



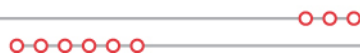
**Definitive Interconnection
System Impact Study for
Generation Interconnection
Requests**

(DISIS-2012-001-4)

Group 3 Restudy

July 2014

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02/08/2013	SPP	Account for Withdrawn Projects, Report Re-Posted (DISIS-2012-001-1)
01/21/2014	SPP	Account for Withdrawn Projects, Report Re-Posted (DISIS-2012-001-2)
05/29/2013	SPP	Account for Withdrawn Projects, Report Re-Posted (DISIS-2012-001-3)
07/30/2014	SPP	Account for Withdrawn Projects, Report Re-Posted (DISIS-2012-001-4)

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. Only those requests within DISIS group 3 are included within this restudy. The results for the previous restudy are still valid for the remaining groups included within this DISIS-2012-001 study. This System Impact Study analyzes the interconnecting of multiple generation interconnection requests associated with new generation totaling approximately 342.5 MW of new generation which would be located within the transmission systems of Sunflower Electric Power Corporation/Mid-Kansas Electric Power LLC (SUNC)/(MKEC). The various generation interconnection requests have differing proposed in-service 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. This restudy was performed to account for withdrawals within the DISIS-2012-001 study and/or higher queued projects withdrawing.

Power flow analysis has indicated that for the power flow cases studied, 342.5 MW of nameplate generation may be interconnected with transmission system reinforcements within the SPP transmission system. Dynamic stability and power factor analysis has determined the need for reactive compensation in accordance with Order No. 661-A for wind farm interconnection requests and those requirements are listed for each interconnection request within the contents of this report. Dynamic stability analysis has determined that the transmission system will remain stable with the assigned Network Upgrades and necessary reactive compensation requirements.

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

The total estimated minimum cost for interconnecting the DISIS-2012-001 interconnection customers is \$56,541,687. These costs are shown in Appendix E and F. Interconnection Service to

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

DISIS-2012-001 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 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. Only those requests within DISIS group 3 are included within this restudy. The results for the previous restudy are still valid for the remaining groups included within this DISIS-2012-001 restudy. This System Impact Study analyzes the interconnecting of multiple generation interconnection requests associated with new generation totaling 342.5 MW of new generation which would be located within the transmission systems of Sunflower Electric Power Corporation/Mid-Kansas Electric Power LLC (SUNC/MKEC). The various generation interconnection requests have differing proposed in-service 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. This restudy was performed to account for withdrawals within the DISIS-2012-001 study and/or higher queued projects withdrawing.

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

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) that became effective March 30, 2010. The interconnection requests that are included in this study are listed in Appendix A.

Affected System Interconnection Request

Also included in this Definitive Impact Study is a single Affected System Study, located on the Pioneer Electric Cooperative, Inc. system, which shares connections to the Sunflower Electric Power Corporation (SUNC) system. The Affected System Study Requests has been given the designation: ASGI-2012-006. ASGI-2012-006 capacity nameplate is 22.5 MW (and associated 17MW internal load) 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 C. In addition to the Base Case Upgrades, the previous queued requests and associated upgrades were assumed to be in-service and added to the Base Case models. These projects were dispatched as Energy Resources with equal distribution across the SPP footprint. Prior queued projects that requested Network Resource Interconnection Service (NRIS) were dispatched in an additional analysis into the balancing authority of the interconnecting transmission owner.

Development of Base Cases

Power Flow

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

Dynamic Stability

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

Base Case Upgrades

The following facilities are part of the SPP Transmission Expansion Plan or the Balanced Portfolio or recently approved Priority Projects. These facilities, have an approved Notice to Construct (NTC), or are in construction stages and were assumed to be in-service at the time of dispatch and added to the base case models. The DISIS-2012-001 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 Interconnection customers.

- Hitchland 230/115kV area projects³:
 - Hitchland – Ochiltree 230kV Project (placed in-service in 2013)
- Balanced Portfolio Projects⁴:
 - Woodward – Border – TUCO 345kV project, scheduled for 9/30/2014 in-service
 - Woodward 345/138kV circuit #2 autotransformer, (placed in-service 2014)
 - TUCO 345/230kV circuit #2 autotransformer, (placed in-service 2014)
 - Reactors at Woodward and Border, (placed in-service 2014)
 - Iatan– Nashua 345kV, scheduled for 6/1/2015 in-service
 - Nashua 345/161kV autotransformer
 - Muskogee– Seminole 345kV, scheduled for 12/31/2013 in-service
 - Cleveland – Sooner 345kV, (placed in-service in 2012)
 - Tap Stillwell – Swissvale 345kV line at West Gardner, (placed in-service in 2013)
- Priority Projects⁵:
 - Hitchland – Woodward double circuit 345kV, (placed in-service 2014)
 - Hitchland 345/230kV circuit #2 autotransformer, (placed in-service 2014)
 - Woodward – Thistle double circuit 345kV, scheduled for 12/31/2014 in-service
 - Spearville – Clark – Thistle double circuit 345kV, scheduled for 12/31/2014 in-service
 - Thistle – Wichita double circuit 345kV, (placed in-service 2014)
 - Thistle 345/138kV autotransformer, (placed in-service 2014)
 - Thistle – Flat Ridge 138kV, (placed in-service 2014)
- Various MKEC Transmission System Upgrades⁶
 - Harper – Flat Ridge 138kV rebuild, (placed in-service in 2013)
 - Flat Ridge – Medicine Lodge 138kV rebuild, (placed in-service 2013)
 - Pratt – Medicine Lodge 115kV rebuild, (placed in-service 2014)
 - Medicine Lodge 138/115kV autotransformer replacement, (placed in-service 2013)
- Northwest 345/138/13.8kV circuit #3 autotransformer, scheduled for 6/1/2017 in-service⁷

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

- Sheldon – SW7th and Pleasant Hill 115kV circuit #2 rebuild, (placed In-Service in 2013)⁸

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-2012-001 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 Customer Generation Facilities in service dates may need to be delayed until the completion of the following upgrades.

- Upgrades assigned to DISIS-2009-001 Interconnection Customers:
 - Lancer Project
 - Spearville – Lancer 345kV, addition
 - Lancer 345/115kV transformer circuit #1, addition
 - Lancer – North Ft. Dodge 115kV, addition
 - Ft. Dodge – North Ft. Dodge circuit #2, addition
 - Move Ft. Dodge terminal of Shooting Star 115kV
 - Fort Randall – Meadow Grove – Kelly 230kV circuit #1, rerate (320MVA)
- Upgrades assigned to DISIS-2010-001 Interconnection Customers:
 - Beaver County 345kV Expansion (Tap & Tie Hitchland – Woodward circuit #2 into Beaver County 345kV)
 - Switch 2749 – Wildorado 69kV circuit # 1, rebuild
- Upgrades assigned to DISIS-2010-002 Interconnection Customers:
 - Buckner –Spearville 345kV circuit #1, replace terminal equipment
 - Twin Church – Dixon County 230kV circuit #1, rerate (320MVA)
- Upgrades assigned to DISIS-2011-001 Interconnection Customers:
 - Rice County – Circle 230kV conversion, (placed In-Service in 2012)
 - Rice County – Lyons 115kV, rebuild (placed In-Service in 2013)
 - Rice County 230/115kV autotransformer, (placed In-Service in 2012)
 - Wheatland – Lyons 115kV, rerate (199 MVA) (placed In-Service in 2012)
 - Hoskins – Dixon County – Twin Church 230kV circuit #1, rerate
 - (NRIS only) Mooreland – FPL Switch – Woodward 138kV circuit #1, rebuild
 - (NRIS only) Glass Mountain – Mooreland 138kV circuit #1, rebuild
 - (NRIS only) TUCO – New Deal – Stanton 345/115kV Project, build
 - (NRIS only) Wolfforth 230/115kV transformer circuit #1, rebuild
- Upgrades assigned to DISIS-2011-002 interconnection Customers:
 - Power System Stabilizers - Install Power System Stabilizers @ Tolk (Units: 1,2) and Jones (Units: 1,2,3,4)
 - SUB 967 - SUB 968 69kV circuit #1, replace terminal equipment
 - (NRIS only) Allen – Lubbock South 115kV circuit #1, rebuild

⁸ SPP Regional Reliability 2012 ITPNT Project. Per SPP-NTC-200171.

- (NRIS only) Hydro Carbon Tap - Sub974 69kV circuit #1, rewire CT
- (NRIS only) Nebraska City U Syracuse – SUB 970 circuit #1, replace terminal equipment

Potential Upgrades Not in the Base Case

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

Regional Groupings

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

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

Power Flow

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

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

Dynamic Stability

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

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

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

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

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

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

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

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

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

- Repeat previous for each responsible GI request for each Project

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

Credits for Amounts Advanced for Network Upgrades

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

Required Interconnection Facilities

The requirement to interconnect the 342.5 MW of generation into the existing and proposed transmission systems in the affected areas of the SPP transmission footprint consist of the necessary cost allocated shared facilities listed in Appendix F by upgrade. The interconnection requirements for the cluster total \$56,541,687. 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 2014 spring peak, 2014 summer and winter peak, the 2019 summer and winter peak and the 2024 summer peak models. The output of the Interconnection Customer’s facility was offset in each model by a reduction in output of existing online SPP generation. This method allows the request to be studied as an Energy Resource (ER) Interconnection Request. Certain requests that requested Network Resource Interconnection Service (NRIS) had an additional analysis conducted for displacing resources in the interconnecting Transmission Owner’s balancing authority.

