



SPP *Southwest Power Pool*

*System Impact Study
SPP-2004-006-3
For Network Service
Requested By
Xcel Energy Marketing*

From SPS To SPS

*For a Reserved Amount Of 320 MW
From 7/15/2005 To 7/1/2019*

SPP Engineering, Tariff Studies

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ATTACHMENT: *SPP-2004-006-3 Tables*

1. Executive Summary

Xcel Energy Marketing has requested a system impact study for Network Integration Transmission Service from SPS to SPS for 320 MW. The period of the service requested is from 7/15/2005 to 7/1/2019. The OASIS reservation number is 705270.

The principal objective of this study is to identify system constraints and potential system modifications necessary to grant the requested Network Service while maintaining system reliability. The study includes transfer analyses from generation to generation and transfer analyses based on the aggregate power factor of the four SPS to Lubbock Power and Light (LP&L) 230 kV ties lines. The requested service was studied using two System Scenarios with SPS exporting and importing, respectively. To determine what limitations occur with all LP&L generation off, the service was modeled from SPS generation to the Network load and to LP&L generation, until LP&L generation was dispatched at zero MW.

The study was revised to account for status changes of two higher priority requests. A SECI to SPS 300 MW request and a SPS to EDDY 200 MW request have both withdrawn. The ATC and upgrades required may vary from these results due to the status of one remaining higher priority request. The higher priority request is a SECI to SPS 150 MW request. Additional analysis was performed with the higher priority request and assigned upgrades included in the models. The outcome of the higher priority request has a significant impact on the upgrades required for the Network Service.

Tables 1.1 and 1.2 list the SPP facility overloads caused or impacted by the transfers modeled, using Scenario 1 and 2, respectively. Tables 2.1 and 2.2 lists the SPP voltage violations caused or impacted by the transfers modeled, using Scenario 1 and 2, respectively. Tables 3.1 and 3.2 list the Non-SPP facility overloads caused or impacted by the transfers modeled, using Scenarios 1 and 2, respectively. Tables 4.1 and 4.2 list the Non-SPP voltage violations caused or impacted by the transfers modeled, using Scenarios 1 and 2, respectively. Selected solutions with known engineering and construction costs are provided for the SPP Facility Overloads and Voltage violations found in the Tables.

Limits were identified in the 2005, 2007, and 2010 Summer Peak models with all LP&L generation off. Due to the inability to mitigate the limiting constraints identified through transmission upgrades by the 7/15/2005 start date, critical contingencies were analyzed to determine maximum allowable SPS to LP&L aggregate tie line flow based on the aggregate tie line power factor. The Tuco 230 kV bus voltage stability limit for the outage of Jones Unit 1 is the most limiting event for power factors ranging from unity to 0.90 lagging, using Scenario 2. Figures 1, 2, and 3 illustrate the tie line flow limit results of the nine worst contingencies based on the aggregate tie line power factor for the 2005, 2007, and 2010 Summer Peak models, using Scenario 2. Figure 3a was added to account for limitations identified with the remaining higher priority request and assigned upgrades included. The Tuco 230 kV bus voltage stability limit for the outage of Tolk Unit 1 is the most limiting event for power factors ranging from unity to 0.90 lagging, using Scenario 2.

Table 5 summarizes the SPS to LP&L tie line limits by season and power factor. For interim service, LP&L generation will need to be dispatched in order to serve the Network load and to operate within the SPS to LP&L 230 kV tie line limits. In order to displace the required dispatch of LP&L generation, upgrades were determined by assuming an aggregate power factor of 0.95 lagging at the SPS to LP&L 230 kV tie lines. The total estimated engineering and construction cost required is \$19,650,000. The required upgrades are documented in Table 6. The required upgrades do not address LP&L transmission system limitations. Additional analysis performed with the higher priority request and assigned upgrades included determined that upgrades would be needed assuming a 0.95 lagging power factor at the ties. The total estimated engineering and construction cost required is \$16,000,000. The required upgrades are documented in Table 7. The required upgrades do not address LP&L transmission system limitations.

At the request of the customer, Figures 4 and 5 were added to depict the change in the tie line flow limits with the required upgrades incrementally added to the models. The order of the required upgrades was determined by taking into consideration the future needs of the higher priority service from SUNC to SPS for 150 MW for which the two 50 MVAR capacitor banks at Tuco 230 kV, the 50 MVAR capacitor bank at Swisher 230 kV, and second Tuco 230/115 kV Transformer addition have already been proposed, ATC provided per dollar, and a requirement to add only 150 MVAR of fixed shunt capacitors to the system before requiring the proposed SVC. The proposed SVC requirement is based upon the need to withstand large power swings like the outage of a Jones or Tolk unit. A thorough explanation of the added figures is provided at the end of the Study Results section. SPP may require additional analysis to be performed once the customer decides on the amount of upgrades needed to offset the amount of LP&L Generation dispatch required in order to serve the Network load and to operate within the SPS to LP&L 230 kV tie line limits. Figure 5a was added to depict the change in the tie line flow limits with the required upgrades from Table 7 incrementally added to the models. A thorough explanation of the added figure is provided at the end of the Study Results section.

2. Introduction

Xcel Energy Marketing has requested a system impact study for Network Integration Transmission Service from SPS to SPS for 320 MW. The principal objective of this study is to identify the restraints on the SPP Regional Tariff System that may limit the requested service and determine the least cost solutions required to alleviate the limiting facilities.

This study includes steady-state contingency analyses (PSS/E function ACCC) and Available Transfer Capability (ATC) analyses. The steady-state analyses consider the impact of the request on transmission line and transformer loadings, and bus voltages for outages of single transmission lines, transformers, and generating units, and selected multiple transmission lines and transformers on the SPP system and first tier Non - SPP systems.

The requested service was studied using two System Scenarios with SPS exporting and importing, respectively. The two scenarios were studied to capture worst case system limitations dependent on the bias of the transmission system. The service was modeled by transfers from SPS generation to LP&L generation up to LP&L generation dispatch of zero MW. The transfers modeled to LP&L generation were performed to determine maximum allowable flows from SPS to the Network Load. Nine of the most limiting contingency events were evaluated in the Summer Peak models based on the aggregate tie line power factor of the SPS to LP&L 230 kV tie lines. The maximum allowable aggregate tie line flow is based upon the most limiting critical contingency events and the aggregate tie line lagging power factor. Additional analysis was performed with a higher priority request and assigned upgrades included in the 2010 Summer Peak and 2010/11 Winter Peak. The outcome of the higher priority request has a significant impact on the upgrades required for the Network Service.

3. Study Methodology

A. Description

The system impact analysis was conducted to determine the steady-state impact of the requested service on the SPP and first tier Non - SPP control area systems. The steady-state analysis was done to ensure current SPP Criteria and NERC Planning Standards requirements are fulfilled. The Southwest Power Pool conforms to the NERC Planning Standards, which provide the strictest requirements, related to voltage violations and thermal overloads during normal conditions and during a contingency. It requires that all facilities be within normal operating ratings for normal system conditions and within emergency ratings after a contingency. Normal operating ratings and emergency operating ratings monitored are Rate A and B in the SPP MDWG models, respectively. The upper bound and lower bound of the normal voltage range monitored is 105% and 95%. The upper bound and lower bound of the emergency voltage range monitored is 110% and 90%. The SPS Tuco 230 kV bus voltage is monitored at 92.5% due to pre-determined system stability limitations.

The contingency set includes all SPP control area branches and ties 69kV and above, first tier Non - SPP control area branches and ties 115 kV and above, any defined contingencies for these control areas, and generation unit outages for the SPP control areas, AECl, and ENTR with SPP reserve share program redispatch. The monitor elements include all SPP control area branches, ties, and buses 69 kV and above, and all first tier Non – SPP control area branches and ties 69 kV and above. Voltage monitoring was performed for SPP control area buses 69 kV and above.

A 3 % transfer distribution factor (TDF) cutoff was applied to all SPP control area facilities. For first tier Non – SPP control area facilities, a 3 % TDF cutoff was applied to AECl, AMRN, and ENTR and a 2 % TDF cutoff was applied to MEC, NPPD, and OPPD. For voltage monitoring, a 0.02 per unit change in voltage must occur due to the transfer to be considered a valid limit to the transfer.

B. Model Updates

SPP used eight seasonal models to study the Network Service for the requested service period. The SPP 2004 Series Cases Update 4 2005 Summer Peak (05SP), 2005 Summer Shoulder (05SH), 2005 Fall Peak (05FA), 2005/2006 Winter Peak (05WP), 2007 Summer Peak (07SP), 2007/08 Winter Peak (07WP), 2010 Summer Peak (10SP), and 2010/11 Winter Peak (10WP) were used to study the impact of the requested service on the transmission system during the requested service period of 7/15/05 to 7/1/2019. The Spring Peak models apply to April and May, the Summer Peak models apply to June through September, the Fall Peak models apply to October and November, and the Winter Peak models apply to December through March.

The chosen base case models were modified to reflect the most current modeling information. From the eight seasonal models, two system scenarios were developed. Scenario 1 includes SWPP OASIS transmission requests not already included in the SPP 2004 Series Cases flowing in a West to East direction with ERCOT exporting and the SPS Control Area exporting to outside control areas and exporting to the planned Lamar HVDC Tie. Scenario 2 includes transmission requests not already included in the SPP 2004 Series Cases flowing in an East to West direction with ERCOT net importing and SPS importing from an outside control area and

importing from the planned Lamar HVDC Tie. The system scenarios were developed to minimize counter flows to the transfers studied.

The Network load for the 2005 Summer Peak was forecasted to be a maximum of 329 MW. Summer peaks were forecasted to increase 2.7% annually. The Network load amounts modeled for the spring peaks, fall peaks and winter peaks was 65% of the summer peaks. The Network load amount modeled in the summer shoulder is 85% of the summer peaks. Future Summer Peak and Non-Summer Peak loads were determined by scaling the 2005 summer peak values while maintaining constant real power and reactive power ratios. [Table 5](#) documents the total Network load modeled in each seasonal case.

SPS currently has 55 MW of long-term firm point-to-point service to the Network load. The existing reserved service was modeled in the cases before any transfer analyses were performed. No changes were made to the Jones Unit 1 and 2 modeling parameters. The Qmax of both Jones Unit 1 and 2 is 120 MVAR.

C. Transfer Analysis

To determine what limitations occur with all LP&L generation off, the service was modeled from SPS generation to the Network load and to LP&L generation, until LP&L generation was dispatched at zero MW. Using the selected cases both with and without the transfers modeled, the PSS/E Activity ACCC was run on the cases and compared to determine the facility thermal overloads and voltage violations caused or impacted by the transfer. The PSS/E options chosen to conduct the analysis can be found in Appendix A.

D. Transfer Analysis Based on the SPS to LP&L Aggregate Tie-Line Power Factor

To determine maximum allowable aggregate tie line flow based upon the most limiting critical contingency events and aggregate tie line lagging power factor. Contingency cases were developed for the 2005, 2007, and 2010 Summer Peaks for both scenarios with the most limiting contingencies. Then a developed PSS/E IPLAN macro was used to adjust the aggregate tie line flow and power factor by pro rata scaling the real and reactive Network load while checking for thermal or voltage violations. The tie line MW limits were then graphed. The most limiting critical contingency events were determined by contingency analysis performed on the models with LP&L generation at zero MW.

E. Upgrade Analysis

Using the 2007 Summer Peak, 2007/08 Winter Peak, 2010 Summer Peak, and 2010/11 Winter Peak cases both with and without the required upgrades from [Table 6](#) or [Table 7](#) modeled and with and without the SPS generation to LP&L generation transfer, the PSS/E Activity ACCC was run on the cases and compared to determine the facility overloads caused or impacted by the required upgrades. The contingency set used included SPS facilities and tie lines, while monitoring the whole SPP and First-tier Non-SPP control area footprint. The 3% transfer distribution cutoff was applied to SPP Facilities identified. The PSS/E options chosen to conduct the analysis can be found in Appendix A.

4. Study Results

A. Study Analysis Results

Tables 1 through 4 contain the initial steady-state analysis results of the System Impact Study. The Tables are in the attached workbook *SPP-2004-006-3 Tables*. The tables identify the seasonal case in which the event occurred, the facility control area location, applicable ratings of the overloaded facility, the loading percentage or voltage with and without the transfer, the percent transfer distribution factor (TDF) if applicable, and the estimated ATC value using interpolation if calculated. Comments are provided in the tables to document any SPP or Non-SPP identification or assignment of the event, existing mitigations plans or criteria to disregard the event as a limiting constraint, upgrades and costs to mitigate a limiting constraint, or any specific study procedures associated with modeling an event. No tie line power factor analysis is included in these results. The tie line power factor is determined by the Network load power factor, transmission system impedance, and generation dispatch.

Tables 1.1 and 1.2 list the SPP facility overloads caused or impacted by the SPS generation to LP&L generation transfers modeled, using Scenario 1 and 2, respectively. Tables 2.1 and 2.2 lists the SPP voltage violations caused or impacted by the SPS generation to LP&L generation transfers modeled, using Scenario 1 and 2, respectively. Tables 3.1 and 3.2 list the Non-SPP facility overloads caused or impacted by the SPS generation to LP&L generation transfers modeled, using Scenarios 1 and 2, respectively. Tables 4.1 and 4.2 list the Non-SPP voltage violations caused or impacted by the SPS generation to LP&L generation transfers modeled, using Scenarios 1 and 2, respectively. Selected solutions with known engineering and construction costs are provided for the SPP Facility Overloads and Voltage violations found in the Tables.

From the results in the Tables, the nine most limiting events were determined to be the following: Jones Unit 1 outage, Jones Unit 2 outage, Tolk Unit 1 outage, Tolk Unit 2 outage, Tolk to Tuco 230 kV line outage, Jones to Lubbock East 230 kV line outage, Carlisle to Tuco 230 kV line outage, Amarilo South to Swisher 230 kV line outage, and Oklaunion to Tuco 345 kV line outage. The violations that occur for these contingencies can be found in the Tables. No LP&L outages were analyzed although LP&L bus voltages and branches were monitored for violations for the nine most limiting events.

Figures 1, 2, and 3 illustrate the results of the SPS to LP&L aggregate tie line limits based on aggregate tie line lagging power factor for 2005, 2007, and 2010 Summer Peaks, using Scenario 2. Each Figure contains plots of the tie line flow limits where valid thermal or voltage violations occur on the SPS and LP&L systems for each critical contingency based on the tie line lagging power factor. From the Figures, the most limiting contingency is the outage of the Jones Unit 1. Scenario 2 or SPS importing is the worst-case scenario for power factors ranging from unity to 0.90.

Two additional plots were added to Figures 1, 2, and 3 to capture the effects on the most limiting contingency with the ERCOT North DC Tie flow from North to South at 220 MW and the reduction of the Jones Unit 2 Qmax by 5%. The additional plot of the Jones Unit 1 outage with the ERCOTN flowing from North to South at 220 MW was selected to determine the maximum

allowable tie line flow based on the tie line power factor for the 2005, 2007, and 2010 Summer Peak. The additional plot with the Jones Unit 2 Qmax reduced by 5% is provided for sensitivity purposes only and was not selected as the most limiting to the service. [Table 5](#) summarizes the SPS to LP&L tie line limits by season with and without the Higher Priority SECI to SPS 150 MW Request and Assigned Upgrades included. Assuming a 0.95 lagging power factor at the ties, the required upgrades for the Network Service without the Higher Priority SECI to SPS 150 MW Request and Assigned Upgrades included are summarized in [Table 6](#).

[Figure 3a](#) was added to account for limitations identified with the remaining higher priority request and assigned upgrades included. From the results in the Tables, the five most limiting events were determined and plotted as previously described. The violations that occur for these contingencies can be found in the Tables. [Figure 3a](#) illustrates the results of the SPS to LP&L aggregate tie line limits based on aggregate tie line lagging power factor for 2010 Summer Peaks, using Scenario 2 with the remaining higher priority request and assigned upgrades included. Assuming a 0.95 lagging power factor at the ties, the required upgrades for the Network Service with the Higher Priority SECI to SPS 150 MW Request and Assigned Upgrades included are summarized in [Table 7](#).

No SPP or Non-SPP thermal overloads or voltage violations were caused or impacted by the modeling the required upgrades listed in [Table 6](#).

No SPP or Non-SPP thermal overloads or voltage violations were caused or impacted by the modeling the required upgrades listed in [Table 7](#).

[Tables 1.1a](#) and [1.2a](#) documents the modeling representation of the events identified in [Tables 1.1](#) and [1.2](#) to include bus numbers and bus names.

At the request of the customer, [Figures 4](#) and [5](#) were added to depict the change in the tie line flow limits with the required upgrades incrementally added to the models. The order of the required upgrades was determined by taking into consideration the future needs of the higher priority service from SUNC to SPS for 150 MW for which the two 50 MVAR capacitor banks at Tuco 230 kV, the 50 MVAR capacitor bank at Swisher 230 kV, and second Tuco 230/115 kV Transformer addition have already been proposed, ATC provided per dollar, and a requirement to add only 150 MVAR of fixed shunt capacitors to the system before requiring the proposed SVC. The proposed SVC requirement is based upon the need to withstand large power swings like the outage of a Jones or Tolk unit. The SUNC to SPS 150 MW request also requires a second Tuco 230/115 kV transformer which would eliminate the need for assigning a second Tuco 230/115 kV transformer for the requested service.

[Figures 4](#) and [5](#) illustrate the results of the SPS to LP&L aggregate tie line limits based on aggregate tie line lagging power factor with the required upgrades incrementally added to the models for 2007 and 2010 Summer Peaks, using Scenario 2. Initially, the three worst outages were analyzed which include the Jones unit 1 outage, Tolk unit 1 outage, and Carlisle to Tuco 230 kV line outage. All but one Tolk unit 1 outage plot was removed after determining that the Jones unit 1 outage remains the worst outage with the upgrades modeled incrementally. The major limiting element for the Jones unit 1 outage and Tolk unit 1 outage is the Tuco 230 kV bus

voltage stability limit. The 250 MVAR of shunt capacitors and 150 MVAR SVC were proposed to eliminate the limitation. The major limiting element for the Carlisle to Tuco 230 kV line outage is the Tuco 230/115 kV transformer overload. A second 230/115 kV transformer was proposed to eliminate the limitation.

Since the most limiting event is the Tuco 230 kV bus voltage for the outage of Jones unit 1, the 100 MVAR of shunt capacitors at Tuco 230 kV bus was the first incremental upgrade modeled and plotted for both the Jones unit 1 outage and Carlisle to Jones 230 kV line outage. The corresponding plots of the same incremental upgrades modeled for different outages use the same color scheme and different legend symbol for the outage (See [Figures 4](#) and [5](#)). The second incremental upgrade modeled and plotted for both the Jones unit 1 outage and Carlisle to Jones 230 kV line outage is the 50 MVAR shunt capacitor at Swisher 230 kV bus. The plots show that ATC is gained by adding the 150 MVAR at Tuco and Swisher. The Carlisle to Tuco 230 kV line outage is also plotted with each incremental upgrade because as the Tuco 230 kV bus voltage stability limit is relieved with the 100 MVAR at Tuco and 50 MVAR at Swisher, the Tuco 230/115 kV transformer overload for the Carlisle to Tuco 230 kV line outage limit changes and begins to be the most limiting event in the 2010 Summer Peak (See [Figure 5](#)). The second Tuco 230/115 kV transformer is needed by 6/1/2008.

The third incremental upgrade modeled and plotted for both the Jones unit 1 outage and Carlisle to Jones 230 kV line outage is the SVC at Tuco 230 kV bus. The plots show that the Tuco 230 kV bus voltage for the Jones unit 1 outage is no longer the most limiting event. The Tuco 230/115 kV transformer overload for the Carlisle to Tuco 230 kV line outage would then be the most limiting event in both the 2007 and 2010 Summer Peak (See [Figures 4](#) and [5](#)). The fourth incremental upgrade modeled and plotted for the Jones unit 1 outage only is the addition of a second Tuco 230/115 kV transformer. And finally, the remaining 100 MVAR of shunt capacitors with 50 MVAR each at Carlisle 230 kV and Lubbock South 230 kV are modeled and plotted for the Jones unit 1 outage and Tolk unit 1 outage. These plots represent limits after all the selected upgrades are modeled, which primarily represent LP&L thermal limitations for the outages modeled. These remaining shunt capacitors were proposed to allow the SVC to stay within an appropriate system intact operating range.

[Figure 5a](#) was added to depict the change in the tie line flow limits with the required upgrades from [Table 7](#) incrementally added to the models. Since the most limiting event is the Tuco 230 kV bus voltage for the outage of Tolk unit 1, the SVC at Tuco 230 kV bus was the first incremental upgrade modeled and plotted for the Tolk unit 1 outage, Jones unit 1 outage, and Amarilo South to Swisher 230 kV line outage. The Tolk unit 1 outage, Jones unit 1 outage, and Amarilo South to Swisher 230 kV line outage were then plotted with the two rebuild requirements. The rebuilds are needed at the same time due to the facilities being in series.

5. Conclusion

Limits were identified in the 2005, 2007, and 2010 Summer Peak models with all LP&L generation off. Due to the inability to mitigate the limiting constraints identified through transmission upgrades by the 7/15/2005 start date, critical contingencies were analyzed to determine maximum allowable SPS to LP&L aggregate tie line flow based on the aggregate tie line power factor. The Tuco 230 kV bus voltage stability limit for the outage of Jones Unit 1 is the most limiting event for power factors ranging from unity to 0.90 lagging, using Scenario 2. Figures 1, 2, and 3 illustrate the tie line flow limit results of the nine worst contingencies based on the aggregate tie line power factor for the 2005, 2007, and 2010 Summer Peak models, using Scenario 2. Figure 3a was added to account for limitations identified with the remaining higher priority request and assigned upgrades included. The Tuco 230 kV bus voltage stability limit for the outage of Tolk Unit 1 is the most limiting event for power factors ranging from unity to 0.90 lagging, using Scenario 2.

Table 5 summarizes the SPS to LP&L tie line limits by season and power factor. For interim service, LP&L generation will need to be dispatched in order to serve the Network load and to operate within the SPS to LP&L 230 kV tie line limits. In order to displace the required dispatch of LP&L generation, upgrades were determined by assuming an aggregate power factor of 0.95 lagging at the SPS to LP&L 230 kV tie lines. The total estimated engineering and construction cost required is \$19,650,000. The required upgrades are documented in Table 6. The required upgrades do not address LP&L transmission system limitations. Additional analysis performed with the higher priority request and assigned upgrades included determined that upgrades would be needed assuming a 0.95 lagging power factor at the ties. The total estimated engineering and construction cost required is \$16,000,000. The required upgrades are documented in Table 7. The required upgrades do not address LP&L transmission system limitations.

At the request of the customer, Figures 4 and 5 were added to depict the change in the tie line flow limits with the required upgrades incrementally added to the models. The order of the required upgrades was determined by taking into consideration the future needs of the higher priority service from SUNC to SPS for 150 MW for which the two 50 MVAR capacitor banks at Tuco 230 kV, the 50 MVAR capacitor bank at Swisher 230 kV, and second Tuco 230/115 kV Transformer addition have already been proposed, ATC provided per dollar, and a requirement to add only 150 MVAR of fixed shunt capacitors to the system before requiring the proposed SVC. The proposed SVC requirement is based upon the need to withstand large power swings like the outage of a Jones or Tolk unit. A thorough explanation of the added figures is provided at the end of the Study Results section. SPP may require additional analysis to be performed once the customer decides on the amount of upgrades needed to offset the amount of LP&L Generation dispatch required in order to serve the Network load and to operate within the SPS to LP&L 230 kV tie line limits. Figure 5a was added to depict the change in the tie line flow limits with the required upgrades from Table 7 incrementally added to the models. A thorough explanation of the added figure is provided at the end of the Study Results section.

Figure 1: SPS to LP&L Tie Line MW Limits for 2005 Summer Peak Scenario 2 (Includes LP&L Limitations)

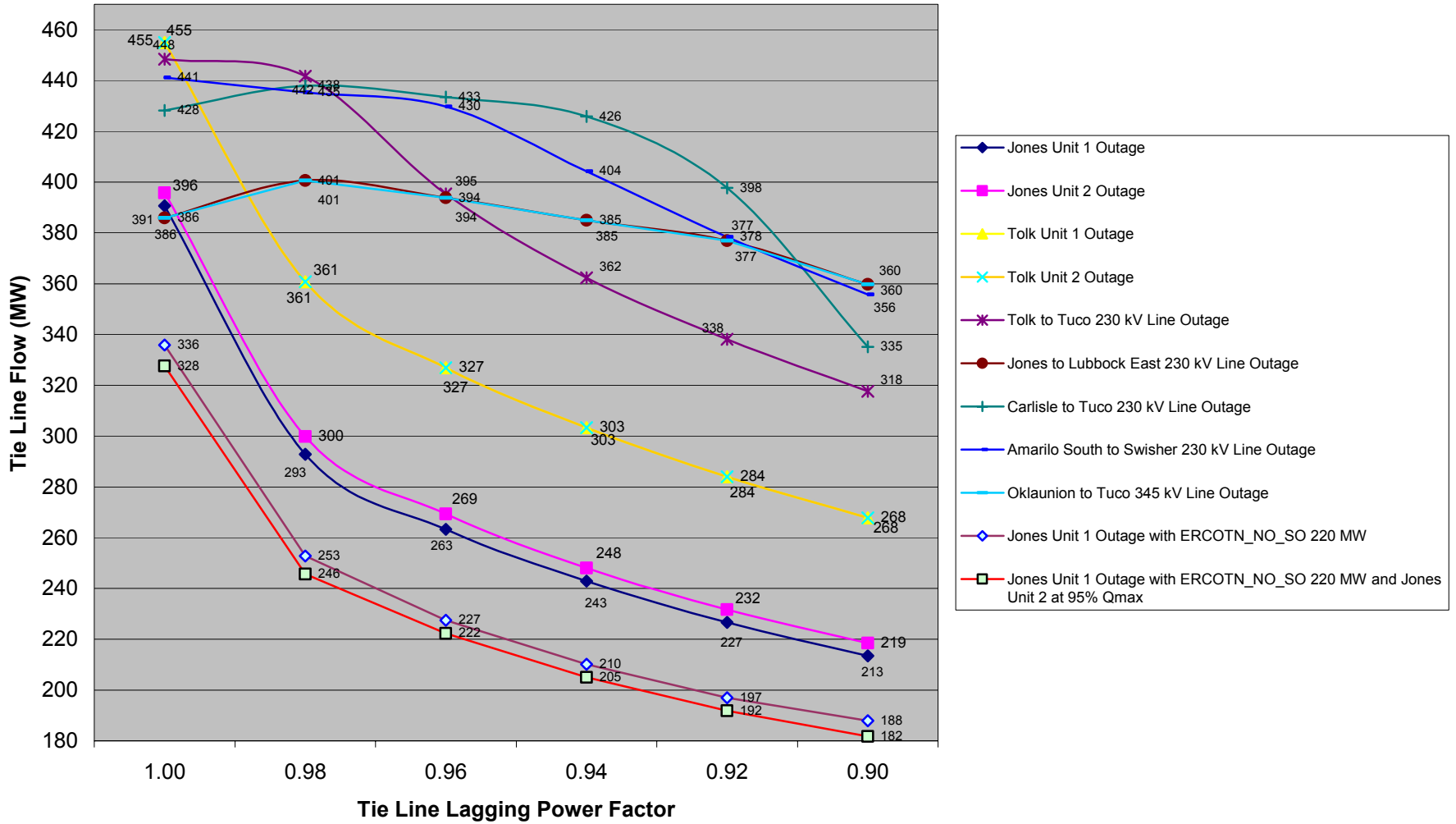


Figure 2: SPS to LP&L Tie Line MW Limits for 2007 Summer Peak Scenario 2 (Includes LP&L Limitations)

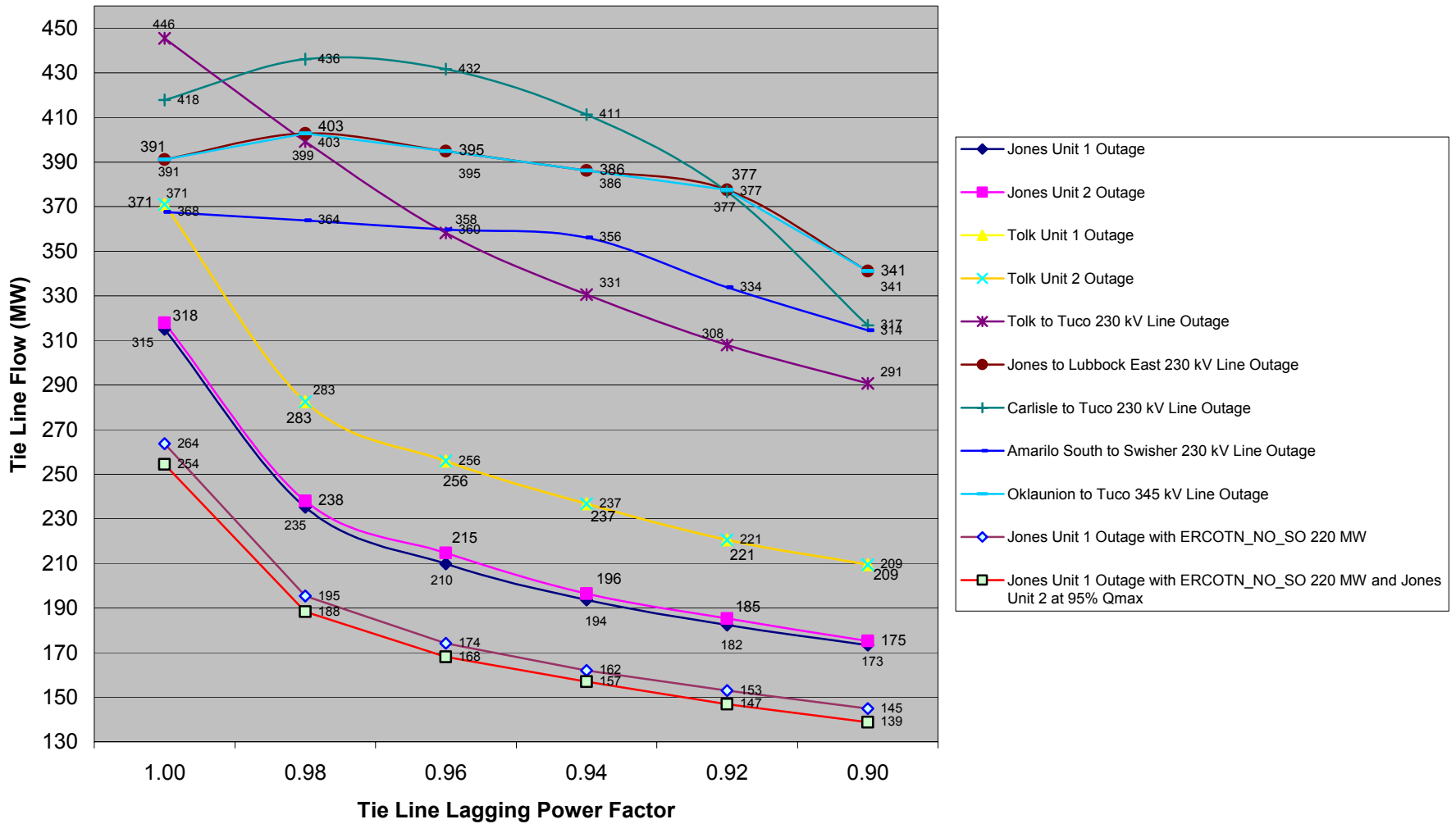


Figure 3: SPS to LP&L Tie Line MW Limits for 2010 Summer Peak Scenario 2 (Includes LP&L Limitations)

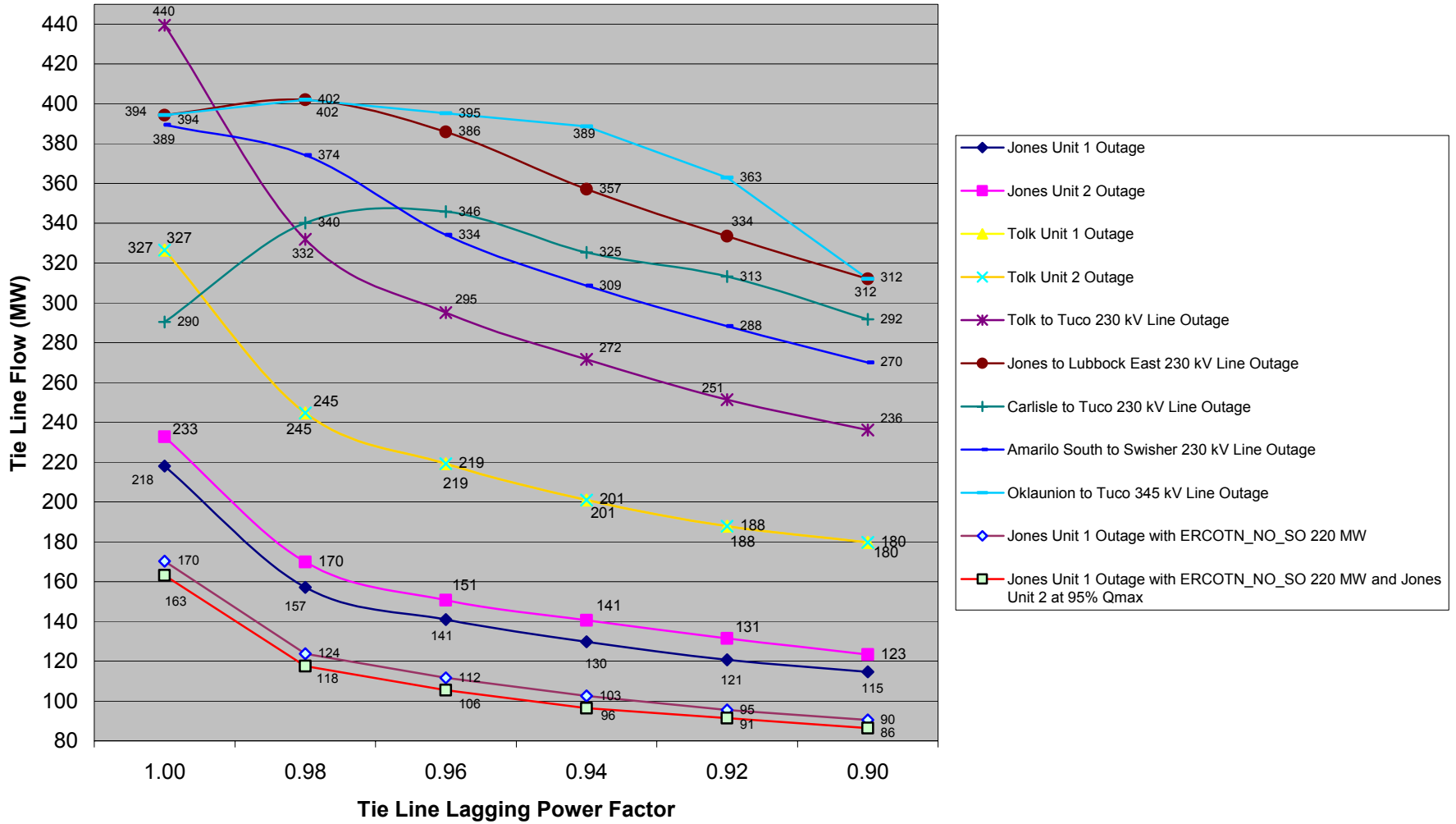


Figure 3a: SPS to LP&L Tie Line MW Limits for 2010 Summer Peak Scenario 2 with Higher Priority SECI to SPS 150 MW Request and Assigned Upgrades (Includes LP&L Limitations)

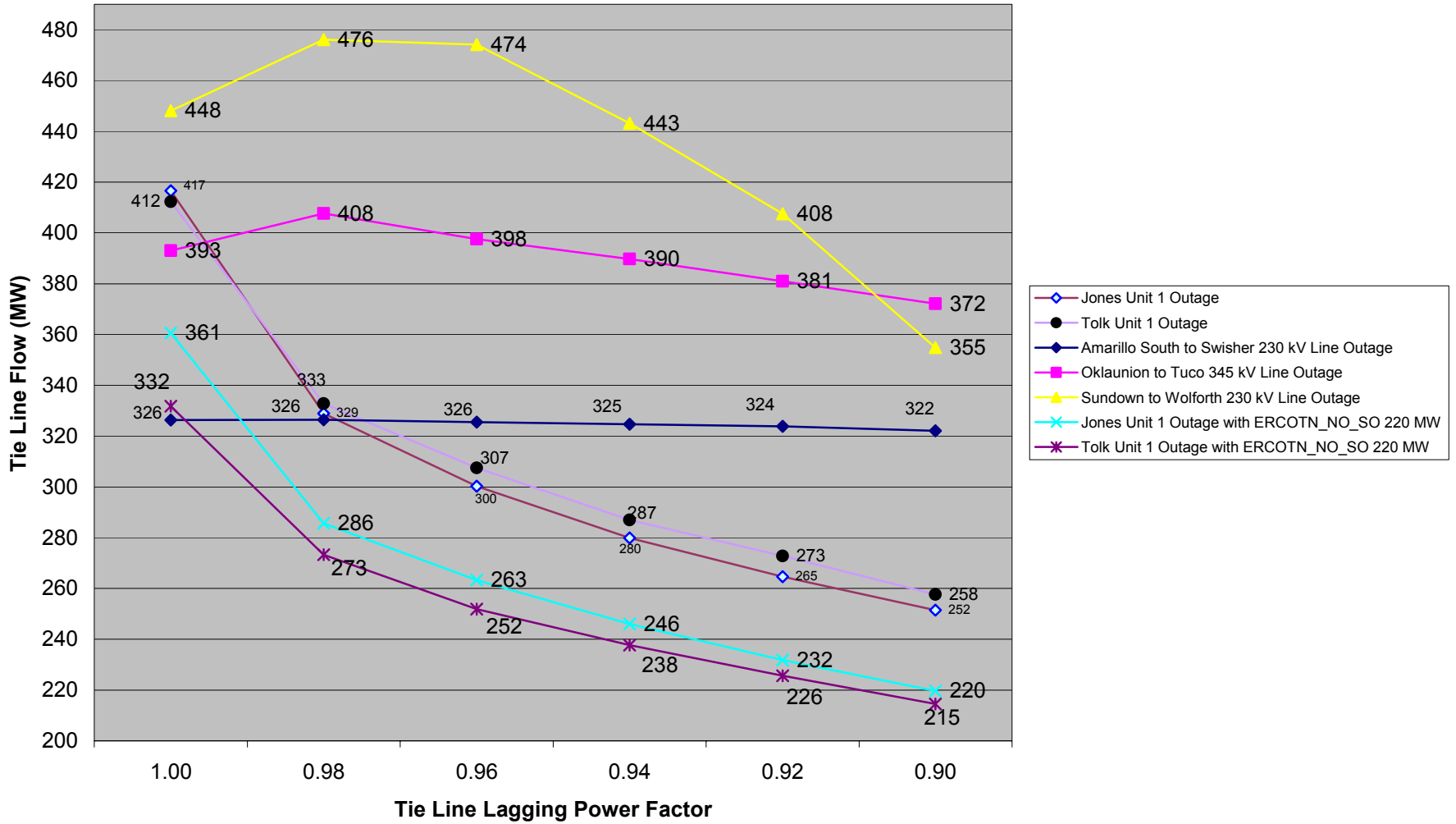


Figure 4: SPS to LP&L Tie Line MW Limits for 2007 Summer Peak Scenario 2 with incremental upgrades modeled (Includes LP&L Limitations)

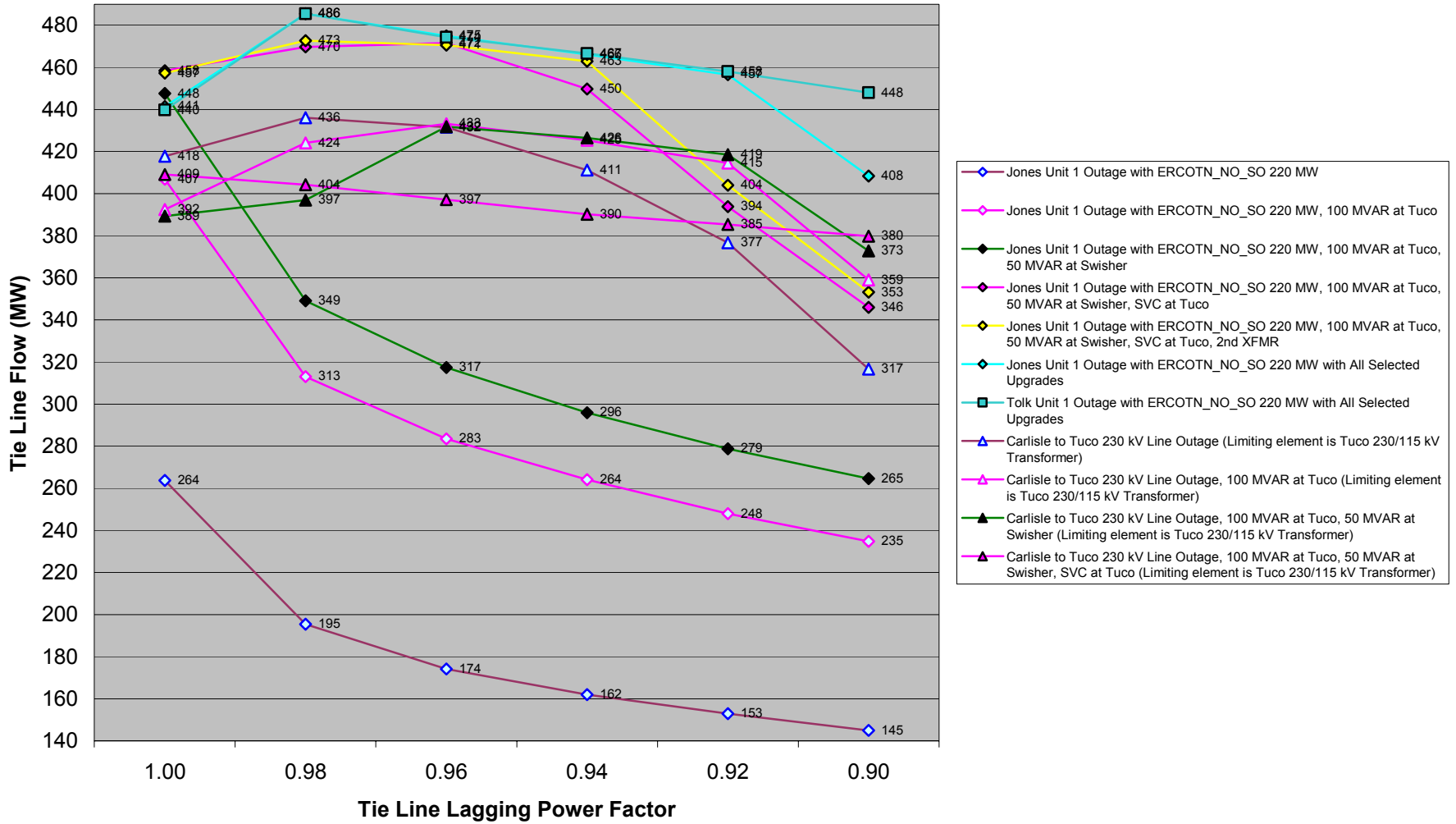


Figure 5: SPS to LP&L Tie Line MW Limits for 2010 Summer Peak Scenario 2 with incremental upgrades modeled (Includes LP&L Limitations)

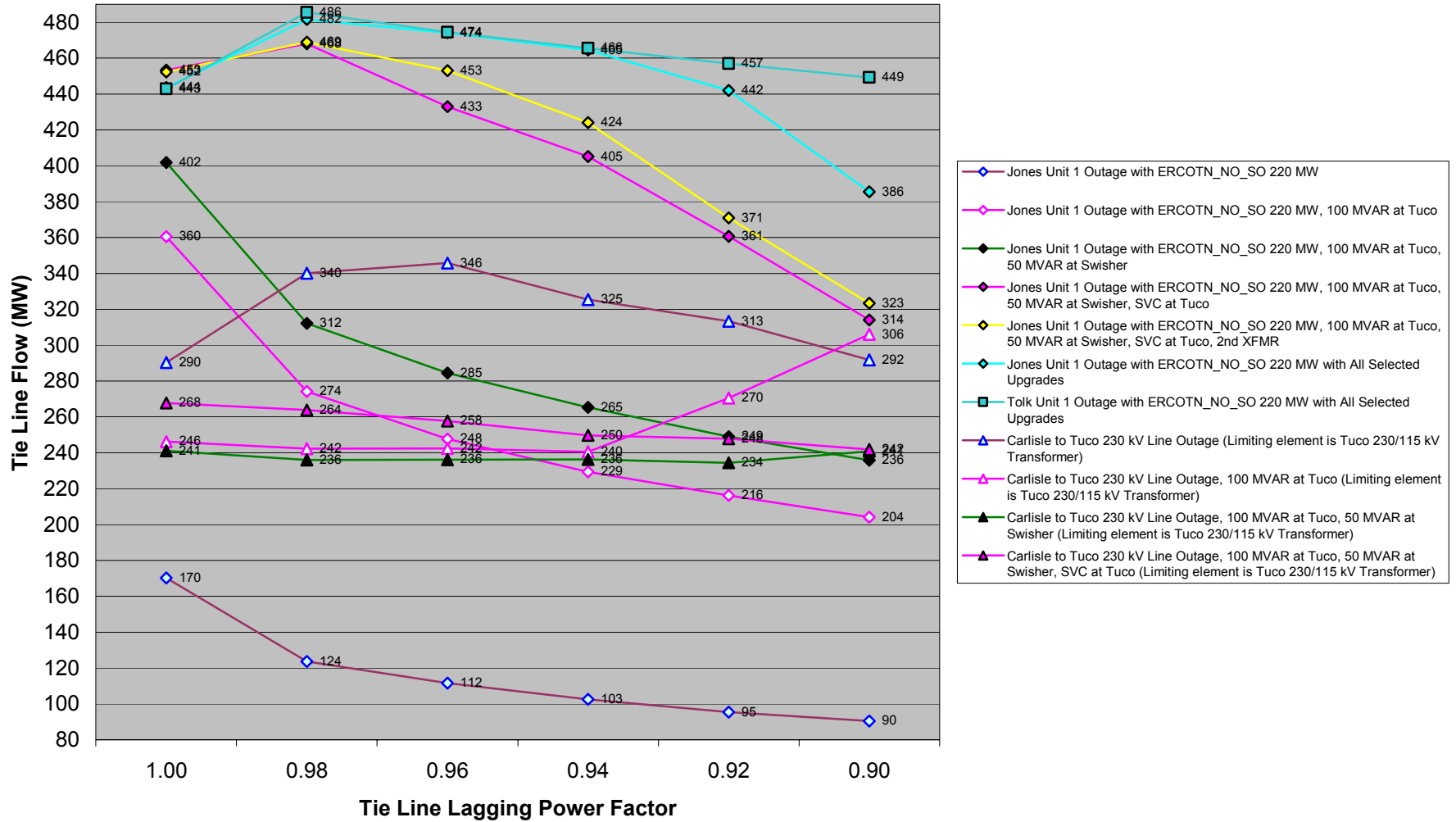
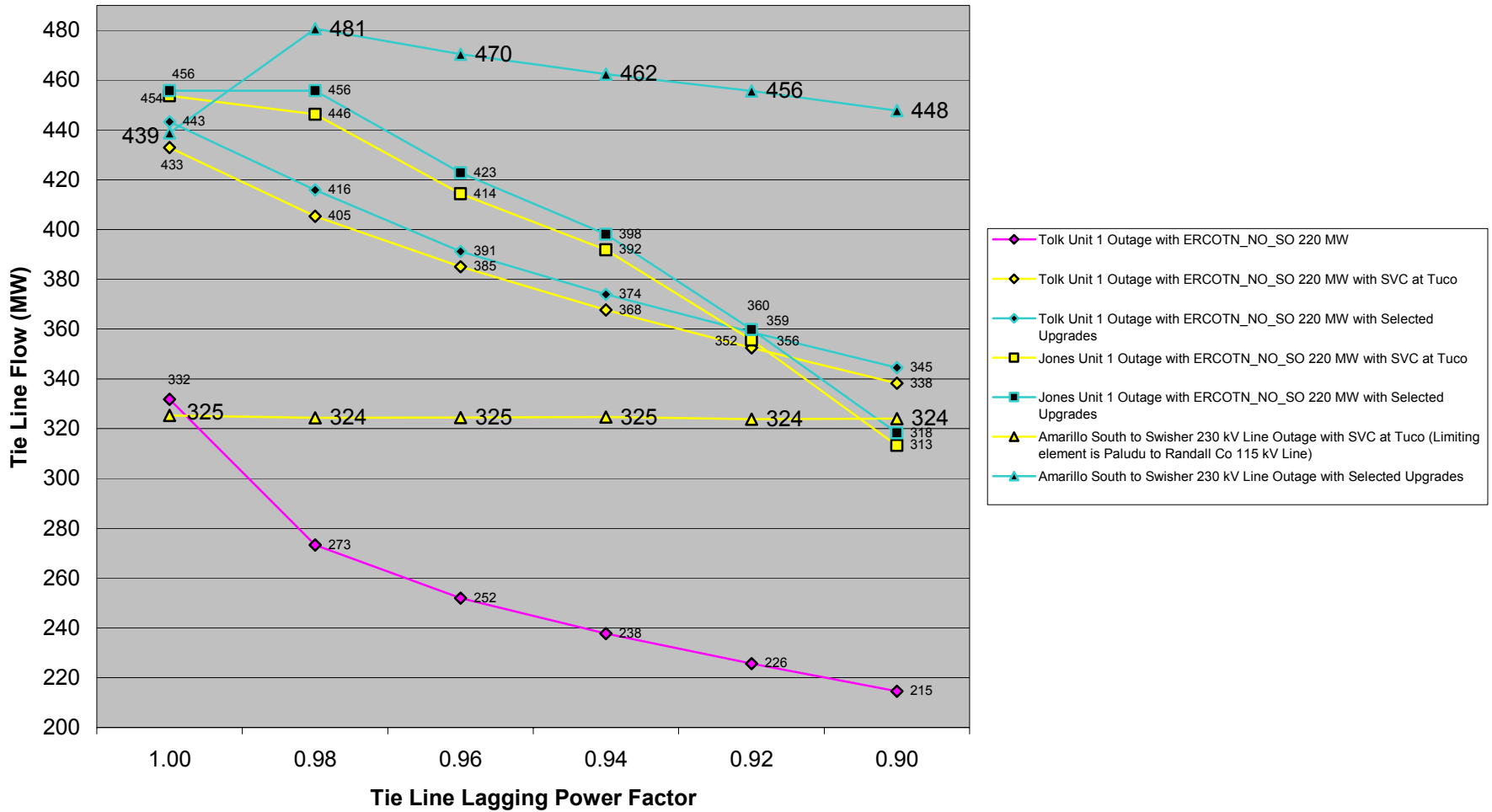


Figure 5a: SPS to LP&L Tie Line MW Limits for 2010 Summer Peak Scenario 2 with Higher Priority SECI to SPS 150 MW Request and Assigned Upgrades with incremental upgrades modeled (Includes LP&L Limitations)



Appendix A

PSS/E CHOICES IN RUNNING LOAD FLOW PROGRAM AND ACCC

BASE CASES:

Solutions - Fixed slope decoupled Newton-Raphson solution (FDNS)

1. Tap adjustment – Stepping
2. Area interchange control – Tie lines only
3. Var limits – Apply immediately
4. Solution options - Phase shift adjustment
 - Flat start
 - Lock DC taps
 - Lock switched shunts

ACCC CASES:

Solutions – AC contingency checking (ACCC)

1. MW mismatch tolerance – 0.5
2. Contingency case rating – Rate B
3. Percent of rating – 100
4. Output code – Summary
5. Min flow change in overload report – 1mw
6. Excl'd cases w/ no overloads form report – YES
7. Exclude interfaces from report – NO
8. Perform voltage limit check – YES
9. Elements in available capacity table – 60000
10. Cutoff threshold for available capacity table – 99999.0
11. Min. contng. case Vltg chng for report – 0.02
12. Sorted output – None

Newton Solution:

1. Tap adjustment – Stepping
2. Area interchange control – Tie lines only
3. Var limits - Apply automatically
4. Solution options - Phase shift adjustment
 - Flat start
 - Lock DC taps
 - Lock switched shunts

SPP-2004-006-3
 Table 1.1 - SPP Facility Overloads
 Caused or Impacted by Transfer Using Scenario 1

Southwest Power Pool
 System Impact Study

Study Case	Transfer Amount (MW)	From Area	To Area	Monitored Branch Overload	Rate <MVA>	BC % Loading	TC % Loading	%TDF	Outaged Branch Causing Overload	ATC (MW)	Solution	Estimated Cost
05SP	274			NONE IDENTIFIED						274		
05SH	224			NONE IDENTIFIED						224		
05FA	159			NONE IDENTIFIED						159		
05WP	159			NONE IDENTIFIED						159		
07SP	292			NONE IDENTIFIED						292		
07WP	171			NONE IDENTIFIED						171		
10SP	321			Contingency Not Converged					LP-SOUTH INT - LUBBOCK SOUTH INTERCHANGE 230KV	N/A	Contingency Converged with Selected Upgrades, No Limitations Identified	
10SP	321			Contingency Not Converged					LP-SOUTH INT 230/69KV TRANSFORMER	N/A	*	
10WP	189			NONE IDENTIFIED						189		
											Total Estimated Engineering and Construction Cost	\$0
10SP*	321			NONE IDENTIFIED						321		
10WP*	189			NONE IDENTIFIED						189		
											Total Estimated Engineering and Construction Cost	\$0

* Study Cases include higher priority service (SUNC to SPS 150 MW) with required network upgrades.

Table 2.1 - SPP Voltage Violations
Caused or Impacted by Transfer Using Scenario 1

Study Case	Transfer Amount (MW)	AREA	Monitored Bus with Violation	BC Voltage (PU)	TC Voltage (PU)	Outaged Branch Causing Voltage Violation	ATC (MW)	Solution	Estimated Cost
05SP	274	SPS	51647 CARLISL6 230	0.9594	0.8702	OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	274	Not a Load Serving Bus	
05SP	274	SPS	51689 LUBE6 230	0.9786	0.8696	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	274	"	
05SH	224	SPS	51647 CARLISL6 230	0.9839	0.8826	OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	274	Not a Load Serving Bus	
05SH	224	SPS	51689 LUBE6 230	0.9856	0.8865	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	274	"	
05FA	159		NONE IDENTIFIED				159		
05WP	159		NONE IDENTIFIED				159		
07SP	292	SPS	51647 CARLISL6 230	0.9474	0.8685	OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	292	Not a Load Serving Bus	
07SP	292	SPS	51689 LUBE6 230	0.9787	0.8658	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	292	"	
07WP	171	SPS	51689 LUBE6 230	0.9934	0.8946	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	171	Not a Load Serving Bus	
								Specific Monitored Bus Voltage 0.925 for Stability Limit, Assuming a 0.95 PF at the SPS and LP&L ties. Solution is to add +150/-50 SVC on 230 kV bus at TUCO, 2 50 MVAR Shunt Capacitors on 230 kV bus at TUCO, and 50 MVAR Shunt Capacitors on 230 kV bus at Swisher, Carlisle, and Lubbock South.	\$17,300,000
10SP	321	SPS	51533 TUCO6 230	0.9719	0.8582	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	132	"	
10SP	321	SPS	51533 TUCO6 230	0.9719	0.8582	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	132	See Previous Upgrade Specified for Facility	
10SP	321	SPS	51533 TUCO6 230	0.9719	0.8588	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	133	"	
10SP	321	SPS	51533 TUCO6 230	0.9719	0.8588	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	133	"	
10SP	321	SPS	51533 TUCO6 230	0.9723	0.8619	OPEN LINE FROM BUS 51733 [SUNDOWN6230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	138	"	
10SP	321	SPS	51525 LH-FLYD269.0	0.9931	0.8978	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	314	Relieved or Impact Removed by Selected Upgrades	
10SP	321	SPS	51523 SFLOYD2 69.0	0.9934	0.8981	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	315	"	
10SP	321	SPS	51525 LH-FLYD269.0	0.9931	0.8986	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	316	"	
10SP	321	SPS	51523 SFLOYD2 69.0	0.9934	0.8990	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	318	"	
10SP	321	SPS	51321 SWISHER6 230	0.9555	0.8845	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	321	Not a Load Serving Bus	
10SP	321	SPS	51321 SWISHER6 230	0.9555	0.8856	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	321	"	
10SP	321	SPS	51321 SWISHER6 230	0.9557	0.8877	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	321	"	
10SP	321	SPS	51321 SWISHER6 230	0.9557	0.8878	OPEN LINE FROM BUS 50524 [LP-WADS269.000] TO BUS 50527 [LP-WADS6230.00] CKT 1	321	"	
10SP	321	SPS	51321 SWISHER6 230	0.9580	0.8934	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	321	"	
10SP	321	SPS	51360 COX3 115	0.9784	0.8956	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	321	"	
10SP	321	SPS	51360 COX3 115	0.9784	0.8963	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	321	"	
10SP	321	SPS	51366 LH-COX3 115	0.9785	0.8958	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	321	"	
10SP	321	SPS	51366 LH-COX3 115	0.9785	0.8965	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	321	"	
10SP	321	SPS	51518 FLOYD3 115	0.9906	0.8939	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	321	"	
10SP	321	SPS	51518 FLOYD3 115	0.9906	0.8946	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	321	"	
10SP	321	SPS	51534 TUCO7 345	0.9901	0.8881	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	321	"	
10SP	321	SPS	51534 TUCO7 345	0.9901	0.8886	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	321	"	
10SP	321	SPS	51534 TUCO7 345	0.9905	0.8914	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	321	"	
10SP	321	SPS	51534 TUCO7 345	0.9905	0.8916	OPEN LINE FROM BUS 50524 [LP-WADS269.000] TO BUS 50527 [LP-WADS6230.00] CKT 1	321	"	
10SP	321	SPS	51564 CROSBY3 115	1.0008	0.8902	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	321	"	
10SP	321	SPS	51564 CROSBY3 115	1.0008	0.8909	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	321	"	
10SP	321	SPS	51564 CROSBY3 115	1.0021	0.8950	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	321	"	
10SP	321	SPS	51564 CROSBY3 115	1.0021	0.8951	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	321	"	
10SP	321	SPS	51647 CARLISL6 230	0.9114	0.8443	OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	321	"	
10SP	321	SPS	51647 CARLISL6 230	0.9598	0.7979	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	321	"	
10SP	321	SPS	51647 CARLISL6 230	0.9598	0.7984	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	321	"	
10SP	321	SPS	51647 CARLISL6 230	0.9612	0.8026	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	321	"	
10SP	321	SPS	51647 CARLISL6 230	0.9612	0.8028	OPEN LINE FROM BUS 50524 [LP-WADS269.000] TO BUS 50527 [LP-WADS6230.00] CKT 1	321	"	
10SP	321	SPS	51681 LUBS6 230	0.9862	0.8113	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	321	"	
10SP	321	SPS	51681 LUBS6 230	0.9862	0.8113	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	321	"	
10SP	321	SPS	51681 LUBS6 230	0.9862	0.8194	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	321	"	
10SP	321	SPS	51681 LUBS6 230	0.9862	0.8200	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	321	"	
10SP	321	SPS	51689 LUBE6 230	0.9879	0.7962	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	321	"	
10SP	321	SPS	51689 LUBE6 230	0.9879	0.7963	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	321	"	
10SP	321	SPS	51689 LUBE6 230	0.9879	0.8030	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	321	"	
10SP	321	SPS	51689 LUBE6 230	0.9879	0.8036	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	321	"	
10SP	321	SPS	51689 LUBE6 230	0.9874	0.8273	OPEN LINE FROM BUS 51435 [TOLKE6 230.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51699 JONES6 230	0.9910	0.8169	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	321	"	
10SP	321	SPS	51699 JONES6 230	0.9910	0.8170	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	321	"	
10SP	321	SPS	51699 JONES6 230	0.9910	0.8285	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	321	"	
10SP	321	SPS	51699 JONES6 230	0.9910	0.8291	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	321	"	

Study Case	Transfer Amount (MW)	AREA	Monitored Bus with Violation	BC Voltage (PU)	TC Voltage (PU)	Outaged Branch Causing Voltage Violation	ATC (MW)	Solution	Estimated Cost
10SP	321	SPS	51763 WOLFRTH6 230	0.9820	0.8422	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	321	"	
10SP	321	SPS	51763 WOLFRTH6 230	0.9820	0.8423	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	321	"	
10SP	321	SPS	51763 WOLFRTH6 230	0.9816	0.8453	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	321	"	
10SP	321	SPS	51763 WOLFRTH6 230	0.9816	0.8458	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	321	"	
10SP	321	SPS	51811 GRASSSLN6 230	0.9912	0.8192	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	321	"	
10SP	321	SPS	51811 GRASSSLN6 230	0.9912	0.8193	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	321	"	
10SP	321	SPS	51811 GRASSSLN6 230	0.9911	0.8291	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	321	"	
10SP	321	SPS	51811 GRASSSLN6 230	0.9911	0.8297	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	321	"	
10SP	321	SPS	51816 GRAHAM3 115	1.0165	0.8991	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	321	"	
10SP	321	SPS	51816 GRAHAM3 115	1.0165	0.8992	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	321	"	
10SP	321	SPS	51861 BORDEN6 230	0.9943	0.8348	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	321	"	
10SP	321	SPS	51861 BORDEN6 230	0.9943	0.8349	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	321	"	
10SP	321	SPS	51861 BORDEN6 230	0.9942	0.8436	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	321	"	
10SP	321	SPS	51861 BORDEN6 230	0.9942	0.8442	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	321	"	
10SP	321	SPS	52036 DOSS3 115	1.0055	0.8778	OPEN LINE FROM BUS 51996 [AMERADA3115.00] TO BUS 52036 [DOSS3 115.00] CKT 1	321	"	
10SP	321		Contingency Not Converged			OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	N/A	Contingency Converged with Selected Upgrades, No Limitations Identified	
10SP	321		Contingency Not Converged			OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	N/A	"	
10WP	189	SPS	51689 LUBE6 230	0.9899	0.8921	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	189	Not a Load Serving Bus	
Total Estimated Engineering and Construction Cost									\$17,300,000
10SP*	321	SPS	51689 LUBE6 230	0.9011	0.8565	OPEN LINE FROM BUS 51689 LUBE6 230 TO BUS 51699 JONES6 230 CKT1	321	Not a Load Serving Bus	
10WP*	189	SPS	51689 LUBE6 230	0.9932	0.8937	OPEN LINE FROM BUS 51689 LUBE6 230 TO BUS 51699 JONES6 230 CKT1	189	Not a Load Serving Bus	
Total Estimated Engineering and Construction Cost									\$0

* Study Cases include higher priority service (SUNC to SPS 150 MW) with required network upgrades.

Table 3.1 - Non-SPP Facility Overloads
Caused or Impacted by Transfer Using Scenario 1

Study Case	Transfer Amount (MW)	From Area	To Area	Monitored Branch Over 100% Rate B	Rate <MVA>	BC % Loading	TC % Loading	%TDF	Outaged Branch Causing Overload	Comments
05SP	274	SPS	SPS	50513 LP-COOP2 69 to 50516 LP-SLAT2 69 CKT 1	54	33.2	108.1	14.8	50513 LP-COOP2 69 to 50524 LP-WADS2 69 CKT 1	
05SP	274	SPS	SPS	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	140	16.8	100.3	42.6	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	
05SP	274	SPS	SPS	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	140	16.8	100.3	42.6	50518 LP-SINT6 230 to 51681 LUBS6 230 CKT 1	
05SP	274	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	140	15.1	109.8	48.4	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	
05SP	274	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	140	15.1	109.8	48.4	50518 LP-SINT6 230 to 51681 LUBS6 230 CKT 1	
05SP	274	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	140	13.4	105.5	47.1	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	
05SP	274	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	140	13.3	105.5	47.1	50527 LP-WADS6 230 to 51689 LUBE6 230 CKT 1	
05SP	274	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	100	12.4	100.7	32.2	BASE CASE	
05SP	274	SPS	SPS	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	140	19.5	107.9	45.2	50521 LP-HOLL6 230 to 51699 JONES6 230 CKT 1	
05SP	274	SPS	SPS	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	140	19.5	107.9	45.2	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	
05SP	274	SPS	SPS	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	140	18.8	104.3	43.7	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	
05SP	274	SPS	SPS	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	140	18.8	104.3	43.7	50527 LP-WADS6 230 to 51689 LUBE6 230 CKT 1	
05SP	274	SPS	SPS	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	100	22.5	103.2	29.5	BASE CASE	
05SH	224			NONE IDENTIFIED						
05FA	159			NONE IDENTIFIED						
05WP	159			NONE IDENTIFIED						
07SP	292	SPS	SPS	50513 LP-COOP2 69 to 50516 LP-SLAT2 69 CKT 1	54	33.3	116.5	15.4	50513 LP-COOP2 69 to 50524 LP-WADS2 69 CKT 1	
07SP	292	SPS	SPS	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	140	16.8	109.7	44.5	50518 LP-SINT6 230 to 51681 LUBS6 230 CKT 1	
07SP	292	SPS	SPS	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	140	16.8	109.7	44.5	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	
07SP	292	SPS	SPS	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	140	15.4	108.8	44.8	50521 LP-HOLL6 230 to 51699 JONES6 230 CKT 1	
07SP	292	SPS	SPS	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	140	15.4	108.8	44.8	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	
07SP	292	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	140	15.1	120.1	50.4	50518 LP-SINT6 230 to 51681 LUBS6 230 CKT 1	
07SP	292	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	140	15.1	120.1	50.4	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	
07SP	292	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	140	13.4	115.3	48.9	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	
07SP	292	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	140	13.4	115.3	48.9	50527 LP-WADS6 230 to 51689 LUBE6 230 CKT 1	
07SP	292	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	100	12.5	108.6	32.9	BASE CASE	
07SP	292	SPS	SPS	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	140	19.5	117.1	46.8	50521 LP-HOLL6 230 to 51699 JONES6 230 CKT 1	
07SP	292	SPS	SPS	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	140	19.5	117.1	46.8	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	
07SP	292	SPS	SPS	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	140	18.8	113.4	45.4	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	
07SP	292	SPS	SPS	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	140	18.8	113.4	45.4	50527 LP-WADS6 230 to 51689 LUBE6 230 CKT 1	
07SP	292	SPS	SPS	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	100	22.5	109.9	29.9	BASE CASE	
07WP	171			NONE IDENTIFIED						
10SP	321			Contingency Not Converged					50518 LP-SINT6 230 to 51681 LUBS6 230 CKT 1	
10SP	321			Contingency Not Converged					50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	
10SP	321	SPS	SPS	50513 LP-COOP2 69 to 50524 LP-WADS2 69 CKT 1	143	36.9	145.2	48.3	50507 LP-MLWK6 230 to 50509 LP-MLWK2 69 CKT 1	
10SP	321	SPS	SPS	50513 LP-COOP2 69 to 50524 LP-WADS2 69 CKT 1	143	36.9	145.2	48.3	50507 LP-MLWK6 230 to 51647 CARLISL6 230 CKT 1	
10SP	321	SPS	SPS	50513 LP-COOP2 69 to 50524 LP-WADS2 69 CKT 1	143	34.7	116.2	36.3	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	
10SP	321	SPS	SPS	50513 LP-COOP2 69 to 50524 LP-WADS2 69 CKT 1	143	34.7	116.2	36.3	50521 LP-HOLL6 230 to 51699 JONES6 230 CKT 1	
10SP	321	SPS	SPS	50513 LP-COOP2 69 to 50524 LP-WADS2 69 CKT 1	143	49.1	100.8	23.1	50516 LP-SLAT2 69 to 50517 LP-SINT2 69 CKT 1	
10SP	321	SPS	SPS	50513 LP-COOP2 69 to 50516 LP-SLAT2 69 CKT 1	54	34.5	131.3	16.3	50513 LP-COOP2 69 to 50524 LP-WADS2 69 CKT 1	
10SP	321	SPS	SPS	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	140	16.4	146.4	56.7	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	
10SP	321	SPS	SPS	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	140	16.4	146.2	56.6	50521 LP-HOLL6 230 to 51699 JONES6 230 CKT 1	
10SP	321	SPS	SPS	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	140	13.9	124.0	48.0	50507 LP-MLWK6 230 to 50509 LP-MLWK2 69 CKT 1	
10SP	321	SPS	SPS	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	140	13.9	124.0	48.0	50507 LP-MLWK6 230 to 51647 CARLISL6 230 CKT 1	
10SP	321	SPS	SPS	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	100	18.2	109.0	28.3	BASE CASE	
10SP	321	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	140	14.6	155.1	61.3	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	
10SP	321	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	140	14.6	155.0	61.2	50527 LP-WADS6 230 to 51689 LUBE6 230 CKT 1	
10SP	321	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	140	12.7	132.0	52.0	50507 LP-MLWK6 230 to 50509 LP-MLWK2 69 CKT 1	
10SP	321	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	140	12.7	132.0	52.0	50507 LP-MLWK6 230 to 51647 CARLISL6 230 CKT 1	
10SP	321	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	100	14.1	119.5	32.8	BASE CASE	
10SP	321	SPS	SPS	50516 LP-SLAT2 69 to 50517 LP-SINT2 69 CKT 1	143	37.5	116.7	35.3	50507 LP-MLWK6 230 to 50509 LP-MLWK2 69 CKT 1	
10SP	321	SPS	SPS	50516 LP-SLAT2 69 to 50517 LP-SINT2 69 CKT 1	143	37.5	116.7	35.3	50507 LP-MLWK6 230 to 51647 CARLISL6 230 CKT 1	
10SP	321	SPS	SPS	50516 LP-SLAT2 69 to 50517 LP-SINT2 69 CKT 1	143	37.2	114.1	34.2	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	
10SP	321	SPS	SPS	50516 LP-SLAT2 69 to 50517 LP-SINT2 69 CKT 1	143	37.2	114.1	34.2	50527 LP-WADS6 230 to 51689 LUBE6 230 CKT 1	
10SP	321	SPS	SPS	50516 LP-SLAT2 69 to 50517 LP-SINT2 69 CKT 1	143	53.2	105.1	23.2	50513 LP-COOP2 69 to 50524 LP-WADS2 69 CKT 1	
10SP	321	SPS	SPS	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	140	20.2	160.0	61.0	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	
10SP	321	SPS	SPS	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	140	20.2	159.8	60.9	50521 LP-HOLL6 230 to 51699 JONES6 230 CKT 1	
10SP	321	SPS	SPS	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	140	18.9	154.7	59.2	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	
10SP	321	SPS	SPS	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	140	18.9	154.6	59.2	50527 LP-WADS6 230 to 51689 LUBE6 230 CKT 1	

Study Case	Transfer Amount (MW)	From Area	To Area	Monitored Branch Over 100% Rate B	Rate <MVA>	BC % Loading	TC % Loading	%TDF	Outaged Branch Causing Overload	Comments
10SP	321	SPS	SPS	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	140	19.1	135.5	50.8	50507 LP-MLWK6 230 to 50509 LP-MLWK2 69 CKT 1	
10WP	189			NONE IDENTIFIED						
10SP*	321	SPS	SPS	50513 LP-COOP269.0 to 50516 LP-SLAT269.0 CKT 1	54	33.6	126.2	15.6	50513 LP-COOP269.0 to 50524 LP-WADS269.0 CKT1	
10SP*	321	SPS	SPS	50524 LP-WADS269.0 to 50527 LP-WADS6 230 CKT 1	140	17.3	122.8	46.0	50518 LP-SINT6 230 to 51681 LUBS6 230 CKT1	
10SP*	321	SPS	SPS	50524 LP-WADS269.0 to 50527 LP-WADS6 230 CKT 1	140	17.3	122.8	46.0	50517 LP-SINT269.0 to 50518 LP-SINT6 230 CKT1	
10SP*	321	SPS	SPS	50524 LP-WADS269.0 to 50527 LP-WADS6 230 CKT 1	140	16.8	120.2	45.1	50521 LP-HOLL6 230 to 51699 JONES6 230 CKT1	
10SP*	321	SPS	SPS	50524 LP-WADS269.0 to 50527 LP-WADS6 230 CKT 1	140	16.8	120.2	45.1	50520 LP-HOLL269.0 to 50521 LP-HOLL6 230 CKT1	
10SP*	321	SPS	SPS	50524 LP-WADS269.0 to 50527 LP-WADS6 230 CKT 1	100	19.4	107.1	27.3	BASE CASE	
10SP*	321	SPS	SPS	50520 LP-HOLL269.0 to 50521 LP-HOLL6 230 CKT 1	140	16.0	134.7	51.7	50518 LP-SINT6 230 to 51681 LUBS6 230 CKT1	
10SP*	321	SPS	SPS	50520 LP-HOLL269.0 to 50521 LP-HOLL6 230 CKT 1	140	16.0	134.7	51.7	50517 LP-SINT269.0 to 50518 LP-SINT6 230 CKT1	
10SP*	321	SPS	SPS	50520 LP-HOLL269.0 to 50521 LP-HOLL6 230 CKT 1	140	13.9	128.1	49.8	50527 LP-WADS6 230 to 51689 LUBE6 230 CKT1	
10SP*	321	SPS	SPS	50520 LP-HOLL269.0 to 50521 LP-HOLL6 230 CKT 1	140	13.9	128.1	49.8	50524 LP-WADS269.0 to 50527 LP-WADS6 230 CKT1	
10SP*	321	SPS	SPS	50520 LP-HOLL269.0 to 50521 LP-HOLL6 230 CKT 1	100	13.4	118.2	32.6	BASE CASE	
10SP*	321	SPS	SPS	50516 LP-SLAT269.0 to 50517 LP-SINT269.0 CKT 1	143	52.5	101.3	21.7	50513 LP-COOP269.0 to 50524 LP-WADS269.0 CKT1	
10SP*	321	SPS	SPS	50517 LP-SINT269.0 to 50518 LP-SINT6 230 CKT 1	140	19.5	129.9	48.1	50521 LP-HOLL6 230 to 51699 JONES6 230 CKT1	
10SP*	321	SPS	SPS	50517 LP-SINT269.0 to 50518 LP-SINT6 230 CKT 1	140	19.5	129.9	48.1	50520 LP-HOLL269.0 to 50521 LP-HOLL6 230 CKT1	
10SP*	321	SPS	SPS	50517 LP-SINT269.0 to 50518 LP-SINT6 230 CKT 1	140	18.2	126.1	47.1	50527 LP-WADS6 230 to 51689 LUBE6 230 CKT1	
10SP*	321	SPS	SPS	50517 LP-SINT269.0 to 50518 LP-SINT6 230 CKT 1	140	18.2	126.1	47.1	50524 LP-WADS269.0 to 50527 LP-WADS6 230 CKT1	
10SP*	321	SPS	SPS	50517 LP-SINT269.0 to 50518 LP-SINT6 230 CKT 1	100	22.2	118.9	30.1	BASE CASE	
10WP*	189			NONE IDENTIFIED						

* Study Cases include higher priority service (SUNC to SPS 150 MW) with required network upgrades.

Study Case	Transfer Amount (MW)	AREA	Monitored Bus with Violation	BC Voltage (PU)	TC Voltage (PU)	Outaged Branch Causing Voltage Violation	Comments
05SP	274	SPS	50507 LP-MLWK6 230	0.8646	0.8438	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
05SP	274	SPS	50507 LP-MLWK6 230	0.9592	0.8701	OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
05SP	274	SPS	50521 LP-HOLL6 230	0.9885	0.8953	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
05SP	274	SPS	50527 LP-WADS6 230	1.0769	0.8555	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
05SP	274	SPS	50527 LP-WADS6 230	0.9788	0.8695	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
05SH	224	SPS	50507 LP-MLWK6 230	0.9837	0.8825	OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
05SH	224	SPS	50527 LP-WADS6 230	0.9856	0.8865	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
05FA	159		NONE IDENTIFIED				
05WP	159		NONE IDENTIFIED				
07SP	292	SPS	50507 LP-MLWK6 230	0.8646	0.8327	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
07SP	292	SPS	50507 LP-MLWK6 230	0.9472	0.8683	OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
07SP	292	SPS	50518 LP-SINT6 230	0.9292	0.8851	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBE6 230.00] CKT 1	
07SP	292	SPS	50521 LP-HOLL6 230	0.9884	0.8744	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
07SP	292	SPS	50527 LP-WADS6 230	1.0768	0.8340	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
07SP	292	SPS	50527 LP-WADS6 230	0.9789	0.8656	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
07WP	171	SPS	50527 LP-WADS6 230	0.9936	0.8947	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50503 LP-ERSK269.0	1.0246	0.4411	OPEN LINE FROM BUS 50520 [LP-HOLL269.00] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP	321	SPS	50503 LP-ERSK269.0	1.0247	0.4011	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50503 LP-ERSK269.0	1.0247	0.4003	OPEN LINE FROM BUS 50524 [LP-WADS269.00] TO BUS 50527 [LP-WADS6230.00] CKT 1	
10SP	321	SPS	50503 LP-ERSK269.0	1.0278	0.4057	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP	321	SPS	50503 LP-ERSK269.0	1.0278	0.4054	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50504 LP-MACK269.0	1.0287	0.4586	OPEN LINE FROM BUS 50520 [LP-HOLL269.00] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP	321	SPS	50504 LP-MACK269.0	1.0288	0.4113	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50504 LP-MACK269.0	1.0288	0.4106	OPEN LINE FROM BUS 50524 [LP-WADS269.00] TO BUS 50527 [LP-WADS6230.00] CKT 1	
10SP	321	SPS	50504 LP-MACK269.0	1.0324	0.4156	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP	321	SPS	50504 LP-MACK269.0	1.0324	0.4153	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50506 LP-NES2 69.0	1.0295	0.4718	OPEN LINE FROM BUS 50520 [LP-HOLL269.00] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP	321	SPS	50506 LP-NES2 69.0	1.0290	0.4166	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50506 LP-NES2 69.0	1.0290	0.4159	OPEN LINE FROM BUS 50524 [LP-WADS269.00] TO BUS 50527 [LP-WADS6230.00] CKT 1	
10SP	321	SPS	50506 LP-NES2 69.0	1.0330	0.4247	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP	321	SPS	50506 LP-NES2 69.0	1.0330	0.4244	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50507 LP-MLWK6 230	0.8669	0.3481	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
10SP	321	SPS	50507 LP-MLWK6 230	0.9595	0.7964	OPEN LINE FROM BUS 50520 [LP-HOLL269.00] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP	321	SPS	50507 LP-MLWK6 230	0.9595	0.7958	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50507 LP-MLWK6 230	0.9610	0.8008	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP	321	SPS	50507 LP-MLWK6 230	0.9610	0.8005	OPEN LINE FROM BUS 50527 LP-WADS6 230 TO BUS 51689 LUBE6 230 CKT1	
10SP	321	SPS	50509 LP-MLWK269.0	1.0056	0.4039	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.00] CKT 1	
10SP	321	SPS	50509 LP-MLWK269.0	1.0056	0.4038	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
10SP	321	SPS	50509 LP-MLWK269.0	1.0218	0.4162	OPEN LINE FROM BUS 50520 [LP-HOLL269.00] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP	321	SPS	50509 LP-MLWK269.0	1.0218	0.4155	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50509 LP-MLWK269.0	1.0226	0.4226	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50510 LP-VCKS269.0	1.0138	0.4224	OPEN LINE FROM BUS 50520 [LP-HOLL269.00] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP	321	SPS	50510 LP-VCKS269.0	1.0199	0.4008	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50510 LP-VCKS269.0	1.0199	0.4001	OPEN LINE FROM BUS 50524 [LP-WADS269.00] TO BUS 50527 [LP-WADS6230.00] CKT 1	
10SP	321	SPS	50510 LP-VCKS269.0	1.0223	0.4065	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP	321	SPS	50510 LP-VCKS269.0	1.0223	0.4062	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50511 LP-THOM 69.0	1.0141	0.4284	OPEN LINE FROM BUS 50520 [LP-HOLL269.00] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP	321	SPS	50511 LP-THOM 69.0	1.0186	0.3990	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50511 LP-THOM 69.0	1.0186	0.3983	OPEN LINE FROM BUS 50524 [LP-WADS269.00] TO BUS 50527 [LP-WADS6230.00] CKT 1	
10SP	321	SPS	50511 LP-THOM 69.0	1.0214	0.4062	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP	321	SPS	50511 LP-THOM 69.0	1.0214	0.4059	OPEN LINE FROM BUS 51733 [SUNDOWN6230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50512 LP-MCCU269.0	1.0152	0.4334	OPEN LINE FROM BUS 50520 [LP-HOLL269.00] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP	321	SPS	50512 LP-MCCU269.0	1.0190	0.4014	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50512 LP-MCCU269.0	1.0190	0.4007	OPEN LINE FROM BUS 50524 [LP-WADS269.00] TO BUS 50527 [LP-WADS6230.00] CKT 1	

Study Case	Transfer Amount (MW)	AREA	Monitored Bus with Violation	BC Voltage (PU)	TC Voltage (PU)	Outaged Branch Causing Voltage Violation	Comments
10SP	321	SPS	50512 LP-MCCU269.0	1.0222	0.4048	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP	321	SPS	50512 LP-MCCU269.0	1.0222	0.4046	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50513 LP-COOP269.0	1.0245	0.4680	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP	321	SPS	50513 LP-COOP269.0	1.0253	0.4194	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50513 LP-COOP269.0	1.0253	0.4187	OPEN LINE FROM BUS 50524 [LP-WADS269.000] TO BUS 50527 [LP-WADS6230.00] CKT 1	
10SP	321	SPS	50513 LP-COOP269.0	1.0293	0.4196	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP	321	SPS	50513 LP-COOP269.0	1.0293	0.4193	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50515 LP-CHAL269.0	1.0182	0.4458	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP	321	SPS	50515 LP-CHAL269.0	1.0207	0.4048	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50515 LP-CHAL269.0	1.0207	0.4040	OPEN LINE FROM BUS 50524 [LP-WADS269.000] TO BUS 50527 [LP-WADS6230.00] CKT 1	
10SP	321	SPS	50515 LP-CHAL269.0	1.0238	0.4142	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP	321	SPS	50515 LP-CHAL269.0	1.0238	0.4139	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50516 LP-SLAT269.0	1.0245	0.4768	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP	321	SPS	50516 LP-SLAT269.0	1.0250	0.4233	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50516 LP-SLAT269.0	1.0250	0.4226	OPEN LINE FROM BUS 50524 [LP-WADS269.000] TO BUS 50527 [LP-WADS6230.00] CKT 1	
10SP	321	SPS	50516 LP-SLAT269.0	1.0286	0.4345	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP	321	SPS	50516 LP-SLAT269.0	1.0286	0.4341	OPEN LINE FROM BUS 51435 [TOLKE6 230.00] TO BUS 51533 [TUCO6 230.00] CKT 1	
10SP	321	SPS	50517 LP-SINT269.0	1.0283	0.5018	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP	321	SPS	50517 LP-SINT269.0	1.0280	0.4406	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50517 LP-SINT269.0	1.0280	0.4398	OPEN LINE FROM BUS 50524 [LP-WADS269.000] TO BUS 50527 [LP-WADS6230.00] CKT 1	
10SP	321	SPS	50517 LP-SINT269.0	1.0312	0.4566	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP	321	SPS	50517 LP-SINT269.0	1.0312	0.4553	OPEN LINE FROM BUS 50891 [HARRNG1124.000] TO BUS 50907 [HARRNG6 230.00] CKT 1	
10SP	321	SPS	50518 LP-SINT6 230	0.9855	0.8013	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	
10SP	321	SPS	50518 LP-SINT6 230	0.9855	0.8012	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
10SP	321	SPS	50518 LP-SINT6 230	0.9855	0.8079	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP	321	SPS	50518 LP-SINT6 230	0.9855	0.8073	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50518 LP-SINT6 230	0.9860	0.8118	OPEN LINE FROM BUS 50891 [HARRNG1124.000] TO BUS 50907 [HARRNG6 230.00] CKT 1	
10SP	321	SPS	50520 LP-HOLL269.0	1.0344	0.5183	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP	321	SPS	50520 LP-HOLL269.0	1.0327	0.4403	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50520 LP-HOLL269.0	1.0327	0.4396	OPEN LINE FROM BUS 50524 [LP-WADS269.000] TO BUS 50527 [LP-WADS6230.00] CKT 1	
10SP	321	SPS	50520 LP-HOLL269.0	1.0375	0.4613	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP	321	SPS	50520 LP-HOLL269.0	1.0375	0.4610	OPEN LINE FROM BUS 50892 [HARRNG2124.000] TO BUS 50907 [HARRNG6 230.00] CKT 1	
10SP	321	SPS	50521 LP-HOLL6 230	0.9906	0.8067	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	
10SP	321	SPS	50521 LP-HOLL6 230	0.9906	0.8066	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
10SP	321	SPS	50521 LP-HOLL6 230	0.9824	0.3890	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50521 LP-HOLL6 230	0.9908	0.8200	OPEN LINE FROM BUS 50524 [LP-WADS269.000] TO BUS 50527 [LP-WADS6230.00] CKT 1	
10SP	321	SPS	50521 LP-HOLL6 230	0.9908	0.8197	OPEN LINE FROM BUS 50892 [HARRNG2124.000] TO BUS 50907 [HARRNG6 230.00] CKT 1	
10SP	321	SPS	50523 LP-BRND269.0	1.0230	0.4317	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP	321	SPS	50523 LP-BRND269.0	1.0230	0.3968	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50523 LP-BRND269.0	1.0230	0.3960	OPEN LINE FROM BUS 50524 [LP-WADS269.000] TO BUS 50527 [LP-WADS6230.00] CKT 1	
10SP	321	SPS	50523 LP-BRND269.0	1.0257	0.4017	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP	321	SPS	50523 LP-BRND269.0	1.0257	0.4014	OPEN LINE FROM BUS 51733 [SUNDOWN6230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50524 LP-WADS269.0	1.0288	0.5134	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP	321	SPS	50524 LP-WADS269.0	1.0280	0.4504	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50524 LP-WADS269.0	1.0280	0.4497	OPEN LINE FROM BUS 50524 [LP-WADS269.000] TO BUS 50527 [LP-WADS6230.00] CKT 1	
10SP	321	SPS	50524 LP-WADS269.0	1.0336	0.4394	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP	321	SPS	50524 LP-WADS269.0	1.0336	0.4391	OPEN LINE FROM BUS 50892 [HARRNG2124.000] TO BUS 50907 [HARRNG6 230.00] CKT 1	
10SP	321	SPS	50526 LP-OLIV269.0	1.0181	0.4595	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP	321	SPS	50526 LP-OLIV269.0	1.0193	0.4100	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50526 LP-OLIV269.0	1.0193	0.4093	OPEN LINE FROM BUS 50524 [LP-WADS269.000] TO BUS 50527 [LP-WADS6230.00] CKT 1	
10SP	321	SPS	50526 LP-OLIV269.0	1.0224	0.4216	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP	321	SPS	50526 LP-OLIV269.0	1.0224	0.4213	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50527 LP-WADS6 230	0.9880	0.7932	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	
10SP	321	SPS	50527 LP-WADS6 230	0.9880	0.7931	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	

Study Case	Transfer Amount (MW)	AREA	Monitored Bus with Violation	BC Voltage (PU)	TC Voltage (PU)	Outaged Branch Causing Voltage Violation	Comments
10SP	321	SPS	50527 LP-WADS6 230	0.9880	0.8000	0.7994 OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50527 LP-WADS6 230	0.9880	0.7994	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP	321	SPS	50527 LP-WADS6 230	1.0767	0.3785	OPEN LINE FROM BUS 51435 [TOLKE6 230.00] TO BUS 51533 [TUCO6 230.00] CKT 1	
10SP	321		Contingency Not Converged			OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	
10SP	321		Contingency Not Converged			OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
10WP	189	SPS	50527 LP-WADS6 230	0.9900	0.8923	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP*	321	SPS	50507 LP-MLWK6 230	0.8669	0.7979	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 51647 CARLISL6 230 CKT1	
10SP*	321	SPS	50518 LP-SINT6 230	0.9301	0.8446	OPEN LINE FROM BUS 50518 LP-SINT6 230 TO BUS 51681 LUBS6 230 CKT1	
10SP*	321	SPS	50521 LP-HOLL6 230	0.9816	0.8440	OPEN LINE FROM BUS 50521 LP-HOLL6 230 TO BUS 51699 JONES6 230 CKT1	
10SP*	321	SPS	50527 LP-WADS6 230	1.0760	0.8045	OPEN LINE FROM BUS 50527 LP-WADS6 230 TO BUS 51689 LUBE6 230 CKT1	
10SP*	321	SPS	50527 LP-WADS6 230	0.9016	0.8562	OPEN LINE FROM BUS 51689 LUBE6 230 TO BUS 51699 JONES6 230 CKT1	
10WP*	189	SPS	50527 LP-WADS6 230	0.9933	0.8939	OPEN LINE FROM BUS 51689 LUBE6 230 TO BUS 51699 JONES6 230 CKT1	

* Study Cases include higher priority service (SUNC to SPS 150 MW) with required network upgrades.

SPP-2004-006-3
 Table 1.2 - SPP Facility Overloads
 Caused or Impacted by Transfer Using Scenario 2

Southwest Power Pool
 System Impact Study

Study Case	Transfer Amount (MW)	From Area	To Area	Monitored Branch Over 100% Rate B	Rate <MVA>	BC % Loading	TC % Loading	%TDF	Outaged Branch Causing Overload	ATC (MW)	Solution	Estimated Cost	
05SP	274			NONE IDENTIFIED						274			
05SH	224			NONE IDENTIFIED						224			
05FA	159			NONE IDENTIFIED						159			
05WP	159			NONE IDENTIFIED						159			
07SP	292			Contingency Not Converged					REMOVE UNIT 1 FROM BUS 51441 [TOLK1 124.000] DISPATCH	N/A			
07SP	292			Contingency Not Converged					REMOVE UNIT 1 FROM BUS 51442 [TOLK2 124.000] DISPATCH	N/A			
07WP	171			NONE IDENTIFIED						171			
10SP	321	SPS	SPS	TUCO INTERCHANGE 230/115KV TRANSFORMER	252	95.3	108.3	10.2	CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV	116	Add Second 230/115 kV Transformer	\$2,350,000	
10SP	321	SPS	SPS	RANDALL COUNTY INTERCHANGE 230/115KV TRANSFORMER	258.75	92.3	104.1	9.5	AMARILLO S INTERCHANGE - NICHOLS STATION 230KV	210	Relieved or Impact Removed by Selected Upgrades		
10SP	321	SPS	SPS	MUSTANG STATION 230/115KV TRANSFORMER	150	87.6	105.3	8.3	REMOVE UNIT 1 FROM BUS 51971 [MUSTG1 113.800] DISPATCH	225	"		
10SP	321	SPS	SPS	MUSTANG STATION 230/115KV TRANSFORMER	150	87.1	104.9	8.3	REMOVE UNIT 1 FROM BUS 51972 [MUSTG2 113.800] DISPATCH	233	"		
10SP	321	SPS	SPS	PALODU - RANDALL COUNTY INTERCHANGE 115KV	99	69.2	110.6	12.8	AMARILLO S INTERCHANGE - SWISHER COUNTY INTERCHANGE 230KV	239	"		
10SP	321	SPS	SPS	HAPPY INTERCHANGE - PALODU 115KV	99	67.6	109.1	12.8	AMARILLO S INTERCHANGE - SWISHER COUNTY INTERCHANGE 230KV	251	"		
10SP	321	SPS	SPS	TUCO INTERCHANGE 230/115KV TRANSFORMER	252	81.7	102.6	16.4	JONES PLANT - TUCO INTERCHANGE 230KV	282	"		
10SP	321	SPS	SPS	COX INTERCHANGE - LH-COX3 115KV	90	59.9	104.6	12.5	TUCO INTERCHANGE 230/115KV TRANSFORMER	288	"		
10SP	321	SPS	SPS	HALE CO INTERCHANGE - LH-COX3 115KV	90	60.1	104.5	12.5	TUCO INTERCHANGE 230/115KV TRANSFORMER	288	"		
10SP	321	SPS	SPS	HALE CO INTERCHANGE - LH-COX3 115KV	90	54.9	101.2	13.0	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	313	"		
10SP	321	SPS	SPS	COX INTERCHANGE - LH-COX3 115KV	90	54.6	101.2	13.1	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	313	"		
10SP	321	SPS	SPS	DOUD3 - SP-YUMA INTERCHANGE 115KV	161	54.3	101.2	23.5	CARLISLE INTERCHANGE - TUCO INTERCHANGE 230KV	313	"		
10SP	321			Contingency Not Converged					REMOVE UNIT 1 FROM BUS 51441 [TOLK1 124.000] DISPATCH	N/A	Contingency Converged with Selected Upgrades, No Limitations Identified		
10SP	321			Contingency Not Converged					REMOVE UNIT 1 FROM BUS 51442 [TOLK2 124.000] DISPATCH	N/A	"		
10SP	321			Contingency Not Converged					REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	N/A	"		
10SP	321			Contingency Not Converged					LP-MLWK6 230/69KV TRANSFORMER	N/A	"		
10SP	321			Contingency Not Converged					CARLISLE INTERCHANGE - LP-MLWK6 230KV	N/A	"		
10SP	321			Contingency Not Converged					LP-SOUTH INT 230/69KV TRANSFORMER	N/A	"		
10SP	321			Contingency Not Converged					LP-SOUTH INT - LUBBOCK SOUTH INTERCHANGE 230KV	N/A	"		
10SP	321			Contingency Not Converged					LP-HOLL2 230/69KV TRANSFORMER	N/A	"		
10SP	321			Contingency Not Converged					JONES PLANT - LP-HOLL6 230KV	N/A	"		
10SP	321			Contingency Not Converged					LP-HCL12 230/69KV TRANSFORMER	N/A	"		
10SP	321			Contingency Not Converged					LP-WADSWORTH STATION - LUBBOCK EAST INTERCHANGE 230KV	N/A	"		
10SP	321			Contingency Not Converged					TUCO INTERCHANGE 345/230KV TRANSFORMER	N/A	"		
10SP	321			Contingency Not Converged					TOLK INTERCHANGE - TUCO INTERCHANGE 230KV	N/A	"		
10SP	321			Contingency Not Converged					SUNDOWN INTERCHANGE - WOLFFORTH INTERCHANGE 230KV	N/A	"		
10SP	321			Contingency Not Converged					OKLAUNION - TUCO INTERCHANGE 345KV	N/A	"		
10WP	189			NONE IDENTIFIED						189			
												Total Estimated Engineering and Construction Cost	\$2,350,000
10SP*	321	SPS	SPS	PALODU - RANDALL COUNTY INTERCHANGE 115KV	99	76.1	110.7	10.7	AMARILLO S INTERCHANGE - SWISHER COUNTY INTERCHANGE 230KV	222	Rebuild 9 miles of 115 kV circuit with 397 ACSR on T-0-102 structures.	\$1,170,000	
10SP*	321	SPS	SPS	HAPPY INTERCHANGE - PALODU 115KV	99	74.4	109.0	10.7	AMARILLO S INTERCHANGE - SWISHER COUNTY INTERCHANGE 230KV	237	Rebuild 24 miles of 115 kV circuit with 397 ACSR on T-0-102 structures.	\$3,130,000	
10SP*	321	SPS	SPS	RANDALL COUNTY INTERCHANGE 230/115KV TRANSFORMER	258.75	92.5	101.0	6.9	AMARILLO S INTERCHANGE - NICHOLS STATION 230KV	282	Open Amarillo South 230/115KV Transformer to Relieve Facility		
10SP*	321			Contingency Not Converged					LP-SOUTH INT 230/69KV TRANSFORMER	N/A	Contingency Converged with Selected Upgrades, No Limitations Identified		
10SP*	321			Contingency Not Converged					LP-SOUTH INT - LUBBOCK SOUTH INTERCHANGE 230KV	N/A	"		
10SP*	321			Contingency Not Converged					TUCO INTERCHANGE 345/230KV TRANSFORMER	N/A	"		
10SP*	321			Contingency Not Converged					OKLAUNION - TUCO INTERCHANGE 345KV	N/A	"		
10SP*	321			Contingency Not Converged					REMOVE UNIT 1 FROM BUS 51441 [TOLK1 124.000] DISPATCH	N/A	"		
10SP*	321			Contingency Not Converged					REMOVE UNIT 1 FROM BUS 51442 [TOLK2 124.000] DISPATCH	N/A	"		
10SP*	321			Contingency Not Converged					REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	N/A	"		
10WP*	189			NONE IDENTIFIED						189			
												Total Estimated Engineering and Construction Cost	\$4,300,000

* Study Cases include higher priority service (SUNC to SPS 150 MW) with required network upgrades

Study Case	Transfer Amount (MW)	AREA	Monitored Bus with Violation	BC Voltage (PU)	TC Voltage (PU)	Outaged Branch Causing Voltage Violation	ATC (MW)	Solution	Estimated Cost
05SP	274	SPS	51533 TUC06 230	0.9700	0.8778	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	134	See Previous Upgrade Specified for Facility in Table 2.1	
05SP	274	SPS	51533 TUC06 230	0.9705	0.8814	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	140	"	
05SP	274	SPS	51533 TUC06 230	0.9613	0.9028	REMOVE UNIT 1 FROM BUS 51441 [TOLK1 124.000] DISPATCH	170	"	
05SP	274	SPS	51533 TUC06 230	0.9613	0.9028	REMOVE UNIT 1 FROM BUS 51442 [TOLK2 124.000] DISPATCH	170	"	
05SP	274	SPS	51321 SWISHER6 230	0.9578	0.8941	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	274	Not a Load Serving Bus	
05SP	274	SPS	51321 SWISHER6 230	0.9581	0.8963	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	274	"	
05SP	274	SPS	51534 TUC07 345	0.9751	0.8875	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	274	"	
05SP	274	SPS	51534 TUC07 345	0.9756	0.8909	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	274	"	
05SP	274	SPS	51534 TUC07 345	0.9518	0.8931	REMOVE UNIT 1 FROM BUS 51441 [TOLK1 124.000] DISPATCH	274	"	
05SP	274	SPS	51534 TUC07 345	0.9518	0.8931	REMOVE UNIT 1 FROM BUS 51442 [TOLK2 124.000] DISPATCH	274	"	
05SP	274	SPS	51647 CARLISL6 230	0.9614	0.8447	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	274	"	
05SP	274	SPS	51647 CARLISL6 230	0.9619	0.8490	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	274	"	
05SP	274	SPS	51647 CARLISL6 230	0.9627	0.8622	OPEN LINE FROM BUS 51533 [TUC06 230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	274	"	
05SP	274	SPS	51647 CARLISL6 230	0.9562	0.8794	REMOVE UNIT 1 FROM BUS 51441 [TOLK1 124.000] DISPATCH	274	"	
05SP	274	SPS	51647 CARLISL6 230	0.9562	0.8794	REMOVE UNIT 1 FROM BUS 51442 [TOLK2 124.000] DISPATCH	274	"	
05SP	274	SPS	51681 LUBES6 230	0.9771	0.8525	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	274	"	
05SP	274	SPS	51681 LUBES6 230	0.9785	0.8582	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	274	"	
05SP	274	SPS	51689 LUBE6 230	0.9778	0.8442	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	274	"	
05SP	274	SPS	51689 LUBE6 230	0.9797	0.8501	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	274	"	
05SP	274	SPS	51689 LUBE6 230	0.9796	0.8626	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51689 [JONES6 230.00] CKT 1	274	"	
05SP	274	SPS	51699 JONES6 230	0.9803	0.8534	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	274	"	
05SP	274	SPS	51699 JONES6 230	0.9819	0.8593	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	274	"	
05SP	274	SPS	51763 WOLFTRH6 230	0.9764	0.8750	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	274	"	
05SP	274	SPS	51763 WOLFTRH6 230	0.9773	0.8797	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	274	"	
05SP	274	SPS	51811 GRASSLN6 230	0.9810	0.8561	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	274	"	
05SP	274	SPS	51811 GRASSLN6 230	0.9824	0.8616	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	274	"	
05SP	274	SPS	51861 BORDEN6 230	0.9850	0.8683	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	274	"	
05SP	274	SPS	51861 BORDEN6 230	0.9863	0.8730	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	274	"	
05SH	224	SPS	51689 LUBE6 230	0.9908	0.8885	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	224	"	
05FA	159		NONE IDENTIFIED				159		
05WP	159		NONE IDENTIFIED				159		
07SP	292	SPS	51533 TUC06 230	0.9604	0.7797	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	57	See Previous Upgrade Specified for Facility in Table 2.1	
07SP	292	SPS	51533 TUC06 230	0.9609	0.7824	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	59	"	
07SP	292	SPS	51629 VICKER2 69.0	0.9725	0.7973	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	121	Relieved or Impact Removed by Selected Upgrades	
07SP	292	SPS	51627 SP-IDAL269.0	0.9737	0.7988	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	123	"	
07SP	292	SPS	51629 VICKER2 69.0	0.9723	0.8036	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	125	"	
07SP	292	SPS	51775 SP-SLAT269.0	1.0093	0.7558	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	126	"	
07SP	292	SPS	51627 SP-IDAL269.0	0.9735	0.8050	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	127	"	
07SP	292	SPS	51777 SOUTHLN269.0	1.0118	0.7592	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	129	"	
07SP	292	SPS	51533 TUC06 230	0.9795	0.8574	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBES6 230.00] CKT 1	130	See Previous Upgrade Specified for Facility in Table 2.1	
07SP	292	SPS	51775 SP-SLAT269.0	1.0097	0.7641	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	130	Relieved or Impact Removed by Selected Upgrades	
07SP	292	SPS	51525 LH-FLYD269.0	0.9954	0.7831	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	131	"	
07SP	292	SPS	51523 SFLOYD2 69.0	0.9958	0.7835	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	132	"	
07SP	292	SPS	51779 LG-HCKB269.0	1.0147	0.7832	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	133	"	
07SP	292	SPS	51777 SOUTHLN269.0	1.0122	0.7874	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	134	"	
07SP	292	SPS	51525 LH-FLYD269.0	0.9956	0.7886	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	135	"	
07SP	292	SPS	51523 SFLOYD2 69.0	0.9959	0.7890	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	135	"	
07SP	292	SPS	51853 BG-JUST269.0	1.0087	0.7751	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	136	"	
07SP	292	SPS	51779 LG-HCKB269.0	1.0151	0.7714	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	138	"	
07SP	292	SPS	51851 BG-GARZ269.0	1.0104	0.7774	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	138	"	
07SP	292	SPS	51853 BG-JUST269.0	1.0086	0.7823	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	140	"	
07SP	292	SPS	51851 BG-GARZ269.0	1.0103	0.7846	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	143	"	
07SP	292	SPS	51819 YANCY2 69.0	1.0136	0.7824	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	143	"	
07SP	292	SPS	51799 LG-NWM2 69.0	1.0132	0.7850	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	145	"	
07SP	292	SPS	51623 SP-HETL269.0	0.9863	0.8142	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	146	"	
07SP	292	SPS	51855 BG-FLUV269.0	1.0251	0.7758	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	147	"	
07SP	292	SPS	51786 SP-WDRW3 115	1.0174	0.7855	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	148	"	
07SP	292	SPS	51819 YANCY2 69.0	1.0135	0.7895	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	148	"	
07SP	292	SPS	51672 WHEEL0C3 115	1.0094	0.7941	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	148	"	
07SP	292	SPS	51799 LG-NWM2 69.0	1.0132	0.7920	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	149	"	
07SP	292	SPS	51664 ALLEN3 115	1.0105	0.7954	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	150	"	
07SP	292	SPS	51786 SP-WDRW3 115	1.0164	0.7908	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	151	"	
07SP	292	SPS	51672 WHEEL0C3 115	1.0086	0.7989	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	151	"	
07SP	292	SPS	51855 BG-FLUV269.0	1.0255	0.7839	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	152	"	
07SP	292	SPS	51623 SP-HETL269.0	0.9861	0.8204	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	152	"	
07SP	292	SPS	51759 LG-TWD2 69.0	1.0284	0.7819	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	152	"	
07SP	292	SPS	51783 DIEKEMP269.0	1.0285	0.7820	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	152	"	
07SP	292	SPS	51674 SP-QUAK3 115	1.0088	0.8004	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	152	"	
07SP	292	SPS	51664 ALLEN3 115	1.0097	0.8003	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	153	"	
07SP	292	SPS	51674 SP-QUAK3 115	1.0082	0.8051	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	156	"	
07SP	292	SPS	51793 GARZA2 69.0	1.0315	0.7855	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	156	"	
07SP	292	SPS	51807 LG-CNTR269.0	1.0223	0.7950	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	157	"	
07SP	292	SPS	51759 LG-TWD2 69.0	1.0287	0.7898	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	157	"	
07SP	292	SPS	51783 DIEKEMP269.0	1.0289	0.7900	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	158	"	

Study Case	Transfer Amount (MW)	AREA	Monitored Bus with Violation	BC Voltage (PU)	TC Voltage (PU)	Outaged Branch Causing Voltage Violation	ATC (MW)	Solution	Estimated Cost
07SP	292	SPS	51793 GARZA2 69.0	1.0319	0.7934	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	161	"	
07SP	292	SPS	51807 LG-CNTR269.0	1.0222	0.8020	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	162	"	
07SP	292	SPS	51773 SLATON2 69.0	0.9947	0.8247	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	163	"	
07SP	292	SPS	51367 LH-AIKN269.0	1.0155	0.8092	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	163	"	
07SP	292	SPS	51827 LG-DRAW269.0	1.0268	0.8015	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	164	"	
07SP	292	SPS	51613 STANTN2 69.0	0.9963	0.8266	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	166	"	
07SP	292	SPS	51801 LG-NH&W269.0	1.0277	0.8039	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	167	"	
07SP	292	SPS	51367 LH-AIKN269.0	1.0157	0.8145	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	168	"	
07SP	292	SPS	51773 SLATON2 69.0	0.9946	0.8308	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	169	"	
07SP	292	SPS	51827 LG-DRAW269.0	1.0267	0.8084	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	169	"	
07SP	292	SPS	51513 IRICK2 69.0	1.0201	0.8149	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	171	"	
07SP	292	SPS	51613 STANTN2 69.0	0.9962	0.8326	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	172	"	
07SP	292	SPS	51801 LG-NH&W269.0	1.0277	0.8107	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	172	"	
07SP	292	SPS	51658 MURPHY3 115	1.0114	0.8225	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	172	"	
07SP	292	SPS	51642 INDIANA3 115	1.0086	0.8274	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	175	"	
07SP	292	SPS	51616 STANTN3 115	1.0089	0.8274	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	175	"	
07SP	292	SPS	51513 IRICK2 69.0	1.0203	0.8202	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	176	"	
07SP	292	SPS	51658 MURPHY3 115	1.0113	0.8267	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	176	"	
07SP	292	SPS	51515 BARWISE269.0	1.0240	0.8199	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	177	"	
07SP	292	SPS	51557 SP-ACUF269.0	1.0168	0.8250	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	178	"	
07SP	292	SPS	51642 INDIANA3 115	1.0088	0.8315	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	179	"	
07SP	292	SPS	51616 STANTN3 115	1.0081	0.8315	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	179	"	
07SP	292	SPS	51769 LEWTER2 69.0	1.0042	0.8363	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	181	"	
07SP	292	SPS	51685 PLANTRS269.0	1.0044	0.8366	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	182	"	
07SP	292	SPS	51515 BARWISE269.0	1.0242	0.8251	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	182	"	
07SP	292	SPS	51329 BRISCOE269.0	0.9644	0.8613	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	182	"	
07SP	292	SPS	51557 SP-ACUF269.0	1.0168	0.8309	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	183	"	
07SP	292	SPS	51527 LH-HARM269.0	1.0279	0.8249	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	184	"	
07SP	292	SPS	51331 LH-SLVR269.0	0.9650	0.8619	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	184	"	
07SP	292	SPS	51803 LYNNCO2 69.0	1.0390	0.8186	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	184	"	
07SP	292	SPS	50501 MU-FLDY269.0	1.0281	0.8250	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	184	"	
07SP	292	SPS	51625 SP-ERSK3 115	1.0131	0.8338	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	184	"	
07SP	292	SPS	51646 CARLISL3 115	1.0143	0.8355	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	187	"	
07SP	292	SPS	51691 CLUTTER269.0	1.0073	0.8402	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	188	"	
07SP	292	SPS	51769 LEWTER2 69.0	1.0040	0.8423	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	188	"	
07SP	292	SPS	51685 PLANTRS269.0	1.0043	0.8426	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	188	"	
07SP	292	SPS	51625 SP-ERSK3 115	1.0132	0.8379	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	189	"	
07SP	292	SPS	51569 HENDRIC269.0	1.0230	0.8327	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	189	"	
07SP	292	SPS	51567 LH-CROS269.0	1.0231	0.8328	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	189	"	
07SP	292	SPS	51527 LH-HARM269.0	1.0281	0.8301	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	189	"	
07SP	292	SPS	50501 MU-FLDY269.0	1.0282	0.8302	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	189	"	
07SP	292	SPS	51803 LYNNCO2 69.0	1.0390	0.8253	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	190	"	
07SP	292	SPS	51339 WPLNV2 69.0	0.9879	0.8529	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	190	"	
07SP	292	SPS	51646 CARLISL3 115	1.0144	0.8396	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	191	"	
07SP	292	SPS	51329 BRISCOE269.0	0.9646	0.8663	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	192	"	
07SP	292	SPS	51331 LH-SLVR269.0	0.9652	0.8670	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	194	"	
07SP	292	SPS	51669 BATTNS2 69.0	1.0231	0.8381	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	194	"	
07SP	292	SPS	51691 CLUTTER269.0	1.0071	0.8482	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	194	"	
07SP	292	SPS	51652 DQUD3 115	1.0137	0.8429	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	194	"	
07SP	292	SPS	51569 HENDRIC269.0	1.0230	0.8386	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	195	"	
07SP	292	SPS	51567 LH-CROS269.0	1.0231	0.8387	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	195	"	
07SP	292	SPS	51339 WPLNV2 69.0	0.9881	0.8566	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	196	"	
07SP	292	SPS	51375 LH-SPL2 69.0	0.9695	0.8671	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	198	"	
07SP	292	SPS	51563 CROSBY2 69.0	1.0285	0.8396	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	199	"	
07SP	292	SPS	51652 DQUD3 115	1.0139	0.8468	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	199	"	
07SP	292	SPS	51669 BATTNS2 69.0	1.0218	0.8440	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	200	"	
07SP	292	SPS	51563 CROSBY2 69.0	1.0285	0.8453	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	205	"	
07SP	292	SPS	51741 AMOCSL6 230	0.9826	0.8656	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	206	"	
07SP	292	SPS	51375 LH-SPL2 69.0	0.9697	0.8721	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	209	"	
07SP	292	SPS	51741 AMOCSL6 230	0.9831	0.8677	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	210	"	
07SP	292	SPS	51675 ACCO2 69.0	1.0321	0.8492	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	211	"	
07SP	292	SPS	51661 IVORY 269.0	1.0328	0.8501	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	212	"	
07SP	292	SPS	50534 CR-VEAL4 138	1.0231	0.8543	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	213	"	
07SP	292	SPS	51337 NPLNV2 69.0	0.9617	0.8786	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	217	"	
07SP	292	SPS	51349 SPLNV2 69.0	0.9990	0.8660	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	217	"	
07SP	292	SPS	51675 ACCO2 69.0	1.0308	0.8551	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	217	"	
07SP	292	SPS	51661 IVORY 269.0	1.0316	0.8559	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	219	"	
07SP	292	SPS	50534 CR-VEAL4 138	1.0242	0.8588	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	219	"	
07SP	292	SPS	51349 SPLNV2 69.0	0.9992	0.8696	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	224	"	
07SP	292	SPS	51335 LH-PL&M269.0	0.9636	0.8806	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	224	"	
07SP	292	SPS	51771 SP-POSY269.0	1.0197	0.8644	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	225	"	
07SP	292	SPS	51785 SP-WDRW269.0	1.0197	0.8644	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	225	"	
07SP	292	SPS	51373 LH-LST2 69.0	0.9781	0.8768	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	225	"	
07SP	292	SPS	51337 NPLNV2 69.0	0.9620	0.8817	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	225	"	

Study Case	Transfer Amount (MW)	AREA	Monitored Bus with Violation	BC Voltage (PU)	TC Voltage (PU)	Outaged Branch Causing Voltage Violation	ATC (MW)	Solution	Estimated Cost
07SP	292	SPS	51345 WESTRID269.0	1.0027	0.8701	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	226	"	
07SP	292	SPS	50538 CR-KOCH4 138	1.0225	0.8652	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	227	"	
07SP	292	SPS	50539 CR-RUSS4 138	1.0257	0.8658	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	230	"	
07SP	292	SPS	51335 LH-PL&M269.0	0.9638	0.8836	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	232	"	
07SP	292	SPS	51345 WESTRID269.0	1.0029	0.8738	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	233	"	
07SP	292	SPS	51785 SP-WDRW269.0	1.0187	0.8702	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	233	"	
07SP	292	SPS	51771 SP-POSY269.0	1.0188	0.8702	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	233	"	
07SP	292	SPS	50538 CR-KOCH4 138	1.0236	0.8695	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	234	"	
07SP	292	SPS	50542 CR-LNWL4 138	1.0246	0.8696	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	235	"	
07SP	292	SPS	50539 CR-RUSS4 138	1.0268	0.8702	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	236	"	
07SP	292	SPS	51373 LH-LST2 69.0	0.9782	0.8817	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	237	"	
07SP	292	SPS	50543 CR-REED4 138	1.0221	0.8735	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	240	"	
07SP	292	SPS	50540 CR-BUCH4 138	1.0270	0.8730	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	241	"	
07SP	292	SPS	50542 CR-LNWL4 138	1.0257	0.8739	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	242	"	
07SP	292	SPS	50543 CR-REED4 138	1.0232	0.8777	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	247	"	
07SP	292	SPS	50540 CR-BUCH4 138	1.0281	0.8773	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	248	"	
07SP	292	SPS	51393 SP-HALF269.0	1.0122	0.8813	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	250	"	
07SP	292	SPS	51393 SP-HALF269.0	1.0124	0.8849	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	257	"	
07SP	292	SPS	51339 WPLNV2 69.0	0.9115	0.8890	OPEN LINE FROM BUS 51401 [HALECO2 69.000] TO BUS 51402 [HALECO3 115.000] CKT 1	259	"	
07SP	292	SPS	50546 CR-LANG4 138	1.0283	0.8837	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	259	"	
07SP	292	SPS	51371 LH-CDRH269.0	0.9888	0.8888	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	259	"	
07SP	292	SPS	51369 LOCKNEY269.0	0.9890	0.8891	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	260	"	
07SP	292	SPS	51337 NPLNV2 69.0	0.9071	0.8848	OPEN LINE FROM BUS 51316 [KRESS3 115.000] TO BUS 51320 [SWISHER3115.000] CKT 1	262	"	
07SP	292	SPS	51335 LH-PL&M269.0	0.9090	0.8868	OPEN LINE FROM BUS 51316 [KRESS3 115.000] TO BUS 51320 [SWISHER3115.000] CKT 1	262	"	
07SP	292	SPS	51339 WPLNV2 69.0	0.9155	0.8934	OPEN LINE FROM BUS 51401 [HALECO2 69.000] TO BUS 51402 [HALECO3 115.000] CKT 2	264	"	
07SP	292	SPS	50546 CR-LANG4 138	1.0294	0.8879	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	267	"	
07SP	292	SPS	51337 NPLNV2 69.0	0.9068	0.8851	OPEN LINE FROM BUS 51320 [SWISHER3115.000] TO BUS 51321 [SWISHER6230.000] CKT 1	269	"	
07SP	292	SPS	51335 LH-PL&M269.0	0.9088	0.8871	OPEN LINE FROM BUS 51320 [SWISHER3115.000] TO BUS 51321 [SWISHER6230.000] CKT 1	270	"	
07SP	292	SPS	51371 LH-CDRH269.0	0.9889	0.8937	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	273	"	
07SP	292	SPS	51369 LOCKNEY269.0	0.9892	0.8940	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	274	"	
07SP	292	SPS	51341 PLAINVV269.0	0.9931	0.8940	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	274	"	
07SP	292	SPS	51365 AIKENT2 69.0	0.9955	0.8964	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	281	"	
07SP	292	SPS	50545 CR-GRAD4 138	1.0212	0.8970	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	285	"	
07SP	292	SPS	51341 PLAINVV269.0	0.9933	0.8988	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	288	"	
07SP	292	SPS	51353 EPLNV2 69.0	0.9974	0.8988	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	288	"	
07SP	292	SPS	51041 AMARLS6 230	0.9165	0.8919	OPEN LINE FROM BUS 50915 [NICHOL6 230.000] TO BUS 51041 [AMARLS6 230.000] CKT 1	292	Not a Load Serving Bus	
07SP	292	SPS	51316 KRESS3 115	1.0096	0.8984	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51321 SWISHER6 230	0.9482	0.8225	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51321 SWISHER6 230	0.9485	0.8244	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51321 SWISHER6 230	0.9438	0.8713	OPEN LINE FROM BUS 51533 [TUCO6 230.000] TO BUS 51534 [TUCO7 345.000] CKT 1	292	"	
07SP	292	SPS	51321 SWISHER6 230	0.9438	0.8714	OPEN LINE FROM BUS 54119 [O.K.U.-7345.000] TO BUS 51534 [TUCO7 345.000] CKT 1	292	"	
07SP	292	SPS	51321 SWISHER6 230	0.9619	0.8813	OPEN LINE FROM BUS 50518 [LP-SINT6230.000] TO BUS 51681 [LUBS6 230.000] CKT 1	292	"	
07SP	292	SPS	51343 PLNVCO2 69.0	0.9997	0.8666	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51343 PLNVCO2 69.0	0.9999	0.8703	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51347 PLNVWT2 69.0	1.0125	0.8816	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51347 PLNVWT2 69.0	1.0127	0.8852	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51360 COX3 115	0.9753	0.8119	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51360 COX3 115	0.9754	0.8158	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51366 LH-COX3 115	0.9754	0.8122	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51366 LH-COX3 115	0.9755	0.8161	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51391 CORNER2 69.0	1.0122	0.8813	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51391 CORNER2 69.0	1.0124	0.8849	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51401 HALECO2 69.0	1.0137	0.8830	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51401 HALECO2 69.0	1.0139	0.8866	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51402 HALECO3 115	0.9922	0.8772	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51402 HALECO3 115	0.9924	0.8802	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51517 FLOYD2 69.0	1.0293	0.8265	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51517 FLOYD2 69.0	1.0294	0.8317	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51518 FLOYD3 115	0.9868	0.7965	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51518 FLOYD3 115	0.9870	0.8010	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51518 FLOYD3 115	1.0011	0.8998	OPEN LINE FROM BUS 50518 [LP-SINT6230.000] TO BUS 51681 [LUBS6 230.000] CKT 1	292	"	
07SP	292	SPS	51521 FLYDAT2 69.0	1.0291	0.8263	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51521 FLYDAT2 69.0	1.0292	0.8315	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51532 TUCO3 115	1.0234	0.8430	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51532 TUCO3 115	1.0237	0.8469	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51534 TUCO7 345	0.9664	0.7966	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51534 TUCO7 345	0.9669	0.7990	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51534 TUCO7 345	0.9581	0.8649	OPEN LINE FROM BUS 54119 [O.K.U.-7345.000] TO BUS 51534 [TUCO7 345.000] CKT 1	292	"	
07SP	292	SPS	51534 TUCO7 345	0.9926	0.8812	OPEN LINE FROM BUS 50518 [LP-SINT6230.000] TO BUS 51681 [LUBS6 230.000] CKT 1	292	"	
07SP	292	SPS	51534 TUCO7 345	0.9926	0.8814	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.000] CKT 1	292	"	
07SP	292	SPS	51559 FLOYDT3 115	0.9952	0.8070	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51559 FLOYDT3 115	0.9954	0.8113	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51564 CROSBY3 115	0.9938	0.7758	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51564 CROSBY3 115	0.9938	0.7808	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	

Study Case	Transfer Amount (MW)	AREA	Monitored Bus with Violation	BC Voltage (PU)	TC Voltage (PU)	Outaged Branch Causing Voltage Violation	ATC (MW)	Solution	Estimated Cost
07SP	292	SPS	51564 CROSBY3 115	1.0076	0.8910	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	292	"	
07SP	292	SPS	51564 CROSBY3 115	1.0076	0.8914	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	292	"	
07SP	292	SPS	51564 CROSBY3 115	1.0076	0.8916	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	292	"	
07SP	292	SPS	51617 SW67862 69.0	0.9979	0.8285	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51617 SW67862 69.0	0.9978	0.8346	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51621 SW67462 69.0	0.9897	0.8184	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51621 SW67462 69.0	0.9896	0.8246	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51647 CARLISL6 230	0.9504	0.7238	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51647 CARLISL6 230	0.9508	0.7270	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51647 CARLISL6 230	0.9685	0.7970	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	292	"	
07SP	292	SPS	51647 CARLISL6 230	0.9685	0.7973	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	292	"	
07SP	292	SPS	51647 CARLISL6 230	0.9687	0.7992	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	292	"	
07SP	292	SPS	51677 IVORYT 269.0	1.0357	0.8535	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51677 IVORYT 269.0	1.0344	0.8594	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51679 LUBS2 69.0	1.0372	0.8654	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51679 LUBS2 69.0	1.0359	0.8612	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51680 LUBS3 115	1.0238	0.7965	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51680 LUBS3 115	1.0226	0.8016	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51681 LUBS6 230	0.9881	0.7141	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51681 LUBS6 230	0.9898	0.7185	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51681 LUBS6 230	0.9867	0.8015	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	292	"	
07SP	292	SPS	51681 LUBS6 230	0.9868	0.8016	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	292	"	
07SP	292	SPS	51681 LUBS6 230	0.9869	0.8095	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	292	"	
07SP	292	SPS	51687 LUBE2 69.0	1.0106	0.8442	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51687 LUBE2 69.0	1.0104	0.8501	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51688 LUBE3 115	1.0210	0.7966	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51688 LUBE3 115	1.0209	0.8016	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51689 LUBE6 230	0.9693	0.6987	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51689 LUBE6 230	0.9708	0.7033	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51689 LUBE6 230	0.9889	0.7867	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	292	"	
07SP	292	SPS	51689 LUBE6 230	0.9887	0.7868	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	292	"	
07SP	292	SPS	51689 LUBE6 230	0.9889	0.7892	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	292	"	
07SP	292	SPS	51699 JONES6 230	0.9715	0.7137	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51699 JONES6 230	0.9731	0.7182	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51699 JONES6 230	0.9910	0.8046	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	292	"	
07SP	292	SPS	51699 JONES6 230	0.9910	0.8046	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	292	"	
07SP	292	SPS	51699 JONES6 230	0.9910	0.8112	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	292	"	
07SP	292	SPS	51733 SUNDOWN6 230	0.9811	0.8568	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51733 SUNDOWN6 230	0.9817	0.8589	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51746 SP-YUMA3 115	1.0152	0.8522	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51746 SP-YUMA3 115	1.0155	0.8569	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51762 WOLFRT3 115	1.0221	0.8752	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51762 WOLFRT3 115	1.0226	0.8786	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51763 WOLFRT6 230	0.9697	0.7648	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51763 WOLFRT6 230	0.9709	0.7683	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51763 WOLFRT6 230	0.9842	0.8366	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	292	"	
07SP	292	SPS	51763 WOLFRT6 230	0.9843	0.8366	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	292	"	
07SP	292	SPS	51763 WOLFRT6 230	0.9843	0.8418	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	292	"	
07SP	292	SPS	51767 POSEY2 69.0	1.0014	0.8329	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51767 POSEY2 69.0	1.0013	0.8388	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51791 YANCYT2 69.0	1.0149	0.7842	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51791 YANCYT2 69.0	1.0148	0.7913	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51804 LYNNCO3 115	1.0169	0.7775	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51804 LYNNCO3 115	1.0168	0.7834	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51804 LYNNCO3 115	1.0248	0.8989	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	292	"	
07SP	292	SPS	51804 LYNNCO3 115	1.0249	0.8990	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	292	"	
07SP	292	SPS	51810 GRASSLN3 115	1.0229	0.7862	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51810 GRASSLN3 115	1.0232	0.7920	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51811 GRASSLN6 230	0.9718	0.7185	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51811 GRASSLN6 230	0.9730	0.7230	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51811 GRASSLN6 230	0.9916	0.8086	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	292	"	
07SP	292	SPS	51811 GRASSLN6 230	0.9916	0.8087	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	292	"	
07SP	292	SPS	51811 GRASSLN6 230	0.9916	0.8143	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	292	"	
07SP	292	SPS	51815 GRAHAM2 69.0	1.0323	0.7873	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51815 GRAHAM2 69.0	1.0326	0.7952	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51816 GRAHAM3 115	1.0123	0.7625	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51816 GRAHAM3 115	1.0126	0.7689	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51816 GRAHAM3 115	1.0192	0.8909	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	292	"	
07SP	292	SPS	51816 GRAHAM3 115	1.0192	0.8910	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	292	"	
07SP	292	SPS	51816 GRAHAM3 115	1.0196	0.8964	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	292	"	
07SP	292	SPS	51825 BG-YNT2 69.0	1.0140	0.7829	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51825 BG-YNT2 69.0	1.0140	0.7901	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51857 BG-JST2 69.0	1.0282	0.7801	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51857 BG-JST2 69.0	1.0286	0.7881	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	

Study Case	Transfer Amount (MW)	AREA	Monitored Bus with Violation	BC Voltage (PU)	TC Voltage (PU)	Outaged Branch Causing Voltage Violation	ATC (MW)	Solution	Estimated Cost
07SP	292	SPS	51861 BORDEN6 230	0.9757	0.7444	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51861 BORDEN6 230	0.9769	0.7488	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51861 BORDEN6 230	0.9946	0.8256	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLSL6230.00] CKT 1	292	"	
07SP	292	SPS	51861 BORDEN6 230	0.9946	0.8257	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	292	"	
07SP	292	SPS	51861 BORDEN6 230	0.9947	0.8304	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	292	"	
07SP	292		Contingency Not Converged			REMOVE UNIT 1 FROM BUS 51441 [TOLK1 124.000] DISPATCH	N/A	Contingency Converged with Selected Upgrades	
07SP	292		Contingency Not Converged			REMOVE UNIT 1 FROM BUS 51442 [TOLK2 124.000] DISPATCH	N/A	"	
07WP	171		NONE IDENTIFIED				171		
10SP	321	SPS	51533 TUCO6 230	0.9510	0.7231	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	37	See Previous Upgrade Specified for Facility in Table 2.1	
10SP	321	SPS	51396 LC-SOL3 115	0.9014	0.7278	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	37	Relieved or Impact Removed by Selected Upgrades	
10SP	321	SPS	51291 DS-#122 69.0	0.9331	0.6913	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	44	"	
10SP	321	SPS	51525 LH-FLYD269.0	0.9657	0.6588	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	69	"	
10SP	321	SPS	51523 SFLOYD2 69.0	0.9660	0.6593	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	69	"	
10SP	321	SPS	51533 TUCO6 230	0.9679	0.7805	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	73	See Previous Upgrade Specified for Facility in Table 2.1	
10SP	321	SPS	51533 TUCO6 230	0.9679	0.7805	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	73	"	
10SP	321	SPS	51629 VICKER2 69.0	0.9764	0.6518	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	76	Relieved or Impact Removed by Selected Upgrades	
10SP	321	SPS	51293 HART2 69.0	0.9553	0.7216	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	76	"	
10SP	321	SPS	51627 SP-IDAL269.0	0.9776	0.6536	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	77	"	
10SP	321	SPS	51775 SP-SLAT269.0	1.0097	0.5682	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	80	"	
10SP	321	SPS	51777 SOUTHLN269.0	1.0123	0.5725	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	82	"	
10SP	321	SPS	51533 TUCO6 230	0.9748	0.7835	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	84	See Previous Upgrade Specified for Facility in Table 2.1	
10SP	321	SPS	51779 LG-HCKB269.0	1.0154	0.5777	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	85	Relieved or Impact Removed by Selected Upgrades	
10SP	321	SPS	51853 BG-JUST269.0	1.0035	0.6118	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	85	"	
10SP	321	SPS	51525 LH-FLYD269.0	0.9938	0.6390	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	85	"	
10SP	321	SPS	51523 SFLOYD2 69.0	0.9941	0.6395	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	85	"	
10SP	321	SPS	51851 BG-GARZ269.0	1.0053	0.6149	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	87	"	
10SP	321	SPS	51329 BRISCOE269.0	0.9669	0.7261	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	89	"	
10SP	321	SPS	51331 LH-SLVR269.0	0.9675	0.7269	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	90	"	
10SP	321	SPS	51819 YANCY2 69.0	1.0088	0.6219	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	90	"	
10SP	321	SPS	51799 LG-NWM2 69.0	1.0087	0.6278	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	92	"	
10SP	321	SPS	51623 SP-HEL269.0	0.9908	0.6733	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	92	"	
10SP	321	SPS	51855 BG-FLUV269.0	1.0261	0.5924	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	93	"	
10SP	321	SPS	51295 LC-HART269.0	0.9672	0.7380	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	94	"	
10SP	321	SPS	51367 LH-AIKN269.0	0.9875	0.6915	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	95	"	
10SP	321	SPS	51375 LH-SPL2 69.0	0.9722	0.7335	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	97	"	
10SP	321	SPS	51329 BRISCOE269.0	0.9666	0.7468	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	97	"	
10SP	321	SPS	51759 LG-TWD2 69.0	1.0297	0.6019	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	97	"	
10SP	321	SPS	51783 DIEKEMP269.0	1.0298	0.6021	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	97	"	
10SP	321	SPS	51775 SP-SLAT269.0	1.0085	0.6521	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	98	"	
10SP	321	SPS	51331 LH-SLVR269.0	0.9672	0.7476	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	98	"	
10SP	321	SPS	51775 SP-SLAT269.0	1.0087	0.6548	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	99	"	
10SP	321	SPS	51339 WPLNV2 69.0	0.9584	0.7693	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	99	"	
10SP	321	SPS	51793 GARZA2 69.0	1.0329	0.6060	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	100	"	
10SP	321	SPS	51807 LG-CNTR269.0	1.0180	0.6392	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	100	"	
10SP	321	SPS	51777 SOUTHLN269.0	1.0111	0.6561	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	100	"	
10SP	321	SPS	51513 IRICK2 69.0	0.9924	0.6966	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	101	"	
10SP	321	SPS	50548 CR-TRIN4 138	1.0314	0.6151	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	101	"	
10SP	321	SPS	51777 SOUTHLN269.0	1.0113	0.6589	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	101	"	
10SP	321	SPS	50555 CR-PHIL4 138	1.0348	0.6101	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	102	"	
10SP	321	SPS	50554 CR-MCDN4 138	1.0346	0.6108	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	102	"	
10SP	321	SPS	50558 CR-TATE4 138	1.0352	0.6100	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	102	"	
10SP	321	SPS	51773 SLATON2 69.0	0.9996	0.6869	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	102	"	
10SP	321	SPS	50549 CR-NWSC4 138	1.0375	0.6112	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	104	"	
10SP	321	SPS	50551 CR-PMBR4 138	1.0378	0.6115	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	104	"	
10SP	321	SPS	51779 LG-HCKB269.0	1.0142	0.6610	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	104	"	
10SP	321	SPS	51629 VICKER2 69.0	0.9685	0.7571	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRH6230.00] CKT 1	104	"	
10SP	321	SPS	51613 STANTN2 69.0	1.0012	0.6891	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	104	"	
10SP	321	SPS	50545 CR-GRAD4 138	1.0320	0.6270	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	105	"	
10SP	321	SPS	51779 LG-HCKB269.0	1.0144	0.6637	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	105	"	
10SP	321	SPS	51827 LG-DRAW269.0	1.0229	0.6479	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	105	"	
10SP	321	SPS	51629 VICKER2 69.0	0.9753	0.7459	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	105	"	
10SP	321	SPS	50552 CR-STL4 138	1.0395	0.6152	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	106	"	
10SP	321	SPS	50548 CR-TRIN4 138	1.0390	0.6176	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	106	"	
10SP	321	SPS	51375 LH-SPL2 69.0	0.9720	0.7541	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	106	"	
10SP	321	SPS	50557 CR-STLA4 138	1.0389	0.6185	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	106	"	
10SP	321	SPS	51775 SP-SLAT269.0	1.0106	0.6759	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRH6230.00] CKT 1	106	"	
10SP	321	SPS	51627 SP-IDAL269.0	0.9697	0.7587	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRH6230.00] CKT 1	106	"	
10SP	321	SPS	51515 BARWISE269.0	0.9966	0.7047	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	106	"	
10SP	321	SPS	50555 CR-PHIL4 138	1.0426	0.6125	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	106	"	
10SP	321	SPS	50554 CR-MCDN4 138	1.0423	0.6133	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	106	"	
10SP	321	SPS	50558 CR-TATE4 138	1.0430	0.6125	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	107	"	
10SP	321	SPS	50543 CR-REED4 138	1.0302	0.6383	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	107	"	
10SP	321	SPS	51629 VICKER2 69.0	0.9673	0.7648	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	107	"	
10SP	321	SPS	50542 CR-LNWL4 138	1.0342	0.6314	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	107	"	

Study Case	Transfer Amount (MW)	AREA	Monitored Bus with Violation	BC Voltage (PU)	TC Voltage (PU)	Outaged Branch Causing Voltage Violation	ATC (MW)	Solution	Estimated Cost
10SP	321	SPS	51801 LG-NH&W269.0	1.0240	0.6521	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	107	"	
10SP	321	SPS	51627 SP-IDAL269.0	0.9765	0.7475	OPEN LINE FROM BUS 51532 [TUC03 115.00] TO BUS 51533 [TUC06 230.00] CKT 1	107	"	
10SP	321	SPS	51367 LH-AIKN269.0	1.0149	0.6722	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	108	"	
10SP	321	SPS	51629 VICKER2 69.0	0.9674	0.7665	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	108	"	
10SP	321	SPS	50549 CR-NWSC4 138	1.0452	0.6137	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	108	"	
10SP	321	SPS	50551 CR-PMBR4 138	1.0456	0.6140	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	108	"	
10SP	321	SPS	51775 SP-SLAT269.0	1.0088	0.6865	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	108	"	
10SP	321	SPS	50538 CR-KOCH4 138	1.0307	0.6445	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	109	"	
10SP	321	SPS	51627 SP-IDAL269.0	0.9685	0.7664	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	109	"	
10SP	321	SPS	51672 WHEEL0C3 115	1.0079	0.6899	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	109	"	
10SP	321	SPS	51786 SP-WDRW3 115	1.0162	0.6739	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	109	"	
10SP	321	SPS	51853 BG-JUST269.0	1.0040	0.6977	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	109	"	
10SP	321	SPS	51777 SOUTHLN269.0	1.0132	0.6798	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	109	"	
10SP	321	SPS	50546 CR-LANG4 138	1.0387	0.6307	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	109	"	
10SP	321	SPS	50545 CR-GRAD4 138	1.0394	0.6293	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	109	"	
10SP	321	SPS	51339 WPLNV2 69.0	0.9662	0.7717	OPEN LINE FROM BUS 51532 [TUC03 115.00] TO BUS 51533 [TUC06 230.00] CKT 1	109	"	
10SP	321	SPS	50540 CR-BUCH4 138	1.0367	0.6368	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	110	"	
10SP	321	SPS	51627 SP-IDAL269.0	0.9686	0.7681	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	110	"	
10SP	321	SPS	51853 BG-JUST269.0	1.0042	0.7000	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	110	"	
10SP	321	SPS	50552 CR-STIL4 138	1.0472	0.6176	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	110	"	
10SP	321	SPS	51864 ALLEN3 115	1.0091	0.6916	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	110	"	
10SP	321	SPS	50539 CR-RUSS4 138	1.0350	0.6430	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	111	"	
10SP	321	SPS	50557 CR-STLA4 138	1.0466	0.6210	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	111	"	
10SP	321	SPS	51373 LH-LST2 69.0	0.9812	0.7457	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	111	"	
10SP	321	SPS	50543 CR-REED4 138	1.0375	0.6405	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	111	"	
10SP	321	SPS	51851 BG-GARZ269.0	1.0058	0.7005	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	111	"	
10SP	321	SPS	51777 SOUTHLN269.0	1.0114	0.6904	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	111	"	
10SP	321	SPS	50542 CR-LNLW4 138	1.0417	0.6337	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	111	"	
10SP	321	SPS	51674 SP-QUAK3 115	1.0073	0.6966	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	112	"	
10SP	321	SPS	51527 LH-HARM269.0	1.0008	0.7109	OPEN LINE FROM BUS 51532 [TUC03 115.00] TO BUS 51533 [TUC06 230.00] CKT 1	112	"	
10SP	321	SPS	50501 MU-FDY269.0	1.0010	0.7111	OPEN LINE FROM BUS 51532 [TUC03 115.00] TO BUS 51533 [TUC06 230.00] CKT 1	112	"	
10SP	321	SPS	51851 BG-GARZ269.0	1.0059	0.7029	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	112	"	
10SP	321	SPS	50534 CR-VEAL4 138	1.0321	0.6546	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	112	"	
10SP	321	SPS	51557 SP-ACUF269.0	1.0173	0.6821	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	112	"	
10SP	321	SPS	51779 LG-HCKB269.0	1.0163	0.6845	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	113	"	
10SP	321	SPS	51513 RIRICK2 69.0	1.0197	0.6795	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	113	"	
10SP	321	SPS	50538 CR-KOCH4 138	1.0379	0.6467	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	113	"	
10SP	321	SPS	51337 NPLNV2 69.0	0.9566	0.7966	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	114	"	
10SP	321	SPS	50546 CR-LANG4 138	1.0462	0.6330	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	114	"	
10SP	321	SPS	51769 LEWTER2 69.0	1.0095	0.7017	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	114	"	
10SP	321	SPS	50540 CR-BUCH4 138	1.0441	0.6391	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	114	"	
10SP	321	SPS	51685 PLANTRS269.0	1.0097	0.7020	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	114	"	
10SP	321	SPS	51337 NPLNV2 69.0	0.9593	0.7930	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	114	"	
10SP	321	SPS	50555 CR-PHIL4 138	1.0385	0.6508	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	115	"	
10SP	321	SPS	51855 BG-FLUV269.0	1.0250	0.6754	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	115	"	
10SP	321	SPS	51339 WPLNV2 69.0	0.9831	0.7509	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	115	"	
10SP	321	SPS	51779 LG-HCKB269.0	1.0145	0.6850	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	115	"	
10SP	321	SPS	50548 CR-TRM4 138	1.0366	0.6555	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	115	"	
10SP	321	SPS	50539 CR-RUSS4 138	1.0423	0.6452	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	115	"	
10SP	321	SPS	50554 CR-MCDN4 138	1.0389	0.6517	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	115	"	
10SP	321	SPS	51853 BG-JUST269.0	1.0058	0.7119	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	116	"	
10SP	321	SPS	51855 BG-FLUV269.0	1.0252	0.6781	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	116	"	
10SP	321	SPS	51819 YANCY2 69.0	1.0092	0.7066	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	116	"	
10SP	321	SPS	50534 CR-VEAL4 138	1.0392	0.6567	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	117	"	
10SP	321	SPS	51819 YANCY2 69.0	1.0094	0.7089	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	117	"	
10SP	321	SPS	50549 CR-NWSC4 138	1.0423	0.6523	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	117	"	
10SP	321	SPS	50551 CR-PMBR4 138	1.0428	0.6526	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	117	"	
10SP	321	SPS	51799 LG-NWM2 69.0	1.0091	0.7111	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	118	"	
10SP	321	SPS	51515 BARWISE269.0	1.0238	0.6857	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	118	"	
10SP	321	SPS	51335 LH-PL&M269.0	0.9586	0.7989	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	118	"	
10SP	321	SPS	51851 BG-GARZ269.0	1.0076	0.7147	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	118	"	
10SP	321	SPS	51691 CLUTTER269.0	1.0127	0.7069	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	118	"	
10SP	321	SPS	51335 LH-PL&M269.0	0.9612	0.7954	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	118	"	
10SP	321	SPS	51799 LG-NWM2 69.0	1.0093	0.7134	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	119	"	
10SP	321	SPS	50545 CR-GRAD4 138	1.0376	0.6657	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	119	"	
10SP	321	SPS	50552 CR-STIL4 138	1.0447	0.6559	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	119	"	
10SP	321	SPS	51803 LYNNCO2 69.0	1.0359	0.6710	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	120	"	
10SP	321	SPS	51759 LG-TWD2 69.0	1.0285	0.6836	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	120	"	
10SP	321	SPS	51783 DIEKEMP269.0	1.0287	0.6838	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	120	"	
10SP	321	SPS	51569 HENDRIC269.0	1.0238	0.6920	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	120	"	
10SP	321	SPS	51567 LH-CROS269.0	1.0239	0.6921	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	120	"	
10SP	321	SPS	51853 BG-JUST269.0	1.0042	0.7260	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	120	"	
10SP	321	SPS	50557 CR-STLA4 138	1.0445	0.6588	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	120	"	
10SP	321	SPS	51759 LG-TWD2 69.0	1.0287	0.6863	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	121	"	

Table 2.2 - SPP Voltage Violations
Caused or Impacted by Transfer using Scenario 2

Southwest Power Pool
System Impact Study

Study Case	Transfer Amount (MW)	AREA	Monitored Bus with Violation	BC Voltage (PU)	TC Voltage (PU)	Outaged Branch Causing Voltage Violation	ATC (MW)	Solution	Estimated Cost
10SP	321	SPS	51373 LH-LST2 69.0	0.9809	0.7659	OPEN LINE FROM BUS 51532 [TUC03 115.00] TO BUS 51533 [TUC06 230.00] CKT 1	121	"	
10SP	321	SPS	51783 DIEKEMP269.0	1.0288	0.6865	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	121	"	
10SP	321	SPS	50543 CR-REED4 138	1.0363	0.6750	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	121	"	
10SP	321	SPS	50542 CR-LNWL4 138	1.0403	0.6691	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	121	"	
10SP	321	SPS	51349 SPLNV2 69.0	0.9705	0.7848	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	122	"	
10SP	321	SPS	51527 LH-HARM269.0	1.0279	0.6920	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	122	"	
10SP	321	SPS	50501 MU-FLDY269.0	1.0281	0.6923	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	122	"	
10SP	321	SPS	51819 YANCY2 69.0	1.0110	0.7206	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	123	"	
10SP	321	SPS	51851 BG-GARZ269.0	1.0060	0.7287	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	123	"	
10SP	321	SPS	51793 GARZA2 69.0	1.0318	0.6877	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	123	"	
10SP	321	SPS	50538 CR-KOCH4 138	1.0368	0.6802	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	123	"	
10SP	321	SPS	50546 CR-LANG4 138	1.0447	0.6693	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	124	"	
10SP	321	SPS	51793 GARZA2 69.0	1.0320	0.6903	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	124	"	
10SP	321	SPS	51855 BG-FLUV269.0	1.0271	0.6987	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	124	"	
10SP	321	SPS	50540 CR-BUCH4 138	1.0428	0.6742	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	124	"	
10SP	321	SPS	51799 LG-NWM2 69.0	1.0109	0.7348	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	124	"	
10SP	321	SPS	51658 MURPHY3 115	1.0099	0.7278	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	125	"	
10SP	321	SPS	50539 CR-RUSS4 138	1.0411	0.6793	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	125	"	
10SP	321	SPS	51616 STANTN3 115	1.0058	0.7351	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	125	"	
10SP	321	SPS	51642 INDIANA3 115	1.0058	0.7351	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	125	"	
10SP	321	SPS	51563 CROSBY2 69.0	1.0296	0.7006	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	126	"	
10SP	321	SPS	50534 CR-VEAL4 138	1.0382	0.6887	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	127	"	
10SP	321	SPS	51855 BG-FLUV269.0	1.0253	0.7091	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	127	"	
10SP	321	SPS	51525 LH-FLYD269.0	0.9895	0.7638	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	127	"	
10SP	321	SPS	51819 YANCY2 69.0	1.0095	0.7345	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	128	"	
10SP	321	SPS	51523 SFLOYD2 69.0	0.9898	0.7642	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	128	"	
10SP	321	SPS	51371 LH-CORH269.0	0.9923	0.7608	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	128	"	
10SP	321	SPS	51623 SP-HETL269.0	0.9897	0.7649	OPEN LINE FROM BUS 51532 [TUC03 115.00] TO BUS 51533 [TUC06 230.00] CKT 1	128	"	
10SP	321	SPS	51669 BATTNS2 69.0	1.0274	0.7082	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	128	"	
10SP	321	SPS	51807 LG-CNTR269.0	1.0185	0.7220	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	128	"	
10SP	321	SPS	51369 LOCKNEY269.0	0.9926	0.7611	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	128	"	
10SP	321	SPS	51623 SP-HETL269.0	0.9830	0.7759	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	129	"	
10SP	321	SPS	51345 WESTRID269.0	0.9744	0.7894	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	129	"	
10SP	321	SPS	51807 LG-CNTR269.0	1.0186	0.7242	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	129	"	
10SP	321	SPS	51759 LG-TWD2 69.0	1.0306	0.7066	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	129	"	
10SP	321	SPS	51783 DIEKEMP269.0	1.0307	0.7067	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	130	"	
10SP	321	SPS	51799 LG-NWM2 69.0	1.0094	0.7384	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	130	"	
10SP	321	SPS	51555 SP-SHLW269.0	0.9850	0.7765	OPEN LINE FROM BUS 51532 [TUC03 115.00] TO BUS 51533 [TUC06 230.00] CKT 1	131	"	
10SP	321	SPS	51349 SPLNV2 69.0	0.9781	0.7871	OPEN LINE FROM BUS 51532 [TUC03 115.00] TO BUS 51533 [TUC06 230.00] CKT 1	131	"	
10SP	321	SPS	51525 LH-FLYD269.0	0.9982	0.7583	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	131	"	
10SP	321	SPS	51523 SFLOYD2 69.0	0.9985	0.7587	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	132	"	
10SP	321	SPS	51525 LH-FLYD269.0	0.9983	0.7597	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	132	"	
10SP	321	SPS	51623 SP-HETL269.0	0.9818	0.7833	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	132	"	
10SP	321	SPS	51759 LG-TWD2 69.0	1.0288	0.7167	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	133	"	
10SP	321	SPS	51783 DIEKEMP269.0	1.0289	0.7169	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	133	"	
10SP	321	SPS	51523 SFLOYD2 69.0	0.9986	0.7601	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	133	"	
10SP	321	SPS	51793 GARZA2 69.0	1.0339	0.7106	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	133	"	
10SP	321	SPS	51329 BRISCOE269.0	0.9585	0.8172	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	133	"	
10SP	321	SPS	51625 SP-ERSK3 115	1.0114	0.7428	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	133	"	
10SP	321	SPS	51349 SPLNV2 69.0	0.9948	0.7667	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	133	"	
10SP	321	SPS	51623 SP-HETL269.0	0.9819	0.7850	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	134	"	
10SP	321	SPS	51331 LH-SLVR269.0	0.9591	0.8180	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	134	"	
10SP	321	SPS	51827 LG-DRAW269.0	1.0233	0.7297	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	135	"	
10SP	321	SPS	51646 CARLISL3 115	1.0129	0.7449	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	135	"	
10SP	321	SPS	51545 LH-PTRS269.0	0.9876	0.7799	OPEN LINE FROM BUS 51532 [TUC03 115.00] TO BUS 51533 [TUC06 230.00] CKT 1	135	"	
10SP	321	SPS	51543 ALLMON2 69.0	0.9876	0.7799	OPEN LINE FROM BUS 51532 [TUC03 115.00] TO BUS 51533 [TUC06 230.00] CKT 1	135	"	
10SP	321	SPS	51341 PLAINVV269.0	0.9967	0.7675	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	135	"	
10SP	321	SPS	51807 LG-CNTR269.0	1.0203	0.7355	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	136	"	
10SP	321	SPS	51827 LG-DRAW269.0	1.0234	0.7319	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	136	"	
10SP	321	SPS	51557 SP-ACUF269.0	1.0154	0.7430	OPEN LINE FROM BUS 51532 [TUC03 115.00] TO BUS 51533 [TUC06 230.00] CKT 1	136	"	
10SP	321	SPS	51793 GARZA2 69.0	1.0321	0.7207	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	136	"	
10SP	321	SPS	51381 SPRINGL269.0	0.9935	0.7743	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	137	"	
10SP	321	SPS	51801 LG-NH&W269.0	1.0244	0.7331	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	137	"	
10SP	321	SPS	51801 LG-NH&W269.0	1.0246	0.7353	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	138	"	
10SP	321	SPS	51345 WESTRID269.0	0.9820	0.7918	OPEN LINE FROM BUS 51532 [TUC03 115.00] TO BUS 51533 [TUC06 230.00] CKT 1	138	"	
10SP	321	SPS	51553 WHITE&M269.0	0.9896	0.7823	OPEN LINE FROM BUS 51532 [TUC03 115.00] TO BUS 51533 [TUC06 230.00] CKT 1	139	"	
10SP	321	SPS	51365 AIKENT2 69.0	0.9993	0.7702	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	139	"	
10SP	321	SPS	51345 WESTRID269.0	0.9987	0.7714	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	139	"	
10SP	321	SPS	50548 CR-TRIN4 138	1.0347	0.7246	OPEN LINE FROM BUS 50554 [CR-MCDN4138.00] TO BUS 50555 [CR-PHIL4138.00] CKT 1	139	"	
10SP	321	SPS	51675 ACCO2 69.0	1.0367	0.7220	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	139	"	
10SP	321	SPS	51371 LH-CORH269.0	0.9921	0.7805	OPEN LINE FROM BUS 51532 [TUC03 115.00] TO BUS 51533 [TUC06 230.00] CKT 1	140	"	
10SP	321	SPS	51616 STANTN3 115	0.9945	0.7777	OPEN LINE FROM BUS 51532 [TUC03 115.00] TO BUS 51533 [TUC06 230.00] CKT 1	140	"	
10SP	321	SPS	51785 SP-WDRW269.0	1.0226	0.7415	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	140	"	
10SP	321	SPS	51771 SP-POSY269.0	1.0227	0.7415	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	140	"	

Study Case	Transfer Amount (MW)	AREA	Monitored Bus with Violation	BC Voltage (PU)	TC Voltage (PU)	Outaged Branch Causing Voltage Violation	ATC (MW)	Solution	Estimated Cost
10SP	321	SPS	51652 DOUD3 115	1.0122	0.7552	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	140	"	
10SP	321	SPS	51369 LOCKNEY269.0	0.9924	0.7809	OPEN LINE FROM BUS 51532 [TUC03 115.00] TO BUS 51533 [TUC06 230.00] CKT 1	140	"	
10SP	321	SPS	50554 CR-MCDN4 138	1.0373	0.7231	OPEN LINE FROM BUS 50554 [CR-MCDN4138.00] TO BUS 50555 [CR-PHIL4138.00] CKT 1	140	"	
10SP	321	SPS	51661 IVORY 269.0	1.0375	0.7230	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	140	"	
10SP	321	SPS	51807 LG-CNTR269.0	1.0187	0.7491	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	141	"	
10SP	321	SPS	50549 CR-NWSC4 138	1.0403	0.7235	OPEN LINE FROM BUS 50554 [CR-MCDN4138.00] TO BUS 50555 [CR-PHIL4138.00] CKT 1	142	"	
10SP	321	SPS	51827 LG-DRAW269.0	1.0250	0.7431	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	142	"	
10SP	321	SPS	50551 CR-PMBR4 138	1.0408	0.7237	OPEN LINE FROM BUS 50554 [CR-MCDN4138.00] TO BUS 50555 [CR-PHIL4138.00] CKT 1	142	"	
10SP	321	SPS	50545 CR-GRAD4 138	1.0350	0.7310	OPEN LINE FROM BUS 50554 [CR-MCDN4138.00] TO BUS 50555 [CR-PHIL4138.00] CKT 1	143	"	
10SP	321	SPS	51541 SP-BECT269.0	0.9918	0.7852	OPEN LINE FROM BUS 51532 [TUC03 115.00] TO BUS 51533 [TUC06 230.00] CKT 1	143	"	
10SP	321	SPS	51773 SLATON2 69.0	0.9985	0.7768	OPEN LINE FROM BUS 51532 [TUC03 115.00] TO BUS 51533 [TUC06 230.00] CKT 1	143	"	
10SP	321	SPS	51353 EPLNV2 69.0	1.0013	0.7734	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	143	"	
10SP	321	SPS	51383 OL-TON2 69.0	0.9977	0.7799	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	144	"	
10SP	321	SPS	50543 CR-REE04 138	1.0333	0.7382	OPEN LINE FROM BUS 50554 [CR-MCDN4138.00] TO BUS 50555 [CR-PHIL4138.00] CKT 1	144	"	
10SP	321	SPS	50542 CR-LNWL4 138	1.0370	0.7322	OPEN LINE FROM BUS 50554 [CR-MCDN4138.00] TO BUS 50555 [CR-PHIL4138.00] CKT 1	144	"	
10SP	321	SPS	50552 CR-STL4 138	1.0423	0.7258	OPEN LINE FROM BUS 50554 [CR-MCDN4138.00] TO BUS 50555 [CR-PHIL4138.00] CKT 1	144	"	
10SP	321	SPS	51773 SLATON2 69.0	0.9919	0.7876	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	144	"	
10SP	321	SPS	51801 LG-NH&W269.0	1.0262	0.7463	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	145	"	
10SP	321	SPS	50557 CR-STLA4 138	1.0419	0.7273	OPEN LINE FROM BUS 50554 [CR-MCDN4138.00] TO BUS 50555 [CR-PHIL4138.00] CKT 1	145	"	
10SP	321	SPS	51642 INDIANA3 115	0.9971	0.7819	OPEN LINE FROM BUS 51532 [TUC03 115.00] TO BUS 51533 [TUC06 230.00] CKT 1	145	"	
10SP	321	SPS	51589 HENDRIC269.0	1.0219	0.7521	OPEN LINE FROM BUS 51532 [TUC03 115.00] TO BUS 51533 [TUC06 230.00] CKT 1	145	"	
10SP	321	SPS	51567 LH-CROS269.0	1.0220	0.7522	OPEN LINE FROM BUS 51532 [TUC03 115.00] TO BUS 51533 [TUC06 230.00] CKT 1	145	"	
10SP	321	SPS	51613 STANTN2 69.0	1.0002	0.7788	OPEN LINE FROM BUS 51532 [TUC03 115.00] TO BUS 51533 [TUC06 230.00] CKT 1	145	"	
10SP	321	SPS	50538 CR-KOCH4 138	1.0335	0.7396	OPEN LINE FROM BUS 50554 [CR-MCDN4138.00] TO BUS 50555 [CR-PHIL4138.00] CKT 1	146	"	
10SP	321	SPS	51375 LH-SPL2 69.0	0.9639	0.8238	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	146	"	
10SP	321	SPS	51385 LC-OLTN269.0	0.9993	0.7820	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	147	"	
10SP	321	SPS	51555 SP-SHLW269.0	0.9876	0.7965	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	147	"	
10SP	321	SPS	51613 STANTN2 69.0	0.9936	0.7895	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	147	"	
10SP	321	SPS	51786 SP-WDRW3 115	1.0268	0.7504	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	147	"	
10SP	321	SPS	51786 SP-WDRW3 115	1.0256	0.7519	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	147	"	
10SP	321	SPS	51341 PLAINVW269.0	0.9964	0.7870	OPEN LINE FROM BUS 51532 [TUC03 115.00] TO BUS 51533 [TUC06 230.00] CKT 1	148	"	
10SP	321	SPS	50546 CR-LANG4 138	1.0415	0.7341	OPEN LINE FROM BUS 50554 [CR-MCDN4138.00] TO BUS 50555 [CR-PHIL4138.00] CKT 1	148	"	
10SP	321	SPS	50540 CR-BUCH4 138	1.0395	0.7367	OPEN LINE FROM BUS 50554 [CR-MCDN4138.00] TO BUS 50555 [CR-PHIL4138.00] CKT 1	148	"	
10SP	321	SPS	51672 WHEEL0C3 115	1.0115	0.7697	OPEN LINE FROM BUS 51532 [TUC03 115.00] TO BUS 51533 [TUC06 230.00] CKT 1	148	"	
10SP	321	SPS	51786 SP-WDRW3 115	1.0258	0.7534	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	148	"	
10SP	321	SPS	50539 CR-RUSS4 138	1.0376	0.7397	OPEN LINE FROM BUS 50554 [CR-MCDN4138.00] TO BUS 50555 [CR-PHIL4138.00] CKT 1	148	"	
10SP	321	SPS	51827 LG-DRAW269.0	1.0235	0.7565	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	148	"	
10SP	321	SPS	51773 SLATON2 69.0	0.9907	0.7949	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	149	"	
10SP	321	SPS	51539 LH-WI&E269.0	0.9954	0.7898	OPEN LINE FROM BUS 51532 [TUC03 115.00] TO BUS 51533 [TUC06 230.00] CKT 1	149	"	
10SP	321	SPS	50534 CR-VEAL4 138	1.0344	0.7452	OPEN LINE FROM BUS 50554 [CR-MCDN4138.00] TO BUS 50555 [CR-PHIL4138.00] CKT 1	149	"	
10SP	321	SPS	51393 SP-HALF269.0	0.9847	0.8027	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	149	"	
10SP	321	SPS	51664 ALLEN3 115	1.0126	0.7712	OPEN LINE FROM BUS 51532 [TUC03 115.00] TO BUS 51533 [TUC06 230.00] CKT 1	150	"	
10SP	321	SPS	51773 SLATON2 69.0	0.9908	0.7966	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	150	"	
10SP	321	SPS	51801 LG-NH&W269.0	1.0247	0.7595	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	151	"	
10SP	321	SPS	51674 SP-QUAK3 115	1.0107	0.7755	OPEN LINE FROM BUS 51532 [TUC03 115.00] TO BUS 51533 [TUC06 230.00] CKT 1	151	"	
10SP	321	SPS	51786 SP-WDRW3 115	1.0202	0.7651	OPEN LINE FROM BUS 51532 [TUC03 115.00] TO BUS 51533 [TUC06 230.00] CKT 1	151	"	
10SP	321	SPS	51613 STANTN2 69.0	0.9924	0.7885	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	152	"	
10SP	321	SPS	51365 AIKENT2 69.0	0.9990	0.7897	OPEN LINE FROM BUS 51532 [TUC03 115.00] TO BUS 51533 [TUC06 230.00] CKT 1	152	"	
10SP	321	SPS	51543 ALLMON2 69.0	0.9902	0.7898	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	152	"	
10SP	321	SPS	51645 LH-PTRS269.0	0.9902	0.7998	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	152	"	
10SP	321	SPS	51551 SP-NDE2 69.0	0.9973	0.7922	OPEN LINE FROM BUS 51532 [TUC03 115.00] TO BUS 51533 [TUC06 230.00] CKT 1	152	"	
10SP	321	SPS	51803 LYNNCO2 69.0	1.0363	0.7501	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	153	"	
10SP	321	SPS	51613 STANTN2 69.0	0.9925	0.7985	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	153	"	
10SP	321	SPS	51563 CROSBY2 69.0	1.0277	0.7601	OPEN LINE FROM BUS 51532 [TUC03 115.00] TO BUS 51533 [TUC06 230.00] CKT 1	153	"	
10SP	321	SPS	51337 NPLNV2 69.0	0.9553	0.8400	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	154	"	
10SP	321	SPS	51803 LYNNCO2 69.0	1.0364	0.7523	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	154	"	
10SP	321	SPS	51672 WHEEL0C3 115	1.0197	0.7708	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	154	"	
10SP	321	SPS	51672 WHEEL0C3 115	1.0199	0.7722	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	155	"	
10SP	321	SPS	51583 WHITE&M269.0	0.9921	0.8022	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	156	"	
10SP	321	SPS	51353 EPLNV2 69.0	1.0010	0.7928	OPEN LINE FROM BUS 51532 [TUC03 115.00] TO BUS 51533 [TUC06 230.00] CKT 1	156	"	
10SP	321	SPS	51339 WPLNV2 69.0	0.9836	0.8116	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	156	"	
10SP	321	SPS	51393 SP-HALF269.0	1.0087	0.7850	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	156	"	
10SP	321	SPS	51664 ALLEN3 115	1.0208	0.7723	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	156	"	
10SP	321	SPS	51359 COX2 69.0	1.0096	0.7844	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	156	"	
10SP	321	SPS	50534 CR-VEAL4 138	1.0242	0.7693	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	156	"	
10SP	321	SPS	51664 ALLEN3 115	1.0210	0.7737	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	157	"	
10SP	321	SPS	51672 WHEEL0C3 115	1.0198	0.7765	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	158	"	
10SP	321	SPS	51393 SP-HALF269.0	0.9922	0.8049	OPEN LINE FROM BUS 51532 [TUC03 115.00] TO BUS 51533 [TUC06 230.00] CKT 1	158	"	
10SP	321	SPS	51329 BRISCOE269.0	0.9661	0.8318	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	158	"	
10SP	321	SPS	51769 LEWTER2 69.0	1.0084	0.7898	OPEN LINE FROM BUS 51532 [TUC03 115.00] TO BUS 51533 [TUC06 230.00] CKT 1	159	"	
10SP	321	SPS	51674 SP-QUAK3 115	1.0197	0.7788	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	160	"	
10SP	321	SPS	51685 PLANTRS269.0	1.0087	0.7901	OPEN LINE FROM BUS 51532 [TUC03 115.00] TO BUS 51533 [TUC06 230.00] CKT 1	160	"	
10SP	321	SPS	51331 LH-SLVR269.0	0.9667	0.8325	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	160	"	
10SP	321	SPS	51335 LH-PL&M269.0	0.9572	0.8422	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	160	"	

Study Case	Transfer Amount (MW)	AREA	Monitored Bus with Violation	BC Voltage (PU)	TC Voltage (PU)	Outaged Branch Causing Voltage Violation	ATC (MW)	Solution	Estimated Cost
10SP	321	SPS	51664 ALLEN3 115	1.0209	0.7779	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	160	"	
10SP	321	SPS	51541 SP-BECT269.0	0.9943	0.8050	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	160	"	
10SP	321	SPS	51497 SP-ABRN269.0	1.0039	0.7956	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	160	"	
10SP	321	SPS	51674 SP-QUAK3 115	1.0198	0.7802	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	161	"	
10SP	321	SPS	51803 LYNNCO2 69.0	1.0380	0.7630	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	161	"	
10SP	321	SPS	51769 LEWTER2 69.0	1.0019	0.8004	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	162	"	
10SP	321	SPS	51685 PLANTRS269.0	1.0021	0.8006	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	163	"	
10SP	321	SPS	51337 NPLNV2 69.0	0.8859	0.8466	OPEN LINE FROM BUS 51316 [KRESS3 115.00] TO BUS 51320 [SWISHER3115.00] CKT 1	164	"	
10SP	321	SPS	51335 LH-PL&M269.0	0.8880	0.8488	OPEN LINE FROM BUS 51316 [KRESS3 115.00] TO BUS 51320 [SWISHER3115.00] CKT 1	164	"	
10SP	321	SPS	51367 LH-AIKN269.0	1.0192	0.7866	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	165	"	
10SP	321	SPS	50538 CR-KOCH4 138	1.0238	0.7827	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	165	"	
10SP	321	SPS	51691 CLUTTER269.0	1.0116	0.7943	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	165	"	
10SP	321	SPS	51741 AMOCSL6 230	0.9769	0.8275	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	165	"	
10SP	321	SPS	51367 LH-AIKN269.0	1.0193	0.7879	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	166	"	
10SP	321	SPS	50539 CR-RUSS4 138	1.0269	0.7820	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	166	"	
10SP	321	SPS	51495 COUNTL2 69.0	1.0098	0.7980	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	166	"	
10SP	321	SPS	51674 SP-QUAK3 115	1.0195	0.7895	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	167	"	
10SP	321	SPS	51539 LH-WI&E269.0	0.9979	0.8095	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	167	"	
10SP	321	SPS	51501 LH-HALC269.0	1.0055	0.8030	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	167	"	
10SP	321	SPS	51658 MURPHY3 115	1.0128	0.7963	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	167	"	
10SP	321	SPS	51769 LEWTER2 69.0	1.0007	0.8076	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	167	"	
10SP	321	SPS	51499 HALCON2 69.0	1.0056	0.8031	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	167	"	
10SP	321	SPS	51685 PLANTRS269.0	1.0009	0.8078	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	168	"	
10SP	321	SPS	51803 LYNNCO2 69.0	1.0365	0.7759	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	168	"	
10SP	321	SPS	50542 CR-LNWL4 138	1.0257	0.7859	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	168	"	
10SP	321	SPS	51691 CLUTTER269.0	1.0051	0.8047	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	168	"	
10SP	321	SPS	51557 SP-ACUF269.0	1.0123	0.7983	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	168	"	
10SP	321	SPS	51557 SP-ACUF269.0	1.0136	0.7974	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	169	"	
10SP	321	SPS	51769 LEWTER2 69.0	1.0008	0.8092	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	169	"	
10SP	321	SPS	51367 LH-AIKN269.0	1.0201	0.7920	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	169	"	
10SP	321	SPS	51373 LH-LST2 69.0	0.9730	0.8345	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	169	"	
10SP	321	SPS	51685 PLANTRS269.0	1.0010	0.8095	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	169	"	
10SP	321	SPS	51658 MURPHY3 115	1.0097	0.8019	OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	169	"	
10SP	321	SPS	51337 NPLNV2 69.0	0.9592	0.8471	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	169	"	
10SP	321	SPS	51557 SP-ACUF269.0	1.0124	0.7998	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	170	"	
10SP	321	SPS	51551 SP-NDE2 69.0	0.9988	0.8118	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	170	"	
10SP	321	SPS	51359 COX2 69.0	1.0093	0.8035	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	171	"	
10SP	321	SPS	51513 IRICK2 69.0	1.0155	0.7981	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	171	"	
10SP	321	SPS	51741 AMOCSL6 230	0.9827	0.8271	OPEN LINE FROM BUS 51419 [PLANTX6 230.00] TO BUS 51733 [SUNDOWN6230.00] CKT 1	171	"	
10SP	321	SPS	50543 CR-REED4 138	1.0236	0.7930	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	172	"	
10SP	321	SPS	51513 IRICK2 69.0	1.0240	0.7929	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	172	"	
10SP	321	SPS	51375 LH-SPL2 69.0	0.9715	0.8382	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	172	"	
10SP	321	SPS	51625 SP-ERSK3 115	1.0120	0.8038	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	173	"	
10SP	321	SPS	50540 CR-BUCH4 138	1.0283	0.7900	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	173	"	
10SP	321	SPS	51513 IRICK2 69.0	1.0241	0.7941	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	173	"	
10SP	321	SPS	51691 CLUTTER269.0	1.0039	0.8119	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	174	"	
10SP	321	SPS	51625 SP-ERSK3 115	1.0100	0.8068	OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	174	"	
10SP	321	SPS	51646 CARLISL3 115	1.0109	0.8066	OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	174	"	
10SP	321	SPS	51642 INDIANA3 115	1.0077	0.8100	OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	175	"	
10SP	321	SPS	51691 CLUTTER269.0	1.0040	0.8135	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	175	"	
10SP	321	SPS	51335 LH-PL&M269.0	0.9811	0.8493	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	175	"	
10SP	321	SPS	51616 STANTN3 115	1.0087	0.8131	OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	178	"	
10SP	321	SPS	51669 BATTNS2 69.0	1.0266	0.7989	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	178	"	
10SP	321	SPS	51515 BARWISE269.0	1.0280	0.7982	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	179	"	
10SP	321	SPS	51497 SP-ABRN269.0	1.0064	0.8156	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	179	"	
10SP	321	SPS	51646 CARLISL3 115	1.0154	0.8087	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	179	"	
10SP	321	SPS	51569 HENDRIC269.0	1.0188	0.8067	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	180	"	
10SP	321	SPS	51515 BARWISE269.0	1.0282	0.7995	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	180	"	
10SP	321	SPS	51569 HENDRIC269.0	1.0201	0.8058	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	180	"	
10SP	321	SPS	51567 LH-CROS269.0	1.0189	0.8068	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	180	"	
10SP	321	SPS	51567 LH-CROS269.0	1.0202	0.8059	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	180	"	
10SP	321	SPS	51349 SPLNV2 69.0	0.9953	0.8261	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	181	"	
10SP	321	SPS	51569 HENDRIC269.0	1.0189	0.8082	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	181	"	
10SP	321	SPS	51567 LH-CROS269.0	1.0190	0.8084	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	181	"	
10SP	321	SPS	51745 SP-YUMA269.0	1.0166	0.8108	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	182	"	
10SP	321	SPS	51658 MURPHY3 115	1.0237	0.8055	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	182	"	
10SP	321	SPS	51329 BRISCOE269.0	0.9768	0.8416	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	182	"	
10SP	321	SPS	51741 AMOCSL6 230	0.9770	0.8415	OPEN LINE FROM BUS 51741 [AMOCSL6 230.00] TO BUS 51891 [YOAKUM6 230.00] CKT 1	182	"	
10SP	321	SPS	51669 BATTNS2 69.0	1.0255	0.8055	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	183	"	
10SP	321	SPS	51658 MURPHY3 115	1.0240	0.8068	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	183	"	
10SP	321	SPS	50546 CR-LANG4 138	1.0296	0.8027	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	183	"	
10SP	321	SPS	51515 BARWISE269.0	1.0289	0.8035	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	184	"	
10SP	321	SPS	51331 LH-SLVR269.0	0.9774	0.8423	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	184	"	
10SP	321	SPS	51669 BATTNS2 69.0	1.0257	0.8072	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	185	"	

Study Case	Transfer Amount (MW)	AREA	Monitored Bus with Violation	BC Voltage (PU)	TC Voltage (PU)	Outaged Branch Causing Voltage Violation	ATC (MW)	Solution	Estimated Cost
10SP	321	SPS	51527 LH-HARM269.0	1.0238	0.8087	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	185	"	
10SP	321	SPS	50501 MU-FLDY269.0	1.0239	0.8090	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	185	"	
10SP	321	SPS	51652 DOUD3 115	1.0116	0.8181	OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51647 [CARLSL6230.00] CKT 1	185	"	
10SP	321	SPS	51527 LH-HARM269.0	1.0321	0.8036	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	186	"	
10SP	321	SPS	51667 BATTNN2 69.0	0.9895	0.8347	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	186	"	
10SP	321	SPS	50501 MU-FLDY269.0	1.0323	0.8038	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	186	"	
10SP	321	SPS	51495 COUNTL2 69.0	1.0124	0.8183	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	186	"	
10SP	321	SPS	51531 TUCO2 69.0	1.0160	0.8164	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	187	"	
10SP	321	SPS	51527 LH-HARM269.0	1.0322	0.8049	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	187	"	
10SP	321	SPS	51501 LH-HALC269.0	1.0080	0.8223	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	187	"	
10SP	321	SPS	51499 HALECN2 69.0	1.0081	0.8224	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	187	"	
10SP	321	SPS	50501 MU-FLDY269.0	1.0324	0.8051	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	187	"	
10SP	321	SPS	51669 BATTNS2 69.0	1.0253	0.8103	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	187	"	
10SP	321	SPS	51642 INDIANA3 115	1.0210	0.8134	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	187	"	
10SP	321	SPS	51616 STANTN3 115	1.0212	0.8138	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	188	"	
10SP	321	SPS	51642 INDIANA3 115	1.0212	0.8146	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	188	"	
10SP	321	SPS	51652 DOUD3 115	1.0157	0.8187	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	189	"	
10SP	321	SPS	51616 STANTN3 115	1.0214	0.8150	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	189	"	
10SP	321	SPS	51345 WESTRID269.0	0.9991	0.8306	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	189	"	
10SP	321	SPS	51563 CROSBY2 69.0	1.0246	0.8141	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	190	"	
10SP	321	SPS	51563 CROSBY2 69.0	1.0259	0.8132	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRH26230.00] CKT 1	190	"	
10SP	321	SPS	51563 CROSBY2 69.0	1.0247	0.8156	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	191	"	
10SP	321	SPS	51675 ACCO2 69.0	1.0358	0.8110	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRH26230.00] CKT 1	194	"	
10SP	321	SPS	51661 IVORY 269.0	1.0366	0.8120	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRH26230.00] CKT 1	195	"	
10SP	321	SPS	51625 SP-ERSK3 115	1.0259	0.8192	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	195	"	
10SP	321	SPS	51373 LH-LST2 69.0	0.9804	0.8488	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	196	"	
10SP	321	SPS	51339 WPLNV2 69.0	0.9968	0.8385	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	196	"	
10SP	321	SPS	51375 LH-SPL2 69.0	0.9821	0.8480	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	196	"	
10SP	321	SPS	50545 CR-GRAD4 138	1.0228	0.8222	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	197	"	
10SP	321	SPS	51625 SP-ERSK3 115	1.0261	0.8204	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	197	"	
10SP	321	SPS	51646 CARLSL3 115	1.0272	0.8208	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	198	"	
10SP	321	SPS	51371 LH-CDRH269.0	0.9842	0.8479	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	198	"	
10SP	321	SPS	51369 LOCKNEY269.0	0.9845	0.8482	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	199	"	
10SP	321	SPS	51675 ACCO2 69.0	1.0348	0.8175	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	199	"	
10SP	321	SPS	51646 CARLSL3 115	1.0275	0.8220	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	199	"	
10SP	321	SPS	51661 IVORY 269.0	1.0356	0.8184	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	200	"	
10SP	321	SPS	51675 ACCO2 69.0	1.0349	0.8191	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	201	"	
10SP	321	SPS	51661 IVORY 269.0	1.0357	0.8201	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	202	"	
10SP	321	SPS	51675 ACCO2 69.0	1.0345	0.8222	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	203	"	
10SP	321	SPS	50557 CR-STLA4 138	1.0285	0.8258	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	203	"	
10SP	321	SPS	51785 SP-WDRW269.0	1.0291	0.8257	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRH26230.00] CKT 1	204	"	
10SP	321	SPS	51771 SP-POSY269.0	1.0292	0.8257	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRH26230.00] CKT 1	204	"	
10SP	321	SPS	51652 DOUD3 115	1.0261	0.8283	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	205	"	
10SP	321	SPS	51661 IVORY 269.0	1.0353	0.8231	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	205	"	
10SP	321	SPS	51785 SP-WDRW269.0	1.0280	0.8273	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	205	"	
10SP	321	SPS	51771 SP-POSY269.0	1.0280	0.8274	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	205	"	
10SP	321	SPS	51652 DOUD3 115	1.0264	0.8295	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	206	"	
10SP	321	SPS	51785 SP-WDRW269.0	1.0281	0.8292	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	207	"	
10SP	321	SPS	51771 SP-POSY269.0	1.0281	0.8291	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	207	"	
10SP	321	SPS	51531 TUCO2 69.0	1.0185	0.8354	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	208	"	
10SP	321	SPS	51341 PLAINVW269.0	0.9886	0.8535	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	211	"	
10SP	321	SPS	51393 SP-HALF269.0	1.0091	0.8430	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	211	"	
10SP	321	SPS	50500 MU-TUL3 115	0.9905	0.8556	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	215	"	
10SP	321	SPS	51365 AIKENT2 69.0	0.9912	0.8562	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	217	"	
10SP	321	SPS	51785 SP-WDRW269.0	1.0226	0.8418	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	218	"	
10SP	321	SPS	51771 SP-POSY269.0	1.0226	0.8419	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	218	"	
10SP	321	SPS	51373 LH-LST2 69.0	0.9909	0.8583	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	220	"	
10SP	321	SPS	51325 KRESRU2 69.0	1.0070	0.8513	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	221	"	
10SP	321	SPS	50500 MU-TUL3 115	0.9974	0.8563	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	222	"	
10SP	321	SPS	50552 CR-STIL4 138	1.0273	0.8433	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	222	"	
10SP	321	SPS	51353 EPLNV2 69.0	0.9932	0.8588	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	223	"	
10SP	321	SPS	51349 SPLNV2 69.0	1.0084	0.8524	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	223	"	
10SP	321	SPS	51325 KRESRU2 69.0	1.0045	0.8547	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	224	"	
10SP	321	SPS	51741 AMOCSL6 230	0.9876	0.8621	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	224	"	
10SP	321	SPS	51371 LH-CDRH269.0	0.9916	0.8619	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	227	"	
10SP	321	SPS	51741 AMOCSL6 230	0.9885	0.8632	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	227	"	
10SP	321	SPS	50500 MU-TUL3 115	0.9163	0.8880	OPEN LINE FROM BUS 51316 [KRESS3 115.00] TO BUS 51320 [SWISHER3115.00] CKT 1	227	"	
10SP	321	SPS	51369 LOCKNEY269.0	0.9919	0.8622	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	227	"	
10SP	321	SPS	50500 MU-TUL3 115	0.9165	0.8885	OPEN LINE FROM BUS 51320 [SWISHER3115.00] TO BUS 51321 [SWISHER6230.00] CKT 1	229	"	
10SP	321	SPS	50548 CR-TRIN4 138	1.0217	0.8526	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	231	"	
10SP	321	SPS	51345 WESTRID269.0	1.0122	0.8568	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	232	"	
10SP	321	SPS	51291 DS-#122 69.0	0.9778	0.8734	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	239	"	
10SP	321	SPS	51341 PLAINVW269.0	0.9960	0.8674	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	240	"	
10SP	321	SPS	50551 CR-PMBR4 138	1.0257	0.8612	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	245	"	

Study Case	Transfer Amount (MW)	AREA	Monitored Bus with Violation	BC Voltage (PU)	TC Voltage (PU)	Outaged Branch Causing Voltage Violation	ATC (MW)	Solution	Estimated Cost
10SP	321	SPS	51359 COX2 69.0	1.0016	0.8687	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	245	"	
10SP	321	SPS	51319 SW-KRES269.0	1.0173	0.8641	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	246	"	
10SP	321	SPS	51365 AIKENT2 69.0	0.9986	0.8701	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	246	"	
10SP	321	SPS	51291 DS-#122 69.0	0.9659	0.8808	OPEN LINE FROM BUS 51388 [LAMTON3 115.00] TO BUS 51396 [LC-SOL3 115.00] CKT 1	249	"	
10SP	321	SPS	51319 SW-KRES269.0	1.0148	0.8674	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	250	"	
10SP	321	SPS	51371 LH-CDRH269.0	1.0020	0.8713	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	250	"	
10SP	321	SPS	51369 LOCKNEY269.0	1.0022	0.8716	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	251	"	
10SP	321	SPS	51353 EPLNV2 69.0	1.0005	0.8726	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	252	"	
10SP	321	SPS	50549 CR-NWSC4 138	1.0248	0.8670	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	254	"	
10SP	321	SPS	51393 SP-HALF269.0	1.0220	0.8688	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	256	"	
10SP	321	SPS	51341 PLAINVV269.0	1.0062	0.8767	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	263	"	
10SP	321	SPS	51365 AIKENT2 69.0	1.0088	0.8794	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	270	"	
10SP	321	SPS	51353 EPLNV2 69.0	1.0107	0.8819	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	276	"	
10SP	321	SPS	51359 COX2 69.0	1.0088	0.8823	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	276	"	
10SP	321	SPS	50500 MIJ-TULI3 115	0.9952	0.8864	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	281	"	
10SP	321	SPS	51745 SP-YUMA269.0	1.0214	0.8835	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	283	"	
10SP	321	SPS	51745 SP-YUMA269.0	1.0177	0.8845	OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	284	"	
10SP	321	SPS	51396 LC-SOL3 115	0.9832	0.8907	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	289	"	
10SP	321	SPS	51291 DS-#122 69.0	0.9770	0.8919	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	290	"	
10SP	321	SPS	50554 CR-MCDN4 138	1.0204	0.8886	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	293	"	
10SP	321	SPS	51359 COX2 69.0	1.0190	0.8914	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	299	"	
10SP	321	SPS	51745 SP-YUMA269.0	1.0309	0.8917	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	302	"	
10SP	321	SPS	51745 SP-YUMA269.0	1.0312	0.8931	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	305	"	
10SP	321	SPS	51325 KRESRU2 69.0	1.0032	0.8949	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	306	"	
10SP	321	SPS	51293 HART2 130	0.9989	0.8972	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	312	"	
10SP	321	SPS	51041 AMARLS6 230	0.9078	0.8544	OPEN LINE FROM BUS 50915 [NICHOL6 230.00] TO BUS 51041 [AMARLS6 230.00] CKT 1	321	Not a Load Serving Bus	
10SP	321	SPS	51302 HAPPY3 115	0.9869	0.8697	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51302 HAPPY3 115	0.9929	0.8720	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51302 HAPPY3 115	0.9237	0.8977	OPEN LINE FROM BUS 51316 [KRESS3 115.00] TO BUS 51320 [SWISHER3115.00] CKT 1	321	"	
10SP	321	SPS	51302 HAPPY3 115	0.9913	0.8980	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	321	"	
10SP	321	SPS	51302 HAPPY3 115	0.9239	0.8981	OPEN LINE FROM BUS 51320 [SWISHER3115.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51310 TULIAT3 115	0.9909	0.8561	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51310 TULIAT3 115	0.9979	0.8568	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51310 TULIAT3 115	0.9956	0.8869	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	321	"	
10SP	321	SPS	51310 TULIAT3 115	0.9168	0.8885	OPEN LINE FROM BUS 51316 [KRESS3 115.00] TO BUS 51320 [SWISHER3115.00] CKT 1	321	"	
10SP	321	SPS	51310 TULIAT3 115	0.9170	0.8889	OPEN LINE FROM BUS 51320 [SWISHER3115.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51315 KRESS2 69.0	1.0173	0.8641	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51315 KRESS2 69.0	1.0149	0.8674	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51316 KRESS3 115	1.0063	0.8384	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51316 KRESS3 115	0.9983	0.8411	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51316 KRESS3 115	1.0030	0.8739	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	321	"	
10SP	321	SPS	51316 KRESS3 115	0.9093	0.8789	OPEN LINE FROM BUS 51316 [KRESS3 115.00] TO BUS 51320 [SWISHER3115.00] CKT 1	321	"	
10SP	321	SPS	51316 KRESS3 115	1.0121	0.8793	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51320 SWISHER3 115	1.0068	0.8461	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51320 SWISHER3 115	1.0151	0.8469	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51320 SWISHER3 115	0.9995	0.8794	OPEN LINE FROM BUS 51320 [SWISHER3115.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51320 SWISHER3 115	1.0138	0.8858	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	321	"	
10SP	321	SPS	51320 SWISHER3 115	1.0232	0.8913	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51321 SWISHER6 230	0.9326	0.7803	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51321 SWISHER6 230	0.9396	0.7783	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51321 SWISHER6 230	0.9248	0.8190	OPEN LINE FROM BUS 50915 [NICHOL6 230.00] TO BUS 51041 [AMARLS6 230.00] CKT 1	321	"	
10SP	321	SPS	51321 SWISHER6 230	0.9559	0.8291	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51321 SWISHER6 230	0.9482	0.8292	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	321	"	
10SP	321	SPS	51343 PLNVC02 69.0	0.9955	0.7672	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51343 PLNVC02 69.0	0.9712	0.7853	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	321	"	
10SP	321	SPS	51343 PLNVC02 69.0	0.9788	0.7876	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51343 PLNVC02 69.0	0.9959	0.8267	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51343 PLNVC02 69.0	1.0090	0.8530	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51347 PLNWT2 69.0	1.0090	0.7853	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51347 PLNWT2 69.0	0.9851	0.8030	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	321	"	
10SP	321	SPS	51347 PLNWT2 69.0	0.9925	0.8053	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51347 PLNWT2 69.0	1.0094	0.8434	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51347 PLNWT2 69.0	1.0224	0.8691	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51360 COX3 115	0.9682	0.7120	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51360 COX3 115	0.9450	0.7275	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51360 COX3 115	0.9609	0.7808	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	321	"	
10SP	321	SPS	51360 COX3 115	0.9734	0.7920	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51360 COX3 115	0.9827	0.7996	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51366 LH-COX3 115	0.9683	0.7124	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51366 LH-COX3 115	0.9451	0.7280	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51366 LH-COX3 115	0.9609	0.7810	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	321	"	
10SP	321	SPS	51366 LH-COX3 115	0.9735	0.7923	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51366 LH-COX3 115	0.9828	0.7999	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51387 LAMTON2 69.0	0.9996	0.7824	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	321	"	

Study Case	Transfer Amount (MW)	AREA	Monitored Bus with Violation	BC Voltage (PU)	TC Voltage (PU)	Outaged Branch Causing Voltage Violation	ATC (MW)	Solution	Estimated Cost
10SP	321	SPS	51388 LAMTON3 115	0.9048	0.7320	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	321	"	
10SP	321	SPS	51388 LAMTON3 115	0.9744	0.8601	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51388 LAMTON3 115	0.9297	0.8656	OPEN LINE FROM BUS 51388 [LAMTON3 115.00] TO BUS 51396 [LC-SOL3 115.00] CKT 1	321	"	
10SP	321	SPS	51388 LAMTON3 115	0.9661	0.8739	OPEN LINE FROM BUS 51532 [TUOC3 115.00] TO BUS 51533 [TUOC6 230.00] CKT 1	321	"	
10SP	321	SPS	51388 LAMTON3 115	0.9742	0.8936	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51391 CORNER2 69.0	1.0087	0.7850	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51391 CORNER2 69.0	0.9848	0.8027	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	321	"	
10SP	321	SPS	51391 CORNER2 69.0	0.9922	0.8050	OPEN LINE FROM BUS 51532 [TUOC3 115.00] TO BUS 51533 [TUOC6 230.00] CKT 1	321	"	
10SP	321	SPS	51391 CORNER2 69.0	1.0092	0.8430	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51391 CORNER2 69.0	1.0221	0.8688	OPEN LINE FROM BUS 52205 [LEAC06 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51401 HALECO2 69.0	1.0102	0.7870	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51401 HALECO2 69.0	0.9863	0.8046	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	321	"	
10SP	321	SPS	51401 HALECO2 69.0	0.9938	0.8069	OPEN LINE FROM BUS 51532 [TUOC3 115.00] TO BUS 51533 [TUOC6 230.00] CKT 1	321	"	
10SP	321	SPS	51401 HALECO2 69.0	1.0107	0.8449	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51401 HALECO2 69.0	1.0236	0.8708	OPEN LINE FROM BUS 52205 [LEAC06 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51402 HALECO3 115	0.9870	0.8053	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51402 HALECO3 115	0.9667	0.8189	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	321	"	
10SP	321	SPS	51402 HALECO3 115	0.9730	0.8206	OPEN LINE FROM BUS 51532 [TUOC3 115.00] TO BUS 51533 [TUOC6 230.00] CKT 1	321	"	
10SP	321	SPS	51402 HALECO3 115	0.9873	0.8504	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51402 HALECO3 115	0.9983	0.8709	OPEN LINE FROM BUS 52205 [LEAC06 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51517 FLOYD2 69.0	1.0293	0.6941	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51517 FLOYD2 69.0	1.0023	0.7129	OPEN LINE FROM BUS 51532 [TUOC3 115.00] TO BUS 51533 [TUOC6 230.00] CKT 1	321	"	
10SP	321	SPS	51517 FLOYD2 69.0	1.0335	0.8054	OPEN LINE FROM BUS 52205 [LEAC06 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51517 FLOYD2 69.0	1.0336	0.8067	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51517 FLOYD2 69.0	1.0252	0.8105	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51518 FLOYD3 115	0.9800	0.6877	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51518 FLOYD3 115	0.9507	0.7035	OPEN LINE FROM BUS 51532 [TUOC3 115.00] TO BUS 51533 [TUOC6 230.00] CKT 1	321	"	
10SP	321	SPS	51518 FLOYD3 115	0.9950	0.7807	OPEN LINE FROM BUS 52205 [LEAC06 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51518 FLOYD3 115	0.9951	0.7817	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51518 FLOYD3 115	0.9957	0.7851	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"	
10SP	321	SPS	51521 FLYDAT2 69.0	1.0291	0.6938	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51521 FLYDAT2 69.0	1.0021	0.7126	OPEN LINE FROM BUS 51532 [TUOC3 115.00] TO BUS 51533 [TUOC6 230.00] CKT 1	321	"	
10SP	321	SPS	51521 FLYDAT2 69.0	1.0333	0.8051	OPEN LINE FROM BUS 52205 [LEAC06 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51521 FLYDAT2 69.0	1.0334	0.8064	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51521 FLYDAT2 69.0	1.0250	0.8102	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51532 TUOC3 115	0.9717	0.7385	OPEN LINE FROM BUS 51532 [TUOC3 115.00] TO BUS 51533 [TUOC6 230.00] CKT 1	321	"	
10SP	321	SPS	51532 TUOC3 115	1.0174	0.7534	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51532 TUOC3 115	1.0347	0.8338	OPEN LINE FROM BUS 52205 [LEAC06 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51532 TUOC3 115	1.0348	0.8348	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51532 TUOC3 115	1.0279	0.8391	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51534 TUOC7 345	0.9556	0.7478	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51534 TUOC7 345	0.9793	0.8062	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51534 TUOC7 345	0.9868	0.8121	OPEN LINE FROM BUS 52205 [LEAC06 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51534 TUOC7 345	0.9869	0.8127	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51534 TUOC7 345	0.9875	0.8135	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"	
10SP	321	SPS	51559 FLOYD7 115	0.9885	0.7024	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51559 FLOYD7 115	0.9557	0.7116	OPEN LINE FROM BUS 51532 [TUOC3 115.00] TO BUS 51533 [TUOC6 230.00] CKT 1	321	"	
10SP	321	SPS	51559 FLOYD7 115	1.0041	0.7926	OPEN LINE FROM BUS 52205 [LEAC06 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51559 FLOYD7 115	1.0042	0.7937	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51559 FLOYD7 115	0.9967	0.7972	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51564 CROSBY3 115	0.9898	0.6590	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51564 CROSBY3 115	0.9765	0.7092	OPEN LINE FROM BUS 51532 [TUOC3 115.00] TO BUS 51533 [TUOC6 230.00] CKT 1	321	"	
10SP	321	SPS	51564 CROSBY3 115	1.0041	0.7544	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"	
10SP	321	SPS	51564 CROSBY3 115	1.0029	0.7552	OPEN LINE FROM BUS 52205 [LEAC06 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51564 CROSBY3 115	1.0029	0.7565	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51611 SW67872 69.0	0.9850	0.7765	OPEN LINE FROM BUS 51532 [TUOC3 115.00] TO BUS 51533 [TUOC6 230.00] CKT 1	321	"	
10SP	321	SPS	51611 SW67872 69.0	0.9876	0.7966	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51617 SW67862 69.0	1.0029	0.6916	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51617 SW67862 69.0	1.0018	0.7810	OPEN LINE FROM BUS 51532 [TUOC3 115.00] TO BUS 51533 [TUOC6 230.00] CKT 1	321	"	
10SP	321	SPS	51617 SW67862 69.0	0.9953	0.7917	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"	
10SP	321	SPS	51617 SW67862 69.0	0.9941	0.7990	OPEN LINE FROM BUS 52205 [LEAC06 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51617 SW67862 69.0	0.9942	0.8007	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51621 SW67462 69.0	0.9944	0.6787	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51621 SW67462 69.0	0.9933	0.7696	OPEN LINE FROM BUS 51532 [TUOC3 115.00] TO BUS 51533 [TUOC6 230.00] CKT 1	321	"	
10SP	321	SPS	51621 SW67462 69.0	0.9866	0.7805	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"	
10SP	321	SPS	51621 SW67462 69.0	0.9854	0.7879	OPEN LINE FROM BUS 52205 [LEAC06 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51621 SW67462 69.0	0.9855	0.7896	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51631 SP-CRLS269.0	1.0021	0.8496	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51645 CARLISL269.0	1.0020	0.8496	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51647 CARLISL6 230	0.9366	0.6416	OPEN LINE FROM BUS 51533 [TUOC6 230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	321	"	
10SP	321	SPS	51647 CARLISL6 230	0.9379	0.6545	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51647 CARLISL6 230	0.9608	0.7199	OPEN LINE FROM BUS 52205 [LEAC06 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51647 CARLISL6 230	0.9609	0.7208	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51647 CARLISL6 230	0.9556	0.7257	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	

Study Case	Transfer Amount (MW)	AREA	Monitored Bus with Violation	BC Voltage (PU)	TC Voltage (PU)	Outaged Branch Causing Voltage Violation	ATC (MW)	Solution	Estimated Cost
10SP	321	SPS	51655 SW68782 69.0	0.9968	0.8433	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51677 IVORYT 269.0	1.0404	0.7274	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51677 IVORYT 269.0	1.0396	0.8158	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"	
10SP	321	SPS	51677 IVORYT 269.0	1.0386	0.8222	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51677 IVORYT 269.0	1.0387	0.8239	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51677 IVORYT 269.0	1.0383	0.8269	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51679 LUBS2 69.0	1.0420	0.7297	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51679 LUBS2 69.0	1.0412	0.8179	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"	
10SP	321	SPS	51679 LUBS2 69.0	1.0402	0.8243	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51679 LUBS2 69.0	1.0403	0.8260	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51679 LUBS2 69.0	1.0399	0.8290	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51680 LUBS3 115	1.0232	0.6908	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51680 LUBS3 115	1.0345	0.7655	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"	
10SP	321	SPS	51680 LUBS3 115	1.0335	0.7710	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51680 LUBS3 115	1.0338	0.7725	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51680 LUBS3 115	1.0272	0.7751	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51681 LUBS6 230	0.9579	0.6341	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51681 LUBS6 230	0.9870	0.6681	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"	
10SP	321	SPS	51681 LUBS6 230	0.9865	0.6959	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51681 LUBS6 230	0.9866	0.6971	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51681 LUBS6 230	0.9866	0.7088	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	321	"	
10SP	321	SPS	51687 LUBE2 69.0	1.0162	0.7119	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51687 LUBE2 69.0	1.0151	0.7987	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51687 LUBE2 69.0	1.0086	0.8091	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"	
10SP	321	SPS	51687 LUBE2 69.0	1.0074	0.8162	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51687 LUBE2 69.0	1.0075	0.8179	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51688 LUBE3 115	1.0215	0.6912	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51688 LUBE3 115	1.0205	0.7611	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51688 LUBE3 115	1.0326	0.7696	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"	
10SP	321	SPS	51688 LUBE3 115	1.0315	0.7755	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51688 LUBE3 115	1.0315	0.7769	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51689 LUBE6 230	0.9747	0.6096	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	321	"	
10SP	321	SPS	51689 LUBE6 230	0.9584	0.6152	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51689 LUBE6 230	0.9884	0.6609	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"	
10SP	321	SPS	51689 LUBE6 230	0.9885	0.6788	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51689 LUBE6 230	0.9885	0.6800	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51699 JONES6 230	0.9613	0.6333	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51699 JONES6 230	0.9910	0.6769	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"	
10SP	321	SPS	51699 JONES6 230	0.9910	0.6962	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51699 JONES6 230	0.9910	0.6974	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51699 JONES6 230	0.9910	0.7094	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	321	"	
10SP	321	SPS	51733 SUNDOWN6 230	0.9817	0.8159	OPEN LINE FROM BUS 51419 [PLANTX6 230.00] TO BUS 51733 [SUNDOWN6230.00] CKT 1	321	"	
10SP	321	SPS	51733 SUNDOWN6 230	0.9752	0.8169	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51733 SUNDOWN6 230	0.9786	0.8435	OPEN LINE FROM BUS 51741 [AMOC6 230.00] TO BUS 51891 [YOAKUM6 230.00] CKT 1	321	"	
10SP	321	SPS	51733 SUNDOWN6 230	0.9870	0.8530	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51733 SUNDOWN6 230	0.9877	0.8940	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51746 SP-YUMA3 115	1.0136	0.7679	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51746 SP-YUMA3 115	1.0181	0.8308	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51746 SP-YUMA3 115	1.0146	0.8318	OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	321	"	
10SP	321	SPS	51746 SP-YUMA3 115	1.0271	0.8381	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51746 SP-YUMA3 115	1.0274	0.8393	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51762 WOLFRTH3 115	1.0206	0.7984	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51762 WOLFRTH3 115	1.0273	0.8603	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51762 WOLFRTH3 115	1.0334	0.8625	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51762 WOLFRTH3 115	1.0338	0.8637	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51762 WOLFRTH3 115	1.0250	0.8644	OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	321	"	
10SP	321	SPS	51763 WOLFRTH6 230	0.9604	0.6990	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51763 WOLFRTH6 230	0.9827	0.7521	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51763 WOLFRTH6 230	0.9830	0.7532	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51763 WOLFRTH6 230	0.9804	0.7566	OPEN LINE FROM BUS 51419 [PLANTX6 230.00] TO BUS 51733 [SUNDOWN6230.00] CKT 1	321	"	
10SP	321	SPS	51763 WOLFRTH6 230	0.9808	0.7632	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51767 POSEYT2 69.0	1.0066	0.6973	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51767 POSEYT2 69.0	1.0055	0.7860	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51767 POSEYT2 69.0	0.9990	0.7966	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"	
10SP	321	SPS	51767 POSEYT2 69.0	0.9978	0.8038	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51767 POSEYT2 69.0	0.9979	0.8055	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51791 YANCYT2 69.0	1.0102	0.6243	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51791 YANCYT2 69.0	1.0106	0.7088	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51791 YANCYT2 69.0	1.0108	0.7111	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51791 YANCYT2 69.0	1.0124	0.7227	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"	
10SP	321	SPS	51791 YANCYT2 69.0	1.0109	0.7366	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	321	"	
10SP	321	SPS	51804 LYNNCO3 115	1.0150	0.6533	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51804 LYNNCO3 115	1.0213	0.7206	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51804 LYNNCO3 115	1.0215	0.7224	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	

Study Case	Transfer Amount (MW)	AREA	Monitored Bus with Violation	BC Voltage (PU)	TC Voltage (PU)	Outaged Branch Causing Voltage Violation	ATC (MW)	Solution	Estimated Cost	
10SP	321	SPS	51804 LYNNCO3 115	1.0229	0.7315	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"		
10SP	321	SPS	51804 LYNNCO3 115	1.0215	0.7426	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	321	"		
10SP	321	SPS	51810 GRASSLN3 115	1.0213	0.6632	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"		
10SP	321	SPS	51810 GRASSLN3 115	1.0262	0.7227	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"		
10SP	321	SPS	51810 GRASSLN3 115	1.0264	0.7246	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"		
10SP	321	SPS	51810 GRASSLN3 115	1.0280	0.7384	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"		
10SP	321	SPS	51810 GRASSLN3 115	1.0265	0.7455	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	321	"		
10SP	321	SPS	51811 GRASSLN6 230	0.9609	0.6323	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"		
10SP	321	SPS	51811 GRASSLN6 230	0.9901	0.6881	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"		
10SP	321	SPS	51811 GRASSLN6 230	0.9902	0.6966	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"		
10SP	321	SPS	51811 GRASSLN6 230	0.9902	0.6767	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	321	"		
10SP	321	SPS	51811 GRASSLN6 230	0.9908	0.6803	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"		
10SP	321	SPS	51815 GRAHAM2 69.0	1.0338	0.6089	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"		
10SP	321	SPS	51815 GRAHAM2 69.0	1.0326	0.6902	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"		
10SP	321	SPS	51815 GRAHAM2 69.0	1.0328	0.6928	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"		
10SP	321	SPS	51815 GRAHAM2 69.0	1.0347	0.7129	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"		
10SP	321	SPS	51815 GRAHAM2 69.0	1.0329	0.7230	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	321	"		
10SP	321	SPS	51816 GRAHAM3 115	1.0095	0.6247	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"		
10SP	321	SPS	51816 GRAHAM3 115	1.0145	0.6896	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"		
10SP	321	SPS	51816 GRAHAM3 115	1.0146	0.6917	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"		
10SP	321	SPS	51816 GRAHAM3 115	1.0163	0.7072	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"		
10SP	321	SPS	51816 GRAHAM3 115	1.0147	0.7151	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	321	"		
10SP	321	SPS	51825 BG-YNT2 69.0	1.0093	0.6226	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"		
10SP	321	SPS	51825 BG-YNT2 69.0	1.0097	0.7073	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"		
10SP	321	SPS	51825 BG-YNT2 69.0	1.0099	0.7096	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"		
10SP	321	SPS	51825 BG-YNT2 69.0	1.0115	0.7212	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"		
10SP	321	SPS	51825 BG-YNT2 69.0	1.0099	0.7351	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	321	"		
10SP	321	SPS	51830 TERRYC3 115	1.0099	0.8966	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"		
10SP	321	SPS	51857 BG-JST2 69.0	1.0294	0.5981	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"		
10SP	321	SPS	51857 BG-JST2 69.0	1.0283	0.6806	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"		
10SP	321	SPS	51857 BG-JST2 69.0	1.0284	0.6833	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"		
10SP	321	SPS	51857 BG-JST2 69.0	1.0304	0.7038	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"		
10SP	321	SPS	51857 BG-JST2 69.0	1.0285	0.7141	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	321	"		
10SP	321	SPS	51861 BORDEN6 230	0.9931	0.6205	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"		
10SP	321	SPS	51861 BORDEN6 230	0.9936	0.6222	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"		
10SP	321	SPS	51861 BORDEN6 230	0.9933	0.6459	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	321	"		
10SP	321	SPS	51861 BORDEN6 230	0.9651	0.6616	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"		
10SP	321	SPS	51861 BORDEN6 230	0.9952	0.6875	OPEN LINE FROM BUS 50554 [CR-MCDNA138.00] TO BUS 50555 [CR-PHIL4138.00] CKT 1	321	"		
10SP	321	SPS	52036 DOSS3 115	1.0059	0.8751	OPEN LINE FROM BUS 51996 [AMERADA3115.00] TO BUS 52036 [DOSS3 115.00] CKT 1	321	"		
10SP	321	SPS	52231 MIDLND-6 230	1.1503	0.5545	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"		
10SP	321		Contingency Not Converged			OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	N/A	Contingency Converged with Selected Upgrades, No Limitations Identified		
10SP	321		Contingency Not Converged			OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	N/A	"		
10SP	321		Contingency Not Converged			OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	N/A	"		
10SP	321		Contingency Not Converged			OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	N/A	"		
10SP	321		Contingency Not Converged			OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	N/A	"		
10SP	321		Contingency Not Converged			OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51689 [JONES6 230.00] CKT 1	N/A	"		
10SP	321		Contingency Not Converged			OPEN LINE FROM BUS 50524 [LP-WADS269.000] TO BUS 50527 [LP-WADS6230.00] CKT 1	N/A	"		
10SP	321		Contingency Not Converged			OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	N/A	"		
10SP	321		Contingency Not Converged			OPEN LINE FROM BUS 51435 [TOLK6 230.00] TO BUS 51533 [TUOC6 230.00] CKT 1	N/A	"		
10SP	321		Contingency Not Converged			OPEN LINE FROM BUS 51533 [TUOC6 230.00] TO BUS 51534 [TUOC7 345.00] CKT 1	N/A	"		
10SP	321		Contingency Not Converged			OPEN LINE FROM BUS 51733 [SUNDOWN6230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	N/A	"		
10SP	321		Contingency Not Converged			OPEN LINE FROM BUS 54119 [O.K.U.-7345.00] TO BUS 51534 [TUOC7 345.00] CKT 1	N/A	"		
10SP	321		Contingency Not Converged			REMOVE UNIT 1 FROM BUS 51441 [TOLK1 124.000] DISPATCH	N/A	"		
10SP	321		Contingency Not Converged			REMOVE UNIT 1 FROM BUS 51442 [TOLK2 124.000] DISPATCH	N/A	"		
10SP	321		Contingency Not Converged			REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	N/A	"		
10WP	189	SPS	51689 LUBE6 230	0.9926	0.8941	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51689 [JONES6 230.00] CKT 1	189	Not a Load Serving Bus		
									Total Estimated Engineering and Construction Cost	\$0
10SP*	321	SPS	51533 TUOC6 230	1.0009	0.7708	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	106	Specific Monitored Bus Voltage 0.925 for Stability Limit, Assuming a 0.95 PF at the SPS and LP&L ties, Solution is to add +150/-50 SVC on 230 kV bus at TUOC	\$11,700,000	
10SP*	321	SPS	51629 VICKER2 69.0	0.969	0.7663	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	109	Relieved or Impact Removed by Selected Upgrades		
10SP*	321	SPS	51775 SP-SLAT269.0	1.0055	0.6961	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	109			
10SP*	321	SPS	51627 SP-IDAL269.0	0.9702	0.7678	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	111			
10SP*	321	SPS	51777 SOUTHNL269.0	1.0082	0.6999	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	113			
10SP*	321	SPS	51779 LG-HCKB269.0	1.0113	0.7045	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	116			
10SP*	321	SPS	51853 BG-JUST269.0	1.0062	0.7273	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	122			
10SP*	321	SPS	51851 BG-GARZ269.0	1.008	0.73	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	125			
10SP*	321	SPS	51855 BG-FLUV269.0	1.0221	0.7185	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	129			
10SP*	321	SPS	51819 YANCY2 69.0	1.0114	0.7357	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	130			
10SP*	321	SPS	51799 LG-NWM2 69.0	1.0113	0.7396	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	131			
10SP*	321	SPS	51775 SP-SLAT269.0	1.0073	0.7502	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTH6 230 CKT1	134			

Study Case	Transfer Amount (MW)	AREA	Monitored Bus with Violation	BC Voltage (PU)	TC Voltage (PU)	Outaged Branch Causing Voltage Violation	ATC (MW)	Solution	Estimated Cost
10SP*	321	SPS	51759 LG-TWD2 69.0	1.0256	0.7259	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	135	"	
10SP*	321	SPS	51783 DIEKEMP269.0	1.0258	0.7261	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	135	"	
10SP*	321	SPS	51623 SP-HETL269.0	0.9835	0.7848	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	135	"	
10SP*	321	SPS	51525 LH-FLYD269.0	0.9903	0.7784	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	137	"	
10SP*	321	SPS	51523 SFLOYD2 69.0	0.9906	0.7788	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	137	"	
10SP*	321	SPS	51777 SOUTHLN269.0	1.0099	0.7537	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRT6 230 CKT1	138	"	
10SP*	321	SPS	51629 VICKER2 69.0	0.9660	0.8122	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRT6 230 CKT1	138	"	
10SP*	321	SPS	51793 GARZA2 69.0	1.0289	0.7298	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	138	"	
10SP*	321	SPS	51533 TUCO6 230	1.0149	0.8081	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRT6 230 CKT1	140	"	
10SP*	321	SPS	51627 SP-IDAL269.0	0.9673	0.8137	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRT6 230 CKT1	141	"	
10SP*	321	SPS	51779 LG-HCKB269.0	1.0130	0.7580	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRT6 230 CKT1	142	"	
10SP*	321	SPS	51807 LG-CNTR269.0	1.0206	0.7503	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	143	"	
10SP*	321	SPS	51853 BG-JUST269.0	1.0021	0.7736	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRT6 230 CKT1	143	"	
10SP*	321	SPS	51786 SP-WDRW3 115	1.0183	0.7582	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	146	"	
10SP*	321	SPS	51851 BG-GARZ269.0	1.0038	0.7781	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRT6 230 CKT1	146	"	
10SP*	321	SPS	51672 WHEELC3 115	1.0117	0.771	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	149	"	
10SP*	321	SPS	51827 LG-DRAW269.0	1.0254	0.7578	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	150	"	
10SP*	321	SPS	51864 ALLEN3 115	1.0128	0.7725	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	151	"	
10SP*	321	SPS	51773 SLATON2 69.0	0.9924	0.7963	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	151	"	
10SP*	321	SPS	51819 YANCY2 69.0	1.0073	0.7813	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRT6 230 CKT1	152	"	
10SP*	321	SPS	51801 LG-NH&W269.0	1.0265	0.7807	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	153	"	
10SP*	321	SPS	51674 SP-QUAK3 115	1.0118	0.7785	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	154	"	
10SP*	321	SPS	51613 STANTN2 69.0	0.994	0.7982	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	154	"	
10SP*	321	SPS	51799 LG-NWM2 69.0	1.0072	0.7843	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRT6 230 CKT1	154	"	
10SP*	321	SPS	51855 BG-FLUV269.0	1.0238	0.7712	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRT6 230 CKT1	157	"	
10SP*	321	SPS	51617 SW67862 69.0	0.9957	0.8004	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	157	"	
10SP*	321	SPS	51759 LG-TWD2 69.0	1.0273	0.7777	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRT6 230 CKT1	164	"	
10SP*	321	SPS	51783 DIEKEMP269.0	1.0274	0.7779	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRT6 230 CKT1	164	"	
10SP*	321	SPS	51793 GARZA2 69.0	1.0306	0.7815	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRT6 230 CKT1	168	"	
10SP*	321	SPS	51807 LG-CNTR269.0	1.0166	0.7947	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRT6 230 CKT1	169	"	
10SP*	321	SPS	51769 LEWTER2 69.0	1.0023	0.8089	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	170	"	
10SP*	321	SPS	51786 SP-WDRW3 115	1.0224	0.7910	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRT6 230 CKT1	170	"	
10SP*	321	SPS	51803 LYNNCO2 69.0	1.0384	0.7771	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	170	"	
10SP*	321	SPS	51685 PLANTRS269.0	1.0026	0.8092	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	170	"	
10SP*	321	SPS	51623 SP-HETL269.0	0.9806	0.8297	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRT6 230 CKT1	171	"	
10SP*	321	SPS	51367 LH-AIKN269.0	1.0115	0.8059	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	174	"	
10SP*	321	SPS	51672 WHEELC3 115	1.0175	0.8010	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRT6 230 CKT1	174	"	
10SP*	321	SPS	51658 MURPHY3 115	1.0163	0.8041	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	176	"	
10SP*	321	SPS	51557 SP-ACUF269.0	1.0132	0.8068	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	176	"	
10SP*	321	SPS	51664 ALLEN3 115	1.0186	0.8024	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRT6 230 CKT1	176	"	
10SP*	321	SPS	51691 CLUTTER269.0	1.0056	0.8133	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	176	"	
10SP*	321	SPS	51827 LG-DRAW269.0	1.0214	0.8015	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRT6 230 CKT1	177	"	
10SP*	321	SPS	51669 BATTNS2 69.0	1.0168	0.8068	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	179	"	
10SP*	321	SPS	51642 INDIANA3 115	1.0079	0.8154	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	180	"	
10SP*	321	SPS	51801 LG-NH&W269.0	1.0228	0.8042	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRT6 230 CKT1	180	"	
10SP*	321	SPS	51616 STANTN3 115	1.0068	0.8167	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	180	"	
10SP*	321	SPS	51674 SP-QUAK3 115	1.0181	0.8078	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRT6 230 CKT1	180	"	
10SP*	321	SPS	51525 LH-FLYD269.0	0.9905	0.8309	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRT6 230 CKT1	182	"	
10SP*	321	SPS	51513 IRICK2 69.0	1.0163	0.812	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	183	"	
10SP*	321	SPS	51523 SFLOYD2 69.0	0.9908	0.8313	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRT6 230 CKT1	183	"	
10SP*	321	SPS	51569 HENDRIC269.0	1.0197	0.8151	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	188	"	
10SP*	321	SPS	51567 LH-CROS269.0	1.0198	0.8152	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	188	"	
10SP*	321	SPS	51625 SP-ERSK3 115	1.0179	0.8181	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	189	"	
10SP*	321	SPS	51515 BARWISE269.0	1.0204	0.8172	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	190	"	
10SP*	321	SPS	51646 CARLISL3 115	1.0202	0.8191	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	192	"	
10SP*	321	SPS	51773 SLATON2 69.0	0.9895	0.8405	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRT6 230 CKT1	193	"	
10SP*	321	SPS	51675 ACCO2 69.0	1.0261	0.8187	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	195	"	
10SP*	321	SPS	51661 IVORY 269.0	1.0269	0.8197	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	197	"	
10SP*	321	SPS	51613 STANTN2 69.0	0.9912	0.8423	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRT6 230 CKT1	197	"	
10SP*	321	SPS	51527 LH-HARM269.0	1.0245	0.8224	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	198	"	
10SP*	321	SPS	50501 MU-FLDY269.0	1.0247	0.8226	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	198	"	
10SP*	321	SPS	51563 CROSBY2 69.0	1.0255	0.8224	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	198	"	
10SP*	321	SPS	51652 DODD3 115	1.0195	0.8262	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	198	"	
10SP*	321	SPS	51533 TUCO6 230	1.0151	0.8706	OPEN LINE FROM BUS 50521 LP-HOLL6 230 TO BUS 51699 JONES6 230 CKT1	200	"	
10SP*	321	SPS	51533 TUCO6 230	1.0151	0.8709	OPEN LINE FROM BUS 50520 LP-HOLL269.0 TO BUS 50521 LP-HOLL6 230 CKT1	201	"	
10SP*	321	SPS	51803 LYNNCO2 69.0	1.0345	0.8196	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRT6 230 CKT1	201	"	
10SP*	321	SPS	51533 TUCO6 230	1.0155	0.8735	OPEN LINE FROM BUS 50527 LP-WAD56 230 TO BUS 51689 LUB6E 230 CKT1	205	"	
10SP*	321	SPS	51658 MURPHY3 115	1.0239	0.8311	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRT6 230 CKT1	206	"	
10SP*	321	SPS	51785 SP-WDRW269.0	1.0206	0.8343	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	208	"	
10SP*	321	SPS	51741 AMOCSL6 230	0.985	0.8537	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	208	"	
10SP*	321	SPS	51771 SP-POSY269.0	1.0207	0.8343	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	208	"	
10SP*	321	SPS	50534 CR-VEAL4 138	1.03	0.8305	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	209	"	
10SP*	321	SPS	51329 BRISCOE269.0	0.9662	0.8653	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	211	"	
10SP*	321	SPS	51331 LH-SLVR269.0	0.9668	0.866	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	213	"	

Study Case	Transfer Amount (MW)	AREA	Monitored Bus with Violation	BC Voltage (PU)	TC Voltage (PU)	Outaged Branch Causing Voltage Violation	ATC (MW)	Solution	Estimated Cost
10SP*	321	SPS	51769 LEWTER2 69.0	0.9995	0.8524	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	217	"	
10SP*	321	SPS	51685 PLANTRS269.0	0.9997	0.8527	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	218	"	
10SP*	321	SPS	51642 INDIANA3 115	1.0167	0.8448	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	218	"	
10SP*	321	SPS	51669 BATTNS2 69.0	1.0217	0.8437	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	219	"	
10SP*	321	SPS	51616 STANTN3 115	1.0156	0.8469	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	220	"	
10SP*	321	SPS	50538 CR-KOCH4 138	1.0289	0.8419	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	221	"	
10SP*	321	SPS	51625 SP-ERSK3 115	1.0260	0.8443	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	223	"	
10SP*	321	SPS	50539 CR-RUSS4 138	1.0323	0.8422	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	223	"	
10SP*	321	SPS	51646 CARLISL3 115	1.0283	0.8446	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	224	"	
10SP*	321	SPS	51691 CLUTTER269.0	1.0028	0.8564	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	225	"	
10SP*	321	SPS	51652 DOUD3 115	1.0269	0.8471	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	227	"	
10SP*	321	SPS	50542 CR-LNWL4 138	1.0309	0.8459	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	227	"	
10SP*	321	SPS	51375 LH-SPL2 69.0	0.9716	0.8714	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	229	"	
10SP*	321	SPS	51367 LH-AIKV269.0	1.0117	0.8565	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	231	"	
10SP*	321	SPS	50543 CR-REED4 138	1.0282	0.8607	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	232	"	
10SP*	321	SPS	51557 SP-ACUF269.0	1.0142	0.8667	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	233	"	
10SP*	321	SPS	50540 CR-BUCH4 138	1.0334	0.8496	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	233	"	
10SP*	321	SPS	51875 ACCO2 69.0	1.0310	0.8551	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	239	"	
10SP*	321	SPS	51661 IVORY 269.0	1.0318	0.8560	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	241	"	
10SP*	321	SPS	51513 IRICK2 69.0	1.0165	0.8622	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	242	"	
10SP*	321	SPS	50534 CR-VEAL4 138	1.0339	0.8596	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	247	"	
10SP*	321	SPS	51569 HENDRIC269.0	1.0207	0.8645	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	248	"	
10SP*	321	SPS	51567 LH-CROS269.0	1.0208	0.8646	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	248	"	
10SP*	321	SPS	50546 CR-LANG4 138	1.0343	0.8608	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	248	"	
10SP*	321	SPS	51515 BARWISE269.0	1.0206	0.8671	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	252	"	
10SP*	321	SPS	51785 SP-WDRW269.0	1.0247	0.8704	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	259	"	
10SP*	321	SPS	51771 SP-POSY269.0	1.0248	0.8705	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	260	"	
10SP*	321	SPS	51373 LH-LST2 69.0	0.9805	0.8815	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	261	"	
10SP*	321	SPS	51563 CROSBY2 69.0	1.0265	0.8714	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	262	"	
10SP*	321	SPS	51527 LH-HARM269.0	1.0248	0.8720	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	262	"	
10SP*	321	SPS	50501 MU-FLDY269.0	1.0249	0.8722	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	263	"	
10SP*	321	SPS	50538 CR-KOCH4 138	1.0324	0.8707	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	263	"	
10SP*	321	SPS	50539 CR-RUSS4 138	1.0360	0.8715	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	265	"	
10SP*	321	SPS	50545 CR-GRAD4 138	1.0266	0.8758	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	269	"	
10SP*	321	SPS	50542 CR-LNWL4 138	1.0346	0.8755	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	272	"	
10SP*	321	SPS	50543 CR-REED4 138	1.0315	0.8793	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	277	"	
10SP*	321	SPS	50540 CR-BUCH4 138	1.0371	0.8789	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	278	"	
10SP*	321	SPS	50557 CR-STLA4 138	1.0324	0.8807	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	280	"	
10SP*	321	SPS	51745 SP-YUMA269.0	1.0244	0.8887	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	294	"	
10SP*	321	SPS	50546 CR-LANG4 138	1.0379	0.8901	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	299	"	
10SP*	321	SPS	51371 LH-CDRH269.0	0.9917	0.8941	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	302	"	
10SP*	321	SPS	51369 LOCKNEY269.0	0.992	0.8944	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	303	"	
10SP*	321	SPS	50552 CR-STIL4 138	1.0307	0.8955	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	310	"	
10SP*	321	SPS	51337 NPLNV2 69.0	0.9551	0.8995	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	318	"	
10SP*	321	SPS	51341 PLAINV269.0	0.9961	0.8992	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	318	"	
10SP*	321	SPS	51786 SP-WDRW3 115	1.0229	0.8997	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 51647 CARLISL6 230 CKT1	320	"	
10SP*	321	SPS	51786 SP-WDRW3 115	1.0230	0.8997	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 50503 LP-MLWK269.0 CKT1	320	"	
10SP*	321	SPS	51321 SWISHER6 230	0.9986	0.8314	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	Not a Load Serving Bus	
10SP*	321	SPS	51321 SWISHER6 230	1.0099	0.8642	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	321	"	
10SP*	321	SPS	51360 COX3 115	0.9676	0.818	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51360 COX3 115	0.9765	0.8583	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	321	"	
10SP*	321	SPS	51366 LH-COX3 115	0.9677	0.8183	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51366 LH-COX3 115	0.9766	0.8586	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	321	"	
10SP*	321	SPS	51402 HALECO3 115	0.9908	0.8904	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51517 FLOYD2 69.0	1.026	0.8242	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51517 FLOYD2 69.0	1.0262	0.8737	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	321	"	
10SP*	321	SPS	51518 FLOYD3 115	0.9742	0.7966	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51518 FLOYD3 115	0.9827	0.8389	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	321	"	
10SP*	321	SPS	51521 FLYDAT2 69.0	1.0257	0.8239	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51521 FLYDAT2 69.0	1.0259	0.8734	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	321	"	
10SP*	321	SPS	51532 TUCO3 115	1.0039	0.8513	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51532 TUCO3 115	1.0143	0.8906	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	321	"	
10SP*	321	SPS	51534 TUCO7 345	0.997	0.7821	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51534 TUCO7 345	1.0204	0.8301	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	321	"	
10SP*	321	SPS	51534 TUCO7 345	1.0206	0.8883	OPEN LINE FROM BUS 50521 LP-HOLL6 230 TO BUS 51699 JONES6 230 CKT1	321	"	
10SP*	321	SPS	51534 TUCO7 345	1.0206	0.8886	OPEN LINE FROM BUS 50520 LP-HOLL269.0 TO BUS 50521 LP-HOLL6 230 CKT1	321	"	
10SP*	321	SPS	51534 TUCO7 345	1.0210	0.8908	OPEN LINE FROM BUS 50527 LP-WADS6 230 TO BUS 51689 LUBE6 230 CKT1	321	"	
10SP*	321	SPS	51559 FLOYDT3 115	0.9808	0.8088	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51559 FLOYDT3 115	0.9898	0.8505	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	321	"	
10SP*	321	SPS	51564 CROSBY3 115	0.986	0.7623	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51564 CROSBY3 115	0.9928	0.8045	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	321	"	
10SP*	321	SPS	51617 SW67862 69.0	0.9929	0.8444	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	321	"	
10SP*	321	SPS	51621 SW67462 69.0	0.9871	0.7893	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51621 SW67462 69.0	0.9842	0.8340	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	321	"	

Study Case	Transfer Amount (MW)	AREA	Monitored Bus with Violation	BC Voltage (PU)	TC Voltage (PU)	Outaged Branch Causing Voltage Violation	ATC (MW)	Solution	Estimated Cost
10SP*	321	SPS	51647 CARLISL6 230	0.9786	0.7098	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51647 CARLISL6 230	0.9913	0.7441	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	321	"	
10SP*	321	SPS	51647 CARLISL6 230	0.9915	0.8060	OPEN LINE FROM BUS 50521 LP-HOLL6 230 TO BUS 51699 JONES6 230 CKT1	321	"	
10SP*	321	SPS	51647 CARLISL6 230	0.9915	0.8064	OPEN LINE FROM BUS 50520 LP-HOLL269.0 TO BUS 50521 LP-HOLL6 230 CKT1	321	"	
10SP*	321	SPS	51647 CARLISL6 230	0.9930	0.8096	OPEN LINE FROM BUS 50527 LP-WADS6 230 TO BUS 51689 LUB6E 230 CKT1	321	"	
10SP*	321	SPS	51677 IVORYT 269.0	1.0299	0.8235	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51677 IVORYT 269.0	1.0347	0.8997	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	321	"	
10SP*	321	SPS	51679 LUBS2 69.0	1.0315	0.8256	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51679 LUBS2 69.0	1.0364	0.8616	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	321	"	
10SP*	321	SPS	51680 LUBS3 115	1.0252	0.7721	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51680 LUBS3 115	1.0299	0.8033	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	321	"	
10SP*	321	SPS	51681 LUBS6 230	0.9825	0.6922	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51681 LUBS6 230	0.9859	0.7095	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	321	"	
10SP*	321	SPS	51681 LUBS6 230	0.9863	0.7963	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 50509 LP-MLWK269.0 CKT1	321	"	
10SP*	321	SPS	51681 LUBS6 230	0.9861	0.7963	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 51647 CARLISL6 230 CKT1	321	"	
10SP*	321	SPS	51681 LUBS6 230	0.9863	0.8087	OPEN LINE FROM BUS 50521 LP-HOLL6 230 TO BUS 51699 JONES6