STABLE	STABLE
10	FLT10_1PH	<i>Single phase fault and sequence like previous</i>	STABLE	STABLE
11	FLT11_3PH	3 phase fault on the Pioneer Tap (531392) to Plymell (531393) 115 kV line, near Pioneer Tap.	STABLE	STABLE
12	FLT12_1PH	<i>Single phase fault and sequence like previous</i>	STABLE	STABLE
13	FLT13_3PH	3 phase fault on the Hickock (531378) 115kV to Hickock (531377) 69kV to Hickock (531250) 13.8kV three winding transformer, near Hickock 115kV.	STABLE	STABLE
14	FLT53_3PH	3 phase fault on the Woodward (515375) to G11-051-Tap (562075) 345kV line, near Woodward.	STABLE	STABLE
15	FLT79_3PH	3 phase fault on the Postrock (530583) to G12-011-POI (562334) 345kV line, near Postrock.	STABLE	STABLE

6.0 Power Factor Analysis

A power factor analysis was not performed in this restudy since the power factor analysis reported in DISIS-2012-001 (posted July 26, 2012) is still valid.

7.0 Conclusion

A transient stability restudy has been performed by the Southwest Power Pool (SPP) to evaluate the interconnection requests in the DISIS-2010-001-1 for Group 3 in the Spearville, Oklahoma area.

The results of a stability analysis determined that for the addition of the DISIS-2010-001-1 Group 3 interconnection requests, the transmission system was found to remain stable for both summer and winter peak conditions with all required network upgrades in service. The study showed that the following lines are not required for stability:

1. Rubart to Amoco 115kV, ckt 1
2. G11-017 to Post Rock 345kV, ckt 2

The power factor analysis that was performed for Group 3 in DISIS-2012-001 remains valid. Therefore, a power factor analysis was not done for this study.

If any previously queued projects that were included in this study drop out, then this System Impact Study may have to be revised to determine the impacts of this Interconnection Customer's project on transmission facilities. In accordance with FERC and SPP procedures, the study cost for restudy shall be borne by the Interconnection Customer.

K: Group 6 Dynamic Stability Analysis Report

See next page.



***Definitive Interconnection System
Impact Study for Generation
Interconnection Requests
DISIS-2012-001-1
Group 6***

***SPP Generation
Interconnection Studies***

DISIS-2012-001-1 Group 6

February 2013

Executive Summary

A transient stability restudy has been performed by the Southwest Power Pool (SPP) to analyze the interconnection requests in the Definitive Interconnection System Impact Study (DISIS) 2012-001-1 for Group 6 in the Grassland, Texas area. This restudy was performed due to a project withdrawal in Group 6 subsequent to the DISIS-2012-001 that was posted on July 26, 2012. Also this restudy was performed due to voltage issues seen in the power flow results with GEN-2012-001 operating at 10% nameplate in the summer and winter seasons.

This restudy evaluated four (4) Interconnection Requests:

1. GEN-2012-001,
2. GEN-2012-008,
3. GEN-2012-009, and
4. GEN-2012-010

The results of the stability analysis determined that for the addition of the DISIS-2012-001-1 Group 6 interconnection requests, the transmission system was found to remain stable for both summer and winter peak condition when GEN-2012-001 is operating at 100% nameplate. The results of the stability analysis determined GEN-2012-001 Tap – Grassland faults are not stable when GEN-2012-001 is operating in low wind conditions (i.e. 10% nameplate). It was determined that the Customer, GEN-2012-001 will need to install a 6MVar reactor bank in addition to the previously required 24MVar capacitor bank at their facility to relieve overvoltage issue seen during low wind operation of GEN-2012-001. The study showed that the following line is not required to be accelerated from its need date (3/1/2018) for stability for the above Generation Interconnection Requests:

1. Grassland – Wolfforth 230kV ckt 1 (SPP-NTC-50404)

Grassland – Wolfforth 230kV ckt was accelerated in the original DISIS-2012-001 group 6 stability analysis since a higher queued project had a need for the upgrade.

The power factor analysis that was performed for Group 6 in DISIS-2012-001 remains valid. Therefore, a power factor analysis was not done for this study.

Should any previously queued projects that were included in this restudy withdraw from the queue, then this System Impact Study may have to be revised to determine the impacts of these Interconnection Customers' projects on transmission facilities.

1.0 Introduction

A transient stability restudy has been performed by the Southwest Power Pool (SPP) to analyze the interconnection requests in the Definitive Interconnection System Impact Study (DISIS) 2012-001-1 for Group 6 in the Grassland, Texas area. This restudy was performed due to a project withdrawal in Group 6 subsequent to the DISIS-2012-001 that was posted on July 26, 2012. Also this restudy was performed due to voltage issues seen in the power flow results with GEN-2012-001 operating during low wind conditions (i.e.10% nameplate) in the summer and winter seasons.

2.0 Purpose

The purpose of this Definitive Interconnection System Impact Study (DISIS) is to evaluate the impact of the proposed interconnection on the reliability of the Transmission System. Table 1 below lists the requests that were analyzed in this restudy.

Two seasonal base cases were used in the restudy to analyze the stability impacts of the proposed generation facilities. A 2014 summer peak case and a 2014 winter peak case were modified to include the prior queued projects shown in Table 2. These two study cases differ from the two study cases used in the DISIS-2012-001 in that the following lines are not in the current study cases:

1. Grassland – Wolfforth 230kV ckt 1 (SPP-NTC-50404)

Contingencies were developed to verify that these two lines are no longer required for stability.

Should any of the previously queued projects listed in Table 2 withdraw, then this System Impact Study may require a re-study of this request at the expense of the customer.

Table 1: DISIS-2012-001 Interconnection Request Table

Request	Size (MW)	PSS/E Model	Point of Interconnection
GEN-2012-001	61.2	CCWE 3.6MW (WT4)	Tap Grassland - Borden 230kV (G12-001 POI, 562089)
GEN-2012-008	40	GENROU	Mustang 115kV & 230kV (527146,527151)
GEN-2012-009	15	GENROU	Mustang 230kV (527151)
GEN-2012-010	15	GENROU	Mustang 230kV (527151)

Table 2: DISIS-2012-001 Prior Queued Request Table

Request	Size (MW)	PSS/E Model	Point of Interconnection
GEN-2001-033	180	Mitsubishi 1000	San Juan Mesa 230kV (524885)
GEN-2001-036	80	CIMTR	Norton 115kV (524502)
GEN-2006-018	167.4	GENSAL	Tuco 230kV (525830)
GEN-2008-008	60	GE 1.5MW	Graham 69kV (526693)
GEN-2008-009	60	GE 1.5MW	San Juan Mesa 230kV (524885)
GEN-2008-014	149.4	Vestas V90 1.8MW	Tap on Tuco – Oklaunion 345kV line (G08-014-POI, 560813)
GEN-2008-022	300	GE 2.5MW	Tap on Eddy County – Tolk 345kV line (G08-022-POI, 577104)
GEN-2009-067S	20	STCNPG (usrmdl)	Seven Rivers 69kV (528093)

Request	Size (MW)	PSS/E Model	Point of Interconnection
GEN-2010-006	180 Summer 205 Winter	GENROU	Jones_bus2 230kV(526338)
ASGI-2010-010	42	GENSAL	Lovington 115kV (528334)
ASGI-2010-020	50	Nordex 2.5MW	Tap LE-Tatum to LE-Crsroads 69kV (AS10-020-POI, 580084)
GEN-2010-020	20	STCNPG	Roswell 69kV (527563)
ASGI-2010-021	36.6	Vestas V90 1.8/ Mitsubishi MPS- 1000A 1.0MW	Tap LE-Saundrtp to LE-Anderson 69kV (ASGI-021-POI, 580090)
GEN-2010-046	56	GENSAL	Tuco 230kV (525830)
GEN-2010-058	20	STCNPG	Chaves County 115kV (527482)
ASGI-2011-003	10	Sany 2.0MW	Hendricks 69kV (525943)
ASGI-2011-001	28.8	Mitsubishi 2.4MW	Lovington 115kV (528334)
GEN-2011-025	80	GE 1.6MW	Tap on Floyd County - Crosby County 115kV line (G11-025-POI, 581137)
GEN-2011-045	180 Summer 205 Winter	GENROU	Jones_bus2 230kV (526338)
GEN-2011-046	23 Summer 27 Winter	GENROU	Tucumcari 115kV (524477)
GEN-2011-048	165 Summer 175 Winter	GENROU	Mustang 230kV (527151)
ASGI-2011-004	19.2MW	GE 1.6MW	Crosby 69kV (525925)

3.0 Facilities

3.1 Interconnection Facility

The interconnection facilities for each of the projects in Table 1 are shown in Figure 1 and Figure 2.

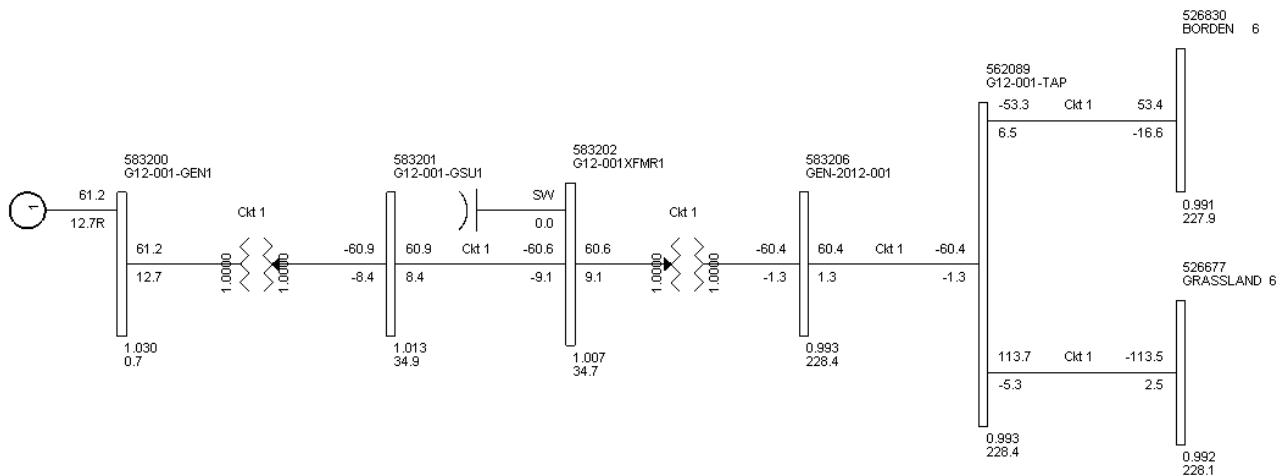


Figure 1: GEN-2012-001 Facility One-line Diagram

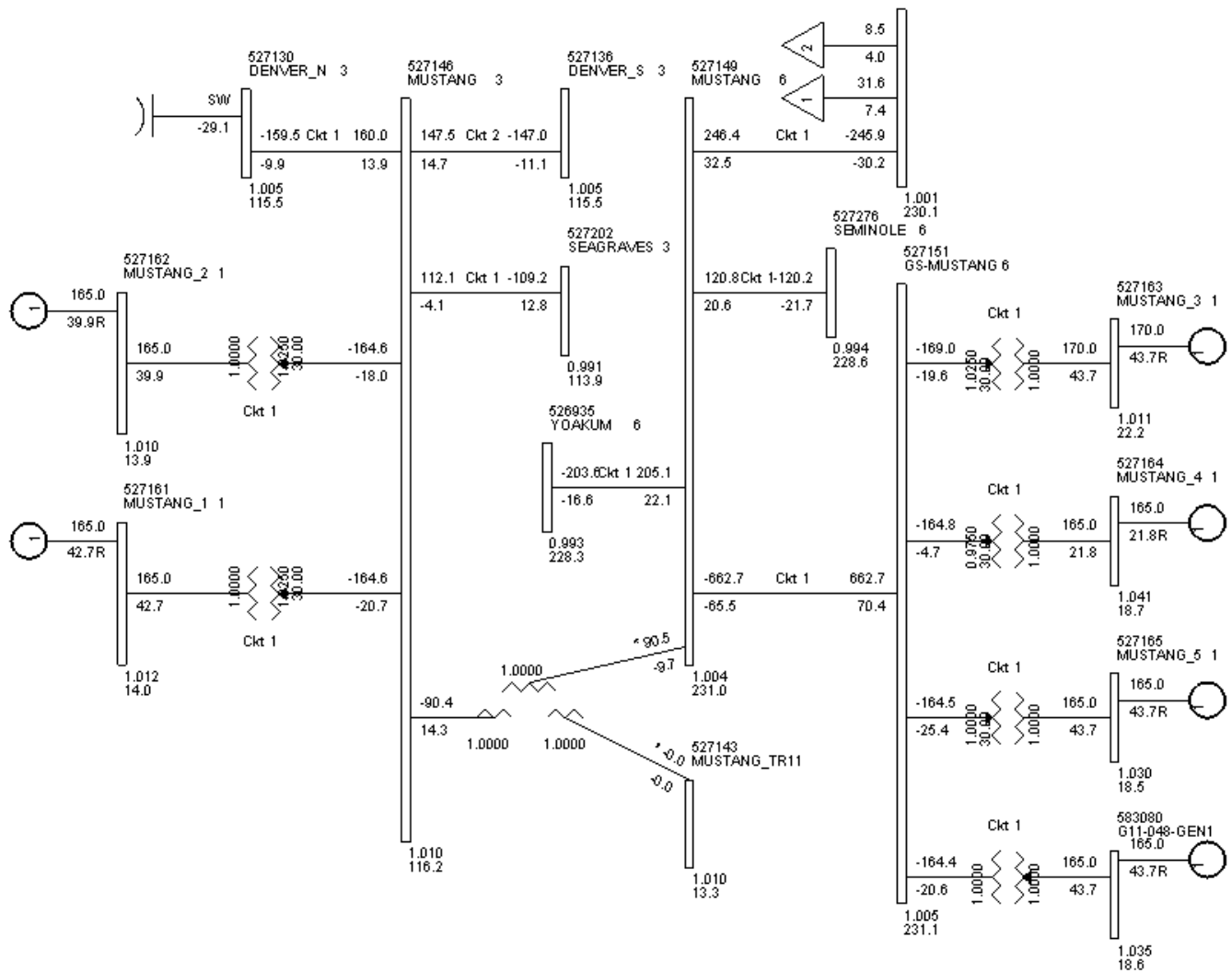


Figure 2: GEN-2012-008, GEN-2012-009, and GEN-2012-010 Facility One-line Diagram

4.0 Stability Study Analysis

Seven (7) contingencies were considered for the transient stability simulations. These contingencies included three phase faults and single phase line faults at locations defined by SPP. Single-phase line faults were simulated by applying a fault impedance to the positive sequence network at the fault location to represent the effect of the negative and zero sequence networks on the positive sequence network. The fault impedance was computed to give a positive sequence voltage at the specified fault location of approximately 60% of pre-fault voltage. This method is in agreement with SPP current practice. The faults that were defined and simulated are listed in Table 3 below. The faults were simulated on both the summer peak and the winter peak models.

In this restudy SPP monitored the generators and transmission lines in Areas 520, 524, 525, 526, 531, 534, 536, 640, 645, 650, and 652.

Table 3: Contingency List

Cont. No.	Cont. Name	Description
1	FLT01_3PH	3 phase fault on the GEN-2012-001 Tap (562089) to Grassland (526677) 230kV line, near GEN-2012-001 Tap. a. Apply fault at the GEN-2012-001 Tap 230kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
2	FLT02_1PH	<i>Single phase fault and sequence like previous</i>
3	FLT03_3PH	3 phase fault on the GEN-2012-001 Tap (562089) to Borden (526830) 230kV line, near GEN-2012-001 Tap. a. Apply fault at the GEN-2012-001 Tap 230kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
4	FLT04_1PH	<i>Single phase fault and sequence like previous</i>
5	FLT05_3PH	3 phase fault on the Grassland (526677) to Jones (526337) 230 kV line, near Grassland. a. Apply fault at the Grassland 230kV bus. b. Clear fault after 5 cycles by tripping the faulted line. c. Wait 20 cycles, and then re-close the line in (b) back into the fault. d. Leave fault on for 5 cycles, then trip the line in (b) and remove fault.
6	FLT06_1PH	<i>Single phase fault and sequence like previous</i>
7	FLT07_3PH	3 phase fault on the Grassland (526677) 230kV to Grassland (526676) 115kV to Grassland (526674) 13.2kV three winding transformer, near Grassland 230kV. a. Apply fault at the Grassland 230kV bus. b. Clear fault after 5 cycles by clearing the fault and tripping the faulted three winding transformer.

5.0 Simulation Results

All faults were run for both summer and winter cases and no tripping occurred in this study, and the transmission system remained stable for GEN-2012-001 operating at 100% nameplate. GEN-2012-001 Tap – Grassland 230kV faults are not stable to do high voltage occurring during contingency. GEN-2012-001 will be required to install a 6MVar reactor bank to relieve the high voltage. GEN-2012-001 was already required to install a 24Mvar capacitor bank in earlier studies.

Table 4 summarizes the results for all faults. Complete sets of plots for summer and winter cases are available on request.

Table 5 summarizes the results for all faults. Complete sets of plots for summer and winter cases are available on request.

Based on the dynamic results, with all network upgrades in service, all the requests in Group 6 did not cause any stability problems and remained stable for all faults studied.

Table 4: Contingency Simulation Results with GEN-2012-001 at 100% Nameplate

Cont. No.	Cont. Name	Description	Summer	Winter
1	FLT01_3PH	3 phase fault on the GEN-2012-001 Tap (562089) to Grassland (526677) 230kV line, near GEN-2012-001 Tap.	STABLE	STABLE
2	FLT02_1PH	<i>Single phase fault and sequence like previous</i>	STABLE	STABLE
3	FLT03_3PH	3 phase fault on the GEN-2012-001 Tap (562089) to Borden (526830) 230kV line, near GEN-2012-001 Tap	STABLE	STABLE
4	FLT04_1PH	<i>Single phase fault and sequence like previous</i>	STABLE	STABLE
5	FLT05_3PH	3 phase fault on the Grassland (526677) to Jones (526337) 230 kV line, near Grassland.	STABLE	STABLE
6	FLT06_1PH	<i>Single phase fault and sequence like previous</i>	STABLE	STABLE
7	FLT07_3PH	3 phase fault on the Grassland (526677) 230kV to Grassland (526676) 115kV to Grassland (526674) 13.2kV three winding transformer, near Grassland 230kV.	STABLE	STABLE

Table 5: Contingency Simulation Results with GEN-2012-001 at 10% Nameplate

Cont. No.	Cont. Name	Description	Summer	Winter
1	FLT01_3PH	3 phase fault on the GEN-2012-001 Tap (562089) to Grassland (526677) 230kV line, near GEN-2012-001 Tap.	NOT STABLE	NOT STABLE
2	FLT02_1PH	<i>Single phase fault and sequence like previous</i>	NOT STABLE	NOT STABLE
3	FLT03_3PH	3 phase fault on the GEN-2012-001 Tap (562089) to Borden (526830) 230kV line, near GEN-2012-001 Tap	STABLE	STABLE
4	FLT04_1PH	<i>Single phase fault and sequence like previous</i>	STABLE	STABLE
5	FLT05_3PH	3 phase fault on the Grassland (526677) to Jones (526337) 230 kV line, near Grassland.	STABLE	STABLE
6	FLT06_1PH	<i>Single phase fault and sequence like previous</i>	STABLE	STABLE
7	FLT07_3PH	3 phase fault on the Grassland (526677) 230kV to Grassland (526676) 115kV to Grassland (526674) 13.2kV three winding transformer, near Grassland 230kV.	STABLE	STABLE

6.0 Power Factor Analysis

A power factor analysis was not performed in this restudy since the power factor analysis reported in DISIS-2012-001 (posted July 26, 2012) is still valid.

7.0 Conclusion

A transient stability restudy has been performed by the Southwest Power Pool (SPP) to evaluate the interconnection requests in the DISIS-2010-001-1 for Group 6 in the Grassland, Texas area.

The results of the stability analysis determined that for the addition of the DISIS-2012-001-1 Group 6 interconnection requests, the transmission system was found to remain stable for both summer and winter peak condition when GEN-2012-001 is operating at 100% nameplate. The results of the stability analysis determined GEN-2012-001 Tap – Grassland faults are not stable when GEN-2012-001 operates at 10% nameplate. It was determined that the Customer, GEN-2012-001 will need to install a 6MVar bank of reactors in addition to the previously required 24Mvar capacitor banks at their facility to relieve overvoltage and stability issues seen during low wind operation of GEN-2012-001. The study showed that the following line is not required to be accelerated from its need date (3/1/2018) for stability for the above Generation Interconnection Requests:

1. Grassland – Wolfforth 230kV ckt 1 (SPP-NTC-50404)

Grassland – Wolfforth 230kV ckt was accelerated in the original DISIS-2012-001 group 6 stability analysis since a higher queued project had a need for the upgrade.

The power factor analysis that was performed for Group 6 in DISIS-2012-001 remains valid. Therefore, a power factor analysis was not done for this study.

If any previously queued projects that were included in this study drop out, then this System Impact Study may have to be revised to determine the impacts of this Interconnection Customer's project on transmission facilities. In accordance with FERC and SPP procedures, the study cost for restudy shall be borne by the Interconnection Customer.