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

Cluster Group 1 (Woodward Area)

In addition to the 4,084.6 MW of previously queued generation in the area, 0 MW of new interconnection service was studied. No new constraints were found in this area.

Cluster Group 2 (Hitchland Area)

In addition to the 2,662.2 MW of previously queued generation in the area, 0 MW of new interconnection service was studied. No new constraints were found in this area.

Cluster Group 3 (Spearville Area)

In addition to the 3,487.9 MW of previously queued generation in the area, 342.5 MW of new interconnection service was studied. Due to the withdrawal of GEN-2007-038 and its associated Network Upgrades, power flow analysis indicates a need for a 100Mvar SVC and 100Mvar Cap bank at GEN 2011-017 Tap due to potential voltage collapse for multiple outages.

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

Cluster Group 4/11 (Mingo/NW Kansas Group)

In addition to the 1,888.10 MW of previously queued generation in the area, 0.0 MW of new interconnection service was studied. No new constraints were found in this area.

Cluster Group 5 (Amarillo Area)

In addition to the 692.6 MW of previously queued generation in the area, 0.0 MW of new interconnection service was studied. No new constraints were found in this area.

Cluster Group 6 (South Texas Panhandle/New Mexico)

In addition to the 2,280.3 MW of previously queued generation in the area, 91.2 MW of new interconnection service was studied. This group was not analyzed for this restudy and previously identified results remain valid.

Cluster Group 7 (Southwestern Oklahoma)

In addition to the 1,825.2 MW of previously queued generation in the area, 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 1,909.5 MW of previously queued generation in the area, 0.0 MW of new interconnection service was studied. No new constraints were found in this area.

Cluster Group 9/10 (Nebraska)

In addition to the 1,557.9 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)

Group 11 has been merged with Group 4.

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 285.8 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 14 (South Central Oklahoma)

In addition to the 220.8 MW of previously queued generation in the area, 41.4 MW of new interconnection service was studied. This group was not analyzed for this restudy and previously identified results remain valid.

Curtailement and System Reliability

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

Stability Analysis

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

Cluster Group 1 (Woodward Area)

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

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

Cluster Group 4 (Mingo Area)

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

Cluster Group 5 (Amarillo Area)

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

Cluster Group 6 (South Texas Panhandle/New Mexico)

The Group 6 stability analysis was not performed again for this restudy.

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 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 again for this restudy.

Conclusion

Only those requests within DISIS group 3 are included within this restudy. The results for the previous restudy are still valid for the remaining groups included within this DISIS-2012-001 study. The minimum cost of interconnecting 342.5 MW of new interconnection requests included in this Definitive Interconnection System Impact Study is estimated at \$56,541,687 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 Restudy

Request	Amount	Service	Area	Requested Point of Interconnection	Proposed Point of Interconnection	Requested In-Service Date	In Service Date Delayed Until no earlier than*
ASGI-2012-006	22.50	ER	SUNCMKEC	Tap Hugoton - Rolla 69kV	Tap Hugoton - Rolla 69kV		
GEN-2012-007	120.00	ER/NR	SUNCMKEC	Rubart 115kV	Rubart 115kV	4/1/2014	TBD
GEN-2012-011	200.00	ER	SUNCMKEC	Tap Spearville - Post Rock 345kV (GEN-2011-017 Tap)	Tap Spearville - Post Rock 345kV (North of GEN-2011-017 Tap)	11/1/2013	TBD
Total:		342.50					

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

B: Generation Interconnection Requests in Impact Study

See next page.

B: Generation Interconnection Requests in Impact Study

Request	Amount	Service	Area	Requested Point of Interconnection	Proposed Point of Interconnection	Requested In-Service Date	In Service Date Delayed Until no earlier than*
ASGI-2012-006	22.50	ER	SUNCMKEC	Tap Hugoton - Rolla 69kV	Tap Hugoton - Rolla 69kV		
GEN-2012-001	61.20	ER	SPS	Tap Grassland - Borden County 230kV	Tap Grassland - Borden County 230kV	11/30/2012	On-Line
GEN-2012-004	41.40	ER/NR	OKGE	Pooleville 138kV	Tap Ratliff - Pooleville (Carter County) 138kV	12/31/2013	
GEN-2012-007	120.00	ER/NR	SUNCMKEC	Rubart 115kV	Rubart 115kV	4/1/2014	TBD
GEN-2012-009	15.00	ER	SPS	Mustang 230kV	Mustang 230kV	4/1/2015	
GEN-2012-010	15.00	ER	SPS	Mustang 230kV	Mustang 230kV	4/1/2015	
GEN-2012-011	200.00	ER	SUNCMKEC	Tap Spearville - Post Rock 345kV (GEN-2011-017 Tap)	Tap Spearville - Post Rock 345kV (North of GEN-2011-017 Tap)	11/1/2013	TBD
Total:						475.10	

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

C: Study Groupings

See next page

C. Study Groups

GROUP 1: WOODWARD AREA			
Request	Capacity	Area	Proposed Point of Interconnection
GEN-2001-014	96.00	WFEC	Ft Supply 138kV
GEN-2001-037	100.00	OKGE	FPL Moreland Tap 138kV
GEN-2005-008	120.00	OKGE	Woodward 138kV
GEN-2006-024S	19.80	WFEC	Buffalo Bear Tap 69kV
GEN-2006-046	131.00	OKGE	Dewey 138kV
GEN-2007-021	201.00	OKGE	Tatonga 345kV
GEN-2007-043	200.00	OKGE	Minco 345kV
GEN-2007-044	300.00	OKGE	Tatonga 345kV
GEN-2007-050	170.00	OKGE	Woodward EHV 138kV
GEN-2007-062	765.00	OKGE	Woodward EHV 345kV
GEN-2008-003	101.00	OKGE	Woodward EHV 138kV
GEN-2008-044	197.80	OKGE	Tatonga 345kV
GEN-2010-011	29.70	OKGE	Tatonga 345kV
GEN-2010-040	300.00	OKGE	Cimarron 345kV
GEN-2011-007	250.10	OKGE	Tap Cimarron - Woodring (Mathewson) 345kV
GEN-2011-010	100.80	OKGE	Minco 345kV
GEN-2011-019	299.00	OKGE	Woodward 345kV
GEN-2011-020	299.00	OKGE	Woodward 345kV
GEN-2011-051	104.40	OKGE	Tap Woodward - Tatonga 345kV
GEN-2011-054	300.00	OKGE	Cimarron 345kV
PRIOR QUEUED SUBTOTAL	4,084.60		
AREA TOTAL	4,084.60		

GROUP 2: HITCHLAND AREA			
Request	Capacity	Area	Proposed Point of Interconnection
ASGI-2011-002	20.00	SPS	Herring 115kV
GEN-2002-008	240.00	SPS	Hitchland 345kV
GEN-2002-009	80.00	SPS	Hansford 115kV
GEN-2003-020	160.00	SPS	Martin 115kV
GEN-2006-020S	18.90	SPS	DWS Frisco 115kV
GEN-2006-044	370.00	SPS	Hitchland 345kV
GEN-2007-046	199.50	SPS	Hitchland 115kV
GEN-2008-047	300.00	OKGE	Tap Hitchland - Woodward Dbl Ckt (Beaver County) 345kV
GEN-2010-001	300.00	OKGE	Tap Hitchland - Woodward Dbl Ckt (Beaver County) 345kV
GEN-2010-014	358.80	SPS	Hitchland 345kV
GEN-2011-014	201.00	OKGE	Tap Hitchland - Woodward Dbl Ckt (Beaver County) 345kV
GEN-2011-022	299.00	SPS	Hitchland 345kV
SPS Distributed (Dumas 19th St)	20.00	SPS	Dumas 19th Street 115kV
SPS Distributed (Etter)	20.00	SPS	Etter 115kV
SPS Distributed (Moore E)	25.00	SPS	Moore East 115kV
SPS Distributed (Sherman)	20.00	SPS	Sherman 115kV
SPS Distributed (Spearman)	10.00	SPS	Spearman 69kV
SPS Distributed (TC-Texas County)	20.00	SPS	Texas County 115kV
PRIOR QUEUED SUBTOTAL	2,662.20		
AREA TOTAL	2,662.20		

GROUP 3: SPEARVILLE AREA			
Request	Capacity	Area	Proposed Point of Interconnection
GEN-2001-039A	105.00	SUNCMKEC	Tap Greensburg - Ft Dodge (Shooting Star Tap) 115kV
GEN-2002-025A	150.00	SUNCMKEC	Spearville 230kV
GEN-2004-014	154.50	SUNCMKEC	Spearville 230kV
GEN-2005-012	250.00	SUNCMKEC	Ironwood 345kV
GEN-2006-006	205.50	SUNCMKEC	Spearville 345kV
GEN-2006-021	101.00	SUNCMKEC	Flat Ridge Tap 138kV
GEN-2007-040	200.00	SUNCMKEC	Buckner 345kV
GEN-2008-018	250.00	SPS	Finney 345kV
GEN-2008-079	99.20	SUNCMKEC	Tap Cudahy - Ft Dodge 115kV
GEN-2008-124	200.10	SUNCMKEC	Ironwood 345kV
GEN-2010-009	165.60	SUNCMKEC	Buckner 345kV
GEN-2010-015	200.10	SUNCMKEC	Spearville 345kV
GEN-2010-045	197.80	SUNCMKEC	Buckner 345kV
GEN-2011-008	600.00	SUNCMKEC	Clark County 345kV
GEN-2011-016	200.10	SUNCMKEC	Spearville 345kV
GEN-2011-017	299.00	SUNCMKEC	Tap Spearville - PostRock (GEN-2011-017T) 345kV
Gray County Wind (Montezuma)	110.00	SUNCMKEC	Gray County Tap 115kV
PRIOR QUEUED SUBTOTAL	3,487.90		
ASGI-2012-006	22.50	SUNCMKEC	Tap Hugoton - Rolla 69kV
GEN-2012-007	120.00	SUNCMKEC	Rubart 115kV
GEN-2012-011	200.00	SUNCMKEC	Tap Spearville - Post Rock 345kV (North of GEN-2011-017 Tap)
CURRENT CLUSTER SUBTOTAL	342.50		
AREA TOTAL	3,830.40		

GROUP 4/11: NW KANSAS AREA

Request	Capacity	Area	Proposed Point of Interconnection
GEN-2001-039M	100.00	SUNCMKEC	Central Plains Tap 115kV
GEN-2003-006A	200.00	SUNCMKEC	Elm Creek 230kV
GEN-2003-019	250.00	MIDW	Smoky Hills Tap 230kV
GEN-2006-031	75.00	MIDW	Knoll 115kV
GEN-2006-040	108.00	SUNCMKEC	Mingo 115kV
GEN-2007-011	135.00	SUNCMKEC	Syracuse 115kV
GEN-2008-017	300.00	SUNCMKEC	Setab 345kV
GEN-2008-092	201.00	MIDW	Post Rock 230kV
GEN-2009-008	199.50	MIDW	South Hays 230kV
GEN-2009-020	48.60	MIDW	Tap Nekoma - Bazine (Walnut Creek) 69kV
GEN-2010-048	70.00	MIDW	Tap Beach Station - Redline 115kV
GEN-2010-057	201.00	MIDW	Rice County 230kV
PRIOR QUEUED SUBTOTAL	1,888.10		
AREA TOTAL	1,888.10		

GROUP 5: AMARILLO AREA

Request	Capacity	Area	Proposed Point of Interconnection
GEN-2002-022	240.00	SPS	Bushland 230kV
GEN-2008-051	322.00	SPS	Potter County 345kV
GEN-2008-088	50.60	SPS	Vega 69kV
Llano Estacado (White Deer)	80.00	SPS	Llano Wind 115kV
PRIOR QUEUED SUBTOTAL	692.60		
AREA TOTAL	692.60		

GROUP 6: S-TX PANHANDLE/W-TX AREA			
Request	Capacity	Area	Proposed Point of Interconnection
ASGI-2010-010	42.20	SPS	Lovington 115kV
ASGI-2010-020	30.00	SPS	Tap LE-Tatum - LE-Crossroads 69kV
ASGI-2010-021	15.00	SPS	Tap LE-Saunders Tap - LE-Anderson 69kV
ASGI-2011-001	28.80	SPS	Lovington 115kV
ASGI-2011-003	10.00	SPS	Hendricks 115kV
ASGI-2011-004	20.00	SPS	Pleasant Hill 69kV
GEN-2001-033	180.00	SPS	San Juan Tap 230kV
GEN-2001-036	80.00	SPS	Norton 115kV
GEN-2006-018	170.00	SPS	TUCO Interchange 230kV
GEN-2006-026	604.00	SPS	Hobbs 230kV & Hobbs 115kV
GEN-2008-022	300.00	SPS	Tap Eddy Co - Tolk (Crossroads) 345kV
GEN-2010-006	205.00	SPS	Jones 230kV
GEN-2010-046	56.00	SPS	TUCO Interchange 230kV
GEN-2011-025	82.30	SPS	Tap Floyd County - Crosby County 115kV
GEN-2011-045	205.00	SPS	Jones 230kV
GEN-2011-046	27.00	SPS	Lopez 115kV
GEN-2011-048	175.00	SPS	Mustang 230kV
SPS Distributed (Hopi)	10.00	SPS	Hopi 115kV
SPS Distributed (Jal)	10.00	SPS	S_Jal 115kV
SPS Distributed (Lea Road)	10.00	SPS	Lea Road 115kV
SPS Distributed (Monument)	10.00	SPS	Monument 115kV
SPS Distributed (Ocotillo)	10.00	SPS	S_Jal 115kV
PRIOR QUEUED SUBTOTAL	2,280.30		
GEN-2012-001	61.20	SPS	Tap Grassland - Borden County 230kV
GEN-2012-009	15.00	SPS	Mustang 230kV
GEN-2012-010	15.00	SPS	Mustang 230kV
CURRENT CLUSTER SUBTOTAL	91.20		
AREA TOTAL	2,371.50		

GROUP 7: SW-OKLAHOMA AREA

Request	Capacity	Area	Proposed Point of Interconnection
GEN-2001-026	74.00	WFEC	Washita 138kV
GEN-2002-005	120.00	WFEC	Red Hills Tap 138kV
GEN-2003-004	100.00	WFEC	Washita 138kV
GEN-2003-005	100.00	WFEC	Anadarko - Paradise (Blue Canyon) 138kV
GEN-2003-022	120.00	AEPW	Washita 138kV
GEN-2004-020	27.00	AEPW	Washita 34.5kV
GEN-2004-023	20.60	WFEC	Washita 138kV
GEN-2005-003	30.60	WFEC	Washita 138kV
GEN-2006-002	101.00	AEPW	Sweetwater 230kV
GEN-2006-035	225.00	AEPW	Sweetwater 230kV
GEN-2006-043	99.00	AEPW	Sweetwater 230kV
GEN-2007-032	150.00	WFEC	Tap Clinton Junction - Clinton 138kV
GEN-2007-052	150.00	WFEC	Anadarko 138kV
GEN-2008-023	150.00	AEPW	Hobart Junction 138kV
GEN-2008-037	101.00	WFEC	Tap Washita - Blue Canyon Wind 138kV
GEN-2011-037	7.00	WFEC	Blue Canyon 5 138kV
GEN-2011-049	250.00	OKGE	Border 345kV
PRIOR QUEUED SUBTOTAL	1,825.20		
AREA TOTAL	1,825.20		

GROUP 8: N-OK/S-KS AREA

Request	Capacity	Area	Proposed Point of Interconnection
ASGI-2010-006	150.00	AECI	Tap Fairfax (AECI) - Shilder (AEPW) 138kV
GEN-2002-004	200.00	WERE	Latham 345kV
GEN-2005-013	201.00	WERE	Tap Latham - Neosho (Caney River) 345kV
GEN-2007-025	300.00	WERE	Viola 345kV
GEN-2008-013	300.00	OKGE	Tap Wichita - Woodring (Hunter) 345kV
GEN-2008-021	42.00	WERE	Wolf Creek 345kV
GEN-2008-098	100.80	WERE	Tap Lacygne - Wolf Creek (Anderson County) 345kV
GEN-2009-025	60.00	OKGE	Nardins 69kV
GEN-2010-003	100.80	WERE	Tap Lacygne - Wolf Creek (Anderson County) 345kV
GEN-2010-005	300.00	WERE	Viola 345kV
GEN-2010-055	4.50	AEPW	Wekiwa 138kV
GEN-2011-057	150.40	WERE	Creswell 138kV
PRIOR QUEUED SUBTOTAL	1,909.50		
AREA TOTAL	1,909.50		

GROUP 9/10: NEBRASKA AREA			
Request	Capacity	Area	Proposed Point of Interconnection
GEN-2002-023N	0.80	NPPD	Harmony 115kV
GEN-2003-021N	75.00	NPPD	Ainsworth Wind Tap 115kV
GEN-2004-023N	75.00	NPPD	Columbus Co 115kV
GEN-2006-020N	42.00	NPPD	Bloomfield 115kV
GEN-2006-037N1	75.00	NPPD	Broken Bow 115kV
GEN-2006-038N005	80.00	NPPD	Broken Bow 115kV
GEN-2006-038N019	80.00	NPPD	Petersburg North 115kV
GEN-2006-044N	40.50	NPPD	North Petersburg 115kV
GEN-2007-011N08	81.00	NPPD	Bloomfield 115kV
GEN-2008-086N02	200.00	NPPD	Tap Ft Randle - Columbus (Madison County) 230kV
GEN-2008-119O	60.00	OPPD	S1399 161kV
GEN-2008-123N	89.70	NPPD	Tap Guide Rock - Pauline (Rosemont) 115kV
GEN-2009-040	108.00	WERE	Marshall 115kV
GEN-2010-041	10.50	OPPD	S 1399 161kV
GEN-2010-051	200.00	NPPD	Tap Twin Church - Hoskins 230kV
GEN-2011-018	73.60	NPPD	Steele City 115kV
GEN-2011-027	120.00	NPPD	Tap Twin Church - Hoskins 230kV (GEN-2010-51 Tap)
GEN-2011-055	52.80	OPPD	South Sterling 69kV
GEN-2011-056	3.60	NPPD	Jeffrey 115kV
GEN-2011-056A	3.60	NPPD	John 1 115kV
GEN-2011-056B	4.50	NPPD	John 2 115kV
NPPD Distributed (Broken Bow)	8.30	NPPD	Broken Bow 115kV
NPPD Distributed (Burt County Wind)	12.00	NPPD	Tekamah & Oakland 115kV
NPPD Distributed (Burwell)	3.00	NPPD	Ord 115kV
NPPD Distributed (Columbus Hydro)	45.00	NPPD	Columbus 115kV
NPPD Distributed (Ord)	11.90	NPPD	Ord 115kV
NPPD Distributed (Stuart)	2.10	NPPD	Ainsworth 115kV
PRIOR QUEUED SUBTOTAL	1,557.90		
AREA TOTAL	1,557.90		

GROUP 12: NW-AR AREA

Request	Capacity	Area	Proposed Point of Interconnection
AREA TOTAL	0.00		

GROUP 13: NW MISSOURI AREA

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

GROUP 14: S-OKLAHOMA AREA

Request	Capacity	Area	Proposed Point of Interconnection
GEN-2011-040	111.00	OKGE	Tap Ratliff - Pooleville (Carter County) 138kV
GEN-2011-050	109.80	AEPW	Santa Fe Station 138kV
PRIOR QUEUED SUBTOTAL	220.80		
GEN-2012-004	41.40	OKGE	Tap Ratliff - Pooleville (Carter County) 138kV
CURRENT CLUSTER SUBTOTAL	41.40		
AREA TOTAL	262.20		

CLUSTER TOTAL (CURRENT STUDY)	475.1	MW
PQ TOTAL (PRIOR QUEUED)	20,894.9	MW
CLUSTER TOTAL (INCLUDING PRIOR QUEUED)	21,370.0	MW

D: Proposed Point of Interconnection One line Diagrams

ASGI-2012-006

*****Facility Study one-line by Interconnecting Transmission Owner*****

GEN-2012-007

*****Please refer to the Facility Study for an updated one-line*****

GEN-2012-011

*****Please refer to the Facility Study for an updated one-line*****

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

Important Note:

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

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

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

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

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

Appendix E. Cost Allocation Per Request

(Including Previously Allocated Network Upgrades*)

Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
ASGI-2012-006			
ASGI 2012-006 Interconnection Costs See Online Diagram	Current Study	\$100,000.00	\$100,000.00
Dobson - Gano 115kV CKT 1 Replace Terminal Equipment	In-Service		\$82,481.09
Hitchland - Woodward 345kV Dbl CKT Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	In-Service		\$226,040,727.00
Hitchland 345/230kV Autotransformer CKT 2 Priority Project: Hitchland 345/230kV Autotransformer CKT 2 (Total Project E&C Cost Shown).	In-Service		\$8,883,760.00
Thistle - Wichita 345KV Dbl CKT Priority Project: Thistle - Wichita Dbl 345kV CKT (Total Project E&C Cost Shown.)	In-Service		\$426,504,292.00
Woodward XFMR 345/138/13.8kV CKT 2 Balanced Portfolio: Woodward 345/138kV Transformer CKT 2 & 50 MVAR Reactor (Total Project E&C Cost Shown).	In-Service		\$249,247,072.00
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		\$426,504,292.00
Spearville - Clark 345KV Dbl CKT Priority Project: Spearville - Clark - Thistle Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$426,504,292.00
	Current Study Total	\$100,000.00	

GEN-2012-007

GEN-2012-007 Interconnection Costs See Online Diagram.	Current Study	\$12,299,954.00	\$12,299,954.00
Cleveland - Sooner 345KV CKT 1 Balanced Portfolio: Cleveland - Sooner 345kV CKT 1 (Total Project E&C Cost Shown).	In-Service		\$58,692,000.00
Dobson - Gano 115kV CKT 1 Replace Terminal Equipment	In-Service		\$82,481.09
Garden City - Kansas Avenue Water Treatment Plant 115kV Ckt 1 Replace Terminal Equipment	In-Service		\$112,722.18

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

Interconnection Request and Upgrades	Upgrade Type	Allocated Cost	Upgrade Cost
Hitchland - Woodward 345kV Dbl CKT Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	In-Service		\$226,040,727.00
Hitchland 345/230kV Autotransformer CKT 2 Priority Project: Hitchland 345/230kV Autotransformer CKT 2 (Total Project E&C Cost Shown).	In-Service		\$8,883,760.00
Thistle - Wichita 345KV Dbl CKT Priority Project: Thistle - Wichita Dbl 345kV CKT (Total Project E&C Cost Shown.)	In-Service		\$426,504,292.00
Woodward XFMR 345/138/13.8kV CKT 2 Balanced Portfolio: Woodward 345/138kV Transformer CKT 2 & 50 MVAR Reactor (Total Project E&C Cost Shown).	In-Service		\$249,247,072.00
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		\$426,504,292.00
Spearville - Clark 345KV Dbl CKT Priority Project: Spearville - Clark - Thistle Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$426,504,292.00
	Current Study Total		\$12,299,954.00

GEN-2012-011

GEN-2011-017 Tap 345kV Reactive Power Support Build GEN-2011-017 Tap +100MVAR SVC and 100MVAR Switchable Capacitor Bank.	Current Study	\$30,000,000.00	\$30,000,000.00
GEN-2012-011 Interconnection Costs See Online Diagram.	Current Study	\$14,141,733.00	\$14,141,733.00
Border - Woodward 345KV CKT 1 Balanced Portfolio: Tuco - Woodward 345kV CKT 1 (Total Project E&C Cost Shown)	In-Service		\$249,247,072.00
Hitchland - Woodward 345kV Dbl CKT Priority Project: Hitchland - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	In-Service		\$226,040,727.00
Hitchland 345/230kV Autotransformer CKT 2 Priority Project: Hitchland 345/230kV Autotransformer CKT 2 (Total Project E&C Cost Shown).	In-Service		\$8,883,760.00
Thistle - Wichita 345KV Dbl CKT Priority Project: Thistle - Wichita Dbl 345kV CKT (Total Project E&C Cost Shown.)	In-Service		\$426,504,292.00
TUCO Interchange 345/230/13.2KV Autotransformer CKT 2 Balanced Portfolio: TUCO 345/230 kV Transformer CKT 2 (Total Project E&C Cost Shown)	In-Service		\$14,900,907.00
Woodward XFMR 345/138/13.8kV CKT 2 Balanced Portfolio: Woodward 345/138kV Transformer CKT 2 & 50 MVAR Reactor (Total Project E&C Cost Shown).	In-Service		\$249,247,072.00

* 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 345kV Expansion Beaver County Expansion: Tap & Tie in Hitchland - Woodward 345kV CKT 2	Previously Allocated		\$3,500,000.00
Border - Tuco Interchange 345KV CKT 1 Balanced Portfolio: Tuco - Woodward 345kV CKT 1 (Total Project E&C Cost Shown)	Previously Allocated		\$249,247,072.00
Buckner - Spearville 345kV CKT 1 Replace Terminal equipment	Previously Allocated		\$771,000.00
Clark - Thistle 345KV Dbl CKT Priority Project: Spearville - Clark - Thistle Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$426,504,292.00
Spearville - Clark 345KV Dbl CKT Priority Project: Spearville - Clark - Thistle Dbl 345kV CKT (Total Project E&C Cost Shown.)	Previously Allocated		\$426,504,292.00
Thistle - Woodward 345KV Dbl CKT Priority Project: Thistle - Woodward Dbl 345kV CKT (Total Project E&C Cost Shown)	Previously Allocated		\$207,782,000.00
	Current Study Total	\$44,141,733.00	
TOTAL CURRENT STUDY COSTS:		\$56,541,687.00	

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

F: Cost Allocation per Proposed Study Network Upgrade

Important Note:

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

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

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

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

Appendix F. Cost Allocation by Upgrade

ASGI-2012-006 Interconnection Costs		\$100,000.00
See Online Diagram		
	ASGI-2012-006	\$100,000.00
	Total Allocated Costs	\$100,000.00
GEN-2011-017 Tap 345kV Reactive Power Support		\$30,000,000.00
Build GEN-2011-017 Tap +100MVAR SVC and 100MVAR Switchable Capacitor Bank.		
	GEN-2012-011	\$30,000,000.00
	Total Allocated Costs	\$30,000,000.00
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-2012-011 Interconnection Costs		\$14,141,733.00
See Online Diagram.		
	GEN-2012-011	\$14,141,733.00
	Total Allocated Costs	\$14,141,733.00

* 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 (MVA)	TDF	TC%LOADING (% MVA)	CONTINGENCY
FNSL-Blown up	03ALL	0	14G	G12_011	-	Non-converged Contingency	1793	0.48242	-	G12-011T 345.00 - POST ROCK 345KV CKT 1
FNSL-Blown up	03ALL	0	14G	G12_011	-	Non-converged Contingency	717.1	0.15144	-	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FNSL-Blown up	03ALL	0	14G	G12_011	-	Non-converged Contingency	1052	0.13425	-	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1

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

See next page.

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB		TC%LOADING	CONTINGENCY
							(MVA)	TDF		
FDNS	03G12_011		0 14G	G12_011	FROM->TO	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1	717.1	0.28681	99.9	DBL-IRON-CLR
FDNS	03ALL		0 14G	G12_011	TO->FROM	CHISHOLM - MAIZEE 4 138.00 138KV CKT 1	287	0.04399	100.8786	BENTON - WICHITA 345KV CKT 1
FDNS	03ALL		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.12294	122.9063	DBL-SPRVL-CL
FDNS	03ALL		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.10115	119.3946	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1
FDNS	03G12_011		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.09622	119.2826	DBL-WICH-THI
FDNS	03G12_011		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.12379	118.5352	DBL-IRON-CLR
FDNS	03G12_011		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.12361	116.3354	DBL-IRON-CLR
FDNS	03G12_011		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.09606	114.9973	DBL-WICH-THI
FDNS	3		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.12363	114.7497	DBL-IRON-CLR
FDNS	3		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.09609	113.8871	DBL-WICH-THI
FDNS	03ALL		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.08558	113.7886	CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 1
FDNS	03ALL		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.08558	113.7886	CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 2
FDNS	03ALL		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.09904	111.8239	AXTELL - POST ROCK 345KV CKT 1
FDNS	03ALL		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.10115	111.7015	KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1
FDNS	03ALL		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.08064	106.9131	THISTLE7 345.00 - WICHITA 345KV CKT 1
FDNS	03ALL		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.08064	106.9131	THISTLE7 345.00 - WICHITA 345KV CKT 2
FDNS	03ALL		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.08551	105.1729	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNS	03ALL		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.07999	104.3374	ST JOHN - ST JOHN 115KV CKT 1
FDNS	03ALL		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.08926	103.9288	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1
FDNS	03ALL		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0827	103.3646	SPP-MKEC-06
FDNS	03ALL		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0827	103.3108	SEWARD - ST JOHN 115KV CKT 1
FDNS	03ALL		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0781	101.556	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	03ALL		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.07713	101.3531	MINGO - RED WILLOW 345KV CKT 1
FDNS	03ALL		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.07999	101.3135	HUNTSVILLE - ST JOHN 115KV CKT 1
FDNS	03ALL		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.07999	101.1	MIDW-CATB05
FDNS	03ALL		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.07606	100.9206	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	03ALL		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.07999	100.7553	HUNTSVILLE - HUTCHINSON ENERGY CENTER 115KV CKT 1
FDNS	03ALL		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.07666	100.7475	DBL-BVR-WWRD
FDNS	03ALL		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.08064	100.6681	CLARKCOUNTY7345.00 - IRONWOOD7 345.00 345KV CKT 1
FDNS	03ALL		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.08064	100.5135	CLARKCOUNTY7345.00 - SPEARVILLE 345KV CKT 1
FDNS	03ALL		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.07801	100.447	GRAND ISLAND - SWEETWATER 345KV CKT 1
FDNS	03ALL		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0781	100.3648	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	03ALL		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.07969	100.3525	AXTELL - PAULINE 345KV CKT 1
FDNS	03ALL		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.07606	100.3127	GEN532652 1-JEFFREY ENERGY CENTER UNIT 2
FDNS	03ALL		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.07606	100.3122	GEN532653 1-JEFFREY ENERGY CENTER UNIT 3
FDNS	03ALL		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0781	100.2294	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	03ALL		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.07923	100.1754	GREAT BEND TAP - SEWARD 115KV CKT 1
FDNS	03ALL		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.07923	100.1525	GREAT BEND TAP - MULLERGREN 115KV CKT 1
FDNS	03ALL		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.07721	100.0659	SPP-MKEC-02
FDNS	03ALL		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.07606	100	GEN532651 1-JEFFREY ENERGY CENTER UNIT 1
FDNS	03ALL		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.07721	99.8851	ELLSWTP3 115.00 - MULLERGREN 115KV CKT 1
FDNS	03ALL		0 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.07908	99.6	MOORE - PAULINE 345KV CKT 1
FDNS	03G12_011		0 14G	G12_011	FROM->TO	CLEARWATER - GILL ENERGY CENTER WEST 138KV CKT 1	191	0.03788	115.5448	DBL-WICH-THI
FDNS	03G12_011		0 14G	G12_011	FROM->TO	CLEARWATER - GILL ENERGY CENTER WEST 138KV CKT 1	191	0.03778	114.3553	DBL-WICH-THI
FDNS	3		0 14G	G12_011	FROM->TO	CLEARWATER - GILL ENERGY CENTER WEST 138KV CKT 1	191	0.03779	113.1162	DBL-WICH-THI
FDNS	03G12_011		0 14G	G12_011	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.03788	212.9816	DBL-WICH-THI
FDNS	03G12_011		0 14G	G12_011	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.03778	210.7744	DBL-WICH-THI
FDNS	3		0 14G	G12_011	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.03779	208.5889	DBL-WICH-THI
FDNS	06ALL		0 14G	G12_011	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.03804	119.1262	DBL-WICH-THI
FDNS	6		0 14G	G12_011	TO->FROM	CLEARWATER - MILAN TAP 138KV CKT 1	110	0.03817	112.1831	DBL-WICH-THI
FDNS	03ALL		0 14G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03744	160.5098	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	03G12_011		0 14G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04158	151.3684	DBL-WICH-THI
FDNS	03ALL		0 14G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03744	146.7899	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	03ALL		0 14G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03744	145.1517	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	03G12_011		0 14G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.0415	144.3805	DBL-WICH-THI
FDNS	3		0 14G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.04151	142.5906	DBL-WICH-THI
FDNS	03G12_011		0 14G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03777	137.0538	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	03G12_011		0 14G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03772	133.5833	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	3		0 14G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03773	132.4797	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	03ALL		0 14G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03081	126.5093	IODINE - WOODWARD EHV 138KV CKT 1
FDNS	03ALL		0 14G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03081	124.7541	DEWEY - IODINE 138KV CKT 1
FDNS	03G12_011		0 14G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03777	123.9502	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	03G12_011		0 14G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03777	122.3769	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	03G12_011		0 14G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03772	120.5253	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	3		0 14G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03773	119.4172	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	03G12_011		0 14G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03772	118.83	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	3		0 14G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03773	117.7103	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB		TC%LOADING (% MVA)	CONTINGENCY
							(MVA)	TDF		
FDNS	03ALL		0 14G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03239	115.398	RENFROW7 345.00 - VIOLA 7 345.00 345KV CKT 1
FDNS	03ALL		0 14G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03239	110.6504	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	03G12_011		0 14G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03107	108.5374	IODINE - WOODWARD EHV 138KV CKT 1
FDNS	03ALL		0 14G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03016	106.9744	AXTELL - POST ROCK 345KV CKT 1
FDNS	03G12_011		0 14G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03107	106.8259	DEWEY - IODINE 138KV CKT 1
FDNS	03G12_011		0 14G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03103	105.508	IODINE - WOODWARD EHV 138KV CKT 1
FDNS	3		0 14G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03104	104.6156	IODINE - WOODWARD EHV 138KV CKT 1
FDNS	03G12_011		0 14G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03103	103.7504	DEWEY - IODINE 138KV CKT 1
FDNS	3		0 14G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03104	102.8438	DEWEY - IODINE 138KV CKT 1
FDNS	03G12_011		0 14G	G12_011	TO->FROM	GREAT BEND TAP - MULLERGREEN 115KV CKT 1	79.7	0.03089	114.1746	DBL-IRON-CLR
FDNS	03G12_011		0 14G	G12_011	TO->FROM	GREAT BEND TAP - MULLERGREEN 115KV CKT 1	79.7	0.03089	114.0589	DBL-IRON-CLR
FDNS	3		0 14G	G12_011	TO->FROM	GREAT BEND TAP - MULLERGREEN 115KV CKT 1	79.7	0.03089	112.1863	DBL-IRON-CLR
FDNS	03ALL		0 14G	G12_011	TO->FROM	GREAT BEND TAP - MULLERGREEN 115KV CKT 1	79.7	0.03078	108.0952	DBL-SPRVL-CL
FDNS	03G12_011		0 14G	G12_011	FROM->TO	GREAT BEND TAP - SEWARD 115KV CKT 1	80.3	0.03089	113.245	DBL-IRON-CLR
FDNS	03G12_011		0 14G	G12_011	FROM->TO	GREAT BEND TAP - SEWARD 115KV CKT 1	80.3	0.03089	113.1373	DBL-IRON-CLR
FDNS	3		0 14G	G12_011	FROM->TO	GREAT BEND TAP - SEWARD 115KV CKT 1	80.3	0.03089	111.2946	DBL-IRON-CLR
FDNS	03ALL		0 14G	G12_011	FROM->TO	GREAT BEND TAP - SEWARD 115KV CKT 1	80.3	0.03078	107.2052	DBL-SPRVL-CL
FDNS	03ALL		0 14G	G12_011	TO->FROM	GREENSBURG - SSTARTP3 115.00 115KV CKT 1	115.1	0.03443	157.1175	DBL-SPRVL-CL
FDNS	03G12_011		0 14G	G12_011	TO->FROM	GREENSBURG - SSTARTP3 115.00 115KV CKT 1	115.1	0.035	150.0494	DBL-IRON-CLR
FDNS	03G12_011		0 14G	G12_011	TO->FROM	GREENSBURG - SSTARTP3 115.00 115KV CKT 1	115.1	0.03477	149.0043	DBL-IRON-CLR
FDNS	3		0 14G	G12_011	TO->FROM	GREENSBURG - SSTARTP3 115.00 115KV CKT 1	115.1	0.03478	146.8881	DBL-IRON-CLR
FDNS	03G12_011		0 14G	G12_011	TO->FROM	GREENSBURG - SSTARTP3 115.00 115KV CKT 1	115.1	0.03477	124.9673	DBL-SPRVL-CL
FDNS	3		0 14G	G12_011	TO->FROM	GREENSBURG - SSTARTP3 115.00 115KV CKT 1	115.1	0.03478	123.43	DBL-SPRVL-CL
FDNS	03G12_011		0 14G	G12_011	TO->FROM	GREENSBURG - SSTARTP3 115.00 115KV CKT 1	115.1	0.035	122.073	DBL-SPRVL-CL
FDNS	03ALL		0 14G	G12_011	FROM->TO	GREENSBURG - SUN CITY 115KV CKT 1	115.1	0.03443	145.7858	DBL-SPRVL-CL
FDNS	03G12_011		0 14G	G12_011	FROM->TO	GREENSBURG - SUN CITY 115KV CKT 1	115.1	0.035	138.7671	DBL-IRON-CLR
FDNS	03G12_011		0 14G	G12_011	FROM->TO	GREENSBURG - SUN CITY 115KV CKT 1	115.1	0.03477	137.8781	DBL-IRON-CLR
FDNS	3		0 14G	G12_011	FROM->TO	GREENSBURG - SUN CITY 115KV CKT 1	115.1	0.03478	135.8115	DBL-IRON-CLR
FDNS	03G12_011		0 14G	G12_011	FROM->TO	GREENSBURG - SUN CITY 115KV CKT 1	115.1	0.03477	114.1541	DBL-SPRVL-CL
FDNS	3		0 14G	G12_011	FROM->TO	GREENSBURG - SUN CITY 115KV CKT 1	115.1	0.03478	112.6271	DBL-SPRVL-CL
FDNS	03G12_011		0 14G	G12_011	FROM->TO	GREENSBURG - SUN CITY 115KV CKT 1	115.1	0.035	111.2364	DBL-SPRVL-CL
FDNS	03G12_011		0 14G	G12_011	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.03788	225.5922	DBL-WICH-THI
FDNS	03G12_011		0 14G	G12_011	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.03778	221.2421	DBL-WICH-THI
FDNS	3		0 14G	G12_011	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.03779	219.0749	DBL-WICH-THI
FDNS	06ALL		0 14G	G12_011	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.03804	129.6596	DBL-WICH-THI
FDNS	6		0 14G	G12_011	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.03817	122.7173	DBL-WICH-THI
FDNS	14ALL		0 14G	G12_011	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.03831	107.7413	DBL-WICH-THI
FDNS	14		0 14G	G12_011	FROM->TO	HARPER - MILAN TAP 138KV CKT 1	110	0.03832	107.5195	DBL-WICH-THI
FDNS	03ALL		0 14G	G12_011	TO->FROM	HAYS PLANT - SOUTH HAYS 115KV CKT 1	99	0.06735	146.4872	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1
FDNS	03G12_011		0 14G	G12_011	TO->FROM	HAYS PLANT - SOUTH HAYS 115KV CKT 1	99	0.06765	127.5525	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1
FDNS	03G12_011		0 14G	G12_011	TO->FROM	HAYS PLANT - SOUTH HAYS 115KV CKT 1	99	0.06752	127.3722	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1
FDNS	3		0 14G	G12_011	TO->FROM	HAYS PLANT - SOUTH HAYS 115KV CKT 1	99	0.06753	124.9412	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1
FDNS	03ALL		0 14G	G12_011	FROM->TO	HAYS PLANT - VINE STREET 115KV CKT 1	88	0.06735	141.7224	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1
FDNS	03G12_011		0 14G	G12_011	FROM->TO	HAYS PLANT - VINE STREET 115KV CKT 1	88	0.06765	120.4031	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1
FDNS	03G12_011		0 14G	G12_011	FROM->TO	HAYS PLANT - VINE STREET 115KV CKT 1	88	0.06752	120.1803	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1
FDNS	3		0 14G	G12_011	FROM->TO	HAYS PLANT - VINE STREET 115KV CKT 1	88	0.06753	117.4215	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1
FDNS	03ALL		0 14G	G12_011	TO->FROM	KNOLL - N HAYS3 115.00 115KV CKT 1	88	0.06735	128.1982	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1
FDNS	03G12_011		0 14G	G12_011	TO->FROM	KNOLL - N HAYS3 115.00 115KV CKT 1	88	0.06765	106.904	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1
FDNS	03G12_011		0 14G	G12_011	TO->FROM	KNOLL - N HAYS3 115.00 115KV CKT 1	88	0.06752	106.5568	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1
FDNS	3		0 14G	G12_011	TO->FROM	KNOLL - N HAYS3 115.00 115KV CKT 1	88	0.06753	103.6693	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1
FDNS	03ALL		0 14G	G12_011	TO->FROM	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1	398	0.20283	101.2204	AXTELL - POST ROCK 345KV CKT 1
FDNS	03ALL		0 14G	G12_011	TO->FROM	MEDICINE LODGE - SUN CITY 115KV CKT 1	115.1	0.03443	140.5652	DBL-SPRVL-CL
FDNS	03G12_011		0 14G	G12_011	TO->FROM	MEDICINE LODGE - SUN CITY 115KV CKT 1	115.1	0.035	133.5652	DBL-IRON-CLR
FDNS	03G12_011		0 14G	G12_011	TO->FROM	MEDICINE LODGE - SUN CITY 115KV CKT 1	115.1	0.03477	132.8368	DBL-IRON-CLR
FDNS	3		0 14G	G12_011	TO->FROM	MEDICINE LODGE - SUN CITY 115KV CKT 1	115.1	0.03478	130.7875	DBL-IRON-CLR
FDNS	03G12_011		0 14G	G12_011	TO->FROM	MEDICINE LODGE - SUN CITY 115KV CKT 1	115.1	0.03477	109.1452	DBL-SPRVL-CL
FDNS	3		0 14G	G12_011	TO->FROM	MEDICINE LODGE - SUN CITY 115KV CKT 1	115.1	0.03478	107.6202	DBL-SPRVL-CL
FDNS	03G12_011		0 14G	G12_011	TO->FROM	MEDICINE LODGE - SUN CITY 115KV CKT 1	115.1	0.035	106.0757	DBL-SPRVL-CL
FDNS	03G12_011		0 14G	G12_011	TO->FROM	MULLERGREEN - SPEARVILLE 230KV CKT 1	398	0.13769	115.5435	G12-011T 345.00 - POST ROCK 345KV CKT 1
FDNS	03G12_011		0 14G	G12_011	TO->FROM	MULLERGREEN - SPEARVILLE 230KV CKT 1	398	0.13734	112.5774	G12-011T 345.00 - POST ROCK 345KV CKT 1
FDNS	03ALL		0 14G	G12_011	TO->FROM	MULLERGREEN - SPEARVILLE 230KV CKT 1	398	0.06358	112.0921	DBL-SPRVL-CL
FDNS	3		0 14G	G12_011	TO->FROM	MULLERGREEN - SPEARVILLE 230KV CKT 1	398	0.13737	110.8928	G12-011T 345.00 - POST ROCK 345KV CKT 1
FDNS	03ALL		0 14G	G12_011	TO->FROM	MULLERGREEN - SPEARVILLE 230KV CKT 1	398	0.08465	110.8353	POST ROCK (POSTROCK T1) 345/230/13.8KV TRANSFORMER CKT 1
FDNS	03G12_011		0 14G	G12_011	TO->FROM	MULLERGREEN - SPEARVILLE 230KV CKT 1	398	0.06461	107.9279	DBL-IRON-CLR
FDNS	03G12_011		0 14G	G12_011	TO->FROM	MULLERGREEN - SPEARVILLE 230KV CKT 1	398	0.06428	106.5119	DBL-IRON-CLR
FDNS	3		0 14G	G12_011	TO->FROM	MULLERGREEN - SPEARVILLE 230KV CKT 1	398	0.06443	105.4893	DBL-IRON-CLR
FDNS	03ALL		0 14G	G12_011	TO->FROM	N HAYS3 115.00 - VINE STREET 115KV CKT 1	99	0.06735	118.6847	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB		TC%LOADING		CONTINGENCY
							(MVA)	TDF	(% MVA)		
FDNS	03G12_011		0 14G	G12_011	TO->FROM	N HAYS3 115.00 - VINE STREET 115KV CKT 1	99	0.06765	99.7	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1	
FDNS	03G12_011		0 14G	G12_011	TO->FROM	N HAYS3 115.00 - VINE STREET 115KV CKT 1	99	0.06752	99.5	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1	
FNSL-Blown up	3		0 14G	G12_011	-	Non-converged Contingency	-	0.33035	-	DBL-THIS-CLR	
FNSL-Blown up	03ALL		0 14G	G12_011	-	Non-converged Contingency	-	0.32869	-	DBL-IRON-CLR	
FNSL-Blown up	03ALL		0 14G	G12_011	-	Non-converged Contingency	-	0.32869	-	DBL-THIS-CLR	
FNSL-Blown up	03ALL		0 14G	G12_011	-	Non-converged Contingency	-	0.18168	-	DBL-WICH-THI	
FNSL-Blown up	03G12_011		0 14G	G12_011	-	Non-converged Contingency	-	0.33083	-	DBL-THIS-CLR	
FNSL-Blown up	03G12_011		0 14G	G12_011	-	Non-converged Contingency	-	0.33029	-	DBL-THIS-CLR	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SEWARD - ST JOHN 115KV CKT 1	87.6	0.03176	127.5775	CIRCLE - MULLERGREN 230KV CKT 1	
FDNS	03G12_011		0 14G	G12_011	FROM->TO	SEWARD - ST JOHN 115KV CKT 1	87.6	0.03879	120.2666	DBL-IRON-CLR	
FDNS	03G12_011		0 14G	G12_011	FROM->TO	SEWARD - ST JOHN 115KV CKT 1	87.6	0.03878	120.0042	DBL-IRON-CLR	
FDNS	3		0 14G	G12_011	FROM->TO	SEWARD - ST JOHN 115KV CKT 1	87.6	0.03879	117.3364	DBL-IRON-CLR	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SEWARD - ST JOHN 115KV CKT 1	87.6	0.03863	114.183	DBL-SPRVL-CL	
FDNS	03G12_011		0 14G	G12_011	FROM->TO	SEWARD - ST JOHN 115KV CKT 1	87.6	0.03188	109.1946	CIRCLE - MULLERGREN 230KV CKT 1	
FDNS	03G12_011		0 14G	G12_011	FROM->TO	SEWARD - ST JOHN 115KV CKT 1	87.6	0.03189	107.4137	CIRCLE - MULLERGREN 230KV CKT 1	
FDNS	3		0 14G	G12_011	FROM->TO	SEWARD - ST JOHN 115KV CKT 1	87.6	0.03189	105.6456	CIRCLE - MULLERGREN 230KV CKT 1	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.15069	123.6259	AXTELL - POST ROCK 345KV CKT 1	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.15049	120.2809	DBL-SPRVL-CL	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.12576	116.2631	CIRCLE - MULLERGREN 230KV CKT 1	
FDNS	03G12_011		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.1512	116.0741	DBL-IRON-CLR	
FDNS	03G12_011		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.15104	115.0501	DBL-IRON-CLR	
FDNS	03G12_011		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.12662	114.9233	DBL-WICH-THI	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11873	112.7842	CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 1	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11873	112.7842	CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 2	
FDNS	3		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.15106	112.5464	DBL-IRON-CLR	
FDNS	03G12_011		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.12649	111.8477	DBL-WICH-THI	
FDNS	3		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.12651	109.8866	DBL-WICH-THI	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11427	106.6728	THISTLE7 345.00 - WICHITA 345KV CKT 1	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11427	106.6728	THISTLE7 345.00 - WICHITA 345KV CKT 2	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11853	105.7563	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11607	103.9834	AXTELL - PAULINE 345KV CKT 1	
FDNS	03G12_011		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.15131	103.8091	AXTELL - POST ROCK 345KV CKT 1	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11064	103.7673	GEN532652 1-JEFFREY ENERGY CENTER UNIT 2	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11064	103.7666	GEN532653 1-JEFFREY ENERGY CENTER UNIT 3	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11064	103.4994	GEN532651 1-JEFFREY ENERGY CENTER UNIT 1	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11319	103.3002	GRAND ISLAND - SWEETWATER 345KV CKT 1	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.13184	103.2754	MULLERGREN - SOUTH HAYS 230KV CKT 1	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11236	102.7615	NORTHWEST - TATONGA7 345.00 345KV CKT 1	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11502	102.7268	MOORE - PAULINE 345KV CKT 1	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11064	102.4612	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1	
FDNS	03G12_011		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.15118	102.4151	AXTELL - POST ROCK 345KV CKT 1	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11115	101.6531	DBL-BVR-WWRD	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11454	101.6254	CLARKCOUNTY7345.00 - IRONWOOD7 345.00 345KV CKT 1	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11236	101.5807	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11454	101.4919	CLARKCOUNTY7345.00 - SPEARVILLE 345KV CKT 1	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11236	101.4566	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11294	101.0476	CIRCLE - EAST MCPHERSON 230KV CKT 1	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.12371	100.6347	POSTROCK6 230.00 - SOUTH HAYS 230KV CKT 1	
FDNS	3		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.1512	100.343	AXTELL - POST ROCK 345KV CKT 1	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11099	100.1049	MINGO - RED WILLOW 345KV CKT 1	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11182	100.0907	ST JOHN - ST JOHN 115KV CKT 1	
FDNS	03G12_011		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.1512	100.0868	DBL-SPRVL-CL	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11115	100.0716	DBL-HTCH-BVR	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11331	100.0687	PHILLIPSBURG - SMITH CENTER 115KV CKT 1	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.1061	100.0561	JEFFREY ENERGY CENTER - SUMMIT 345KV CKT 1	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11064	100	GEN542962 2-IATAN UNIT #2	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11185	99.9	GRAND ISLAND - MCCOOL 345KV CKT 1	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11119	99.9	DBL-THIS-WWR	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.1126	99.8	KNOLL - SALINE RIVER 115KV CKT 1	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.1109	99.8	STEGALL - STEGALL TRANSFORMER 230KV CKT 1	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.1109	99.8	STEGALL TY 345/230KV TRANSFORMER CKT 1	
FDNS	03G12_011		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.15104	99.8	DBL-SPRVL-CL	
FNSL	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.1116	99.7	SPP-MKEC-08	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11116	99.7	SPP-MKEC-09B	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11064	99.7	GEN542955 1-LACYGNE UNIT #1	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11064	99.7	GEN542956 2-LACYGNE UNIT #2	
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11063	99.64505	LAWTON EASTSIDE - OKLAUNION 345KV CKT 1	

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB		TC%LOADING	CONTINGENCY
							(MVA)	TDF		
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.1126	99.6	PLAINVILLE - SALINE RIVER 115KV CKT 1
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11116	99.6	GREENSBURG - SSTARTP3 115.00 115KV CKT 1
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11064	99.6	GENS32663 1-LAWRENCE ENERGY CENTER UNIT 5
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11064	99.6	GENS42957 1-IATAN UNIT #1
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11231	99.5	SEWARD - ST JOHN 115KV CKT 1
FDNS	03ALL		0 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11231	99.5	SPP-MKEC-06
FDNS	03ALL		2 14G	G12_011	TO->FROM	CHISHOLM - MAIZEE 4 138.00 138KV CKT 1	287	0.044	100.8204	BENTON - WICHITA 345KV CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.12295	120.9864	DBL-SPRVL-CL
FDNS	03ALL		2 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.10116	118.7972	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.08558	112.0466	CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.08558	112.0466	CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 2
FDNS	03ALL		2 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.08552	111.5207	SPP-SWPS-05
FDNS	03ALL		2 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.08552	111.4127	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.10116	111.1024	KNOLL 230 - SMOKYHL6 230.00 230KV CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.09904	110.7474	AXTELL - POST ROCK 345KV CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.08064	106.3705	THISTLE7 345.00 - WICHITA 345KV CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.08064	106.3705	THISTLE7 345.00 - WICHITA 345KV CKT 2
FDNS	03ALL		2 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.08552	104.3113	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.07999	103.7876	ST JOHN - ST JOHN 115KV CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.08926	103.3516	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.08271	102.822	SPP-MKEC-06
FDNS	03ALL		2 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0827	102.7705	SEWARD - ST JOHN 115KV CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.08154	102.7316	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0781	101.0472	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.07713	100.821	MINGO - RED WILLOW 345KV CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.07999	100.7728	HUNTSVILLE - ST JOHN 115KV CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.07999	100.563	MIDW-CATB05
FDNS	03ALL		2 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.07606	100.4213	GENS32751 1-WOLF CREEK GENERATING STATION UNIT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.07999	100.2156	HUNTSVILLE - HUTCHINSON ENERGY CENTER 115KV CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.07667	100.1765	DBL-BVR-WWRD
FDNS	03ALL		2 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.08064	100.1553	CLARKCOUNTY7345.00 - IRONWOOD7 345.00 345KV CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.08064	100	CLARKCOUNTY7345.00 - SPEARVILLE 345KV CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0781	99.9	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.07801	99.9	GRAND ISLAND - SWEETWATER 345KV CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.07969	99.8	AXTELL - PAULINE 345KV CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.07606	99.8	GENS32652 1-JEFFREY ENERGY CENTER UNIT 2
FDNS	03ALL		2 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.07606	99.8	GENS32653 1-JEFFREY ENERGY CENTER UNIT 3
FDNS	03ALL		2 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.07923	99.7	GREAT BEND TAP - SEWARD 115KV CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.0781	99.7	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.07923	99.6	GREAT BEND TAP - MULLERGREN 115KV CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.07721	99.6	SPP-MKEC-02
FDNS	03ALL		2 14G	G12_011	TO->FROM	CIRCLE - MULLERGREN 230KV CKT 1	318.7	0.07606	99.5	GENS32651 1-JEFFREY ENERGY CENTER UNIT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03744	159.6247	NORTHWEST - TATONGA7 345.00 345KV CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03744	145.9488	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03744	144.2772	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03082	125.9725	IODINE - WOODWARD EHV 138KV CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03082	124.2149	DEWEY - IODINE 138KV CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03239	114.9709	RENFROW7 345.00 - VIOLA 7 345.00 345KV CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03547	112.7054	G12-011T 345.00 - POST ROCK 345KV CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03239	110.0818	VIOLA 7 345.00 - WICHITA 345KV CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	FPL SWITCH - WOODWARD 138KV CKT 1	153	0.03016	106.5572	AXTELL - POST ROCK 345KV CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	GREAT BEND TAP - MULLERGREN 115KV CKT 1	79.7	0.03078	108.0749	DBL-SPRVL-CL
FDNS	03ALL		2 14G	G12_011	FROM->TO	GREAT BEND TAP - SEWARD 115KV CKT 1	80.3	0.03078	107.2047	DBL-SPRVL-CL
FDNS	03ALL		2 14G	G12_011	TO->FROM	GREENSBURG - SSTARTP3 115.00 115KV CKT 1	115.1	0.03443	154.7514	DBL-SPRVL-CL
FDNS	03ALL		2 14G	G12_011	FROM->TO	GREENSBURG - SUN CITY 115KV CKT 1	115.1	0.03443	143.5655	DBL-SPRVL-CL
FDNS	03ALL		2 14G	G12_011	TO->FROM	HAYS PLANT - SOUTH HAYS 115KV CKT 1	99	0.06735	146.1132	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1
FDNS	03ALL		2 14G	G12_011	FROM->TO	HAYS PLANT - VINE STREET 115KV CKT 1	88	0.06735	141.283	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	KNOLL - N HAYS3 115.00 115KV CKT 1	88	0.06735	127.646	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1	398	0.20282	100.4237	AXTELL - POST ROCK 345KV CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	MEDICINE LODGE - SUN CITY 115KV CKT 1	115.1	0.03443	138.3603	DBL-SPRVL-CL
FDNS	03ALL		2 14G	G12_011	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	398	0.13664	141.451	G12-011T 345.00 - POST ROCK 345KV CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	398	0.06358	110.3906	DBL-SPRVL-CL
FDNS	03ALL		2 14G	G12_011	TO->FROM	MULLERGREN - SPEARVILLE 230KV CKT 1	398	0.08464	109.9305	POST ROCK (POSTROCK T1) 345/230/13.8KV TRANSFORMER CKT 1
FDNS	03ALL		2 14G	G12_011	TO->FROM	N HAYS3 115.00 - VINE STREET 115KV CKT 1	99	0.06735	118.2371	KNOLL 230 - POSTROCK6 230.00 230KV CKT 1
FNSL-Blown up	03ALL		2 14G	G12_011	-	Non-converged Contingency	-	0.3287	-	DBL-IRON-CLR
FNSL-Blown up	03ALL		2 14G	G12_011	-	Non-converged Contingency	-	0.3287	-	DBL-THIS-CLR
FNSL-Blown up	03ALL		2 14G	G12_011	-	Non-converged Contingency	-	0.18168	-	DBL-WICH-THI

SOLUTION	GROUP	SCENARIO	SEASON	SOURCE	DIRECTION	MONITORED ELEMENT	RATEB		TC%LOADING		CONTINGENCY
							(MVA)	TDF	(% MVA)		
FDNS	03ALL		2 14G	G12_011	FROM->TO	SEWARD - ST JOHN 115KV CKT 1	87.6	0.03177	127.0117	CIRCLE - MULLERGREN 230KV CKT 1	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SEWARD - ST JOHN 115KV CKT 1	87.6	0.03864	113.3038	DBL-SPRVL-CL	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.15069	123.5724	AXTELL - POST ROCK 345KV CKT 1	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.15049	119.8882	DBL-SPRVL-CL	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.12576	115.9104	CIRCLE - MULLERGREN 230KV CKT 1	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11874	112.0028	CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 1	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11874	112.0028	CLARKCOUNTY7345.00 - THISTLE7 345.00 345KV CKT 2	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11853	111.1848	SPP-SWPS-05	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11853	111.0954	FINNEY SWITCHING STATION - Hitchland Interchange 345KV CKT 1	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11427	106.3401	THISTLE7 345.00 - WICHITA 345KV CKT 1	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11427	106.3401	THISTLE7 345.00 - WICHITA 345KV CKT 2	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11853	105.0903	FINNEY SWITCHING STATION - HOLCOMB 345KV CKT 1	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11561	104.1832	BUCKNER7 345.00 - HOLCOMB 345KV CKT 1	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11607	103.6887	AXTELL - PAULINE 345KV CKT 1	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11064	103.5179	GEN532652 1-JEFFREY ENERGY CENTER UNIT 2	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11064	103.5172	GEN532653 1-JEFFREY ENERGY CENTER UNIT 3	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11064	103.2498	GEN532651 1-JEFFREY ENERGY CENTER UNIT 1	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.13184	103.0444	MULLERGREN - SOUTH HAYS 230KV CKT 1	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11319	102.9814	GRAND ISLAND - SWEETWATER 345KV CKT 1	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11236	102.4417	NORTHWEST - TATONGA7 345.00 345KV CKT 1	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11502	102.4331	MOORE - PAULINE 345KV CKT 1	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11064	102.1915	GEN532751 1-WOLF CREEK GENERATING STATION UNIT 1	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11454	101.3653	CLARKCOUNTY7345.00 - IRONWOOD7 345.00 345KV CKT 1	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11115	101.3295	DBL-BVR-WWRD	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11236	101.2598	G11_051T 345.00 - TATONGA7 345.00 345KV CKT 1	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11454	101.2356	CLARKCOUNTY7345.00 - SPEARVILLE 345KV CKT 1	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11236	101.1283	G11_051T 345.00 - WOODWARD DISTRICT EHV 345KV CKT 1	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11294	100.768	CIRCLE - EAST MCPHERSON 230KV CKT 1	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.12371	100.3771	POSTROCK6 230.00 - SOUTH HAYS 230KV CKT 1	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11182	99.80898	ST JOHN - ST JOHN 115KV CKT 1	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11331	99.8	PHILLIPSBURG - SMITH CENTER 115KV CKT 1	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11115	99.8	DBL-HTCH-BVR	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11099	99.8	MINGO - RED WILLOW 345KV CKT 1	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.1061	99.8	JEFFREY ENERGY CENTER - SUMMIT 345KV CKT 1	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11064	99.7	GEN542962 2-IATAN UNIT #2	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11185	99.6	GRAND ISLAND - MCCOOL 345KV CKT 1	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.1126	99.5	KNOLL - SALINE RIVER 115KV CKT 1	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11119	99.5	DBL-THIS-WWR	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.1109	99.5	NEB01WAPAB3	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.1109	99.5	STEGALL - STEGALL TRANSFORMER 230KV CKT 1	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.1109	99.5	STEGALL TY 345/230KV TRANSFORMER CKT 1	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.1109	99.5	TRF-STEGALL	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11064	99.5	GEN542955 1-LACYGNE UNIT #1	
FDNS	03ALL		2 14G	G12_011	FROM->TO	SMOKYHL6 230.00 - SUMMIT 230KV CKT 1	330	0.11064	99.5	GEN542956 2-LACYGNE UNIT #2	

I: Power Flow Analysis (Category C Contingencies)

Available on Request.

J: Group 3 Dynamic Stability Analysis Report

Available on Request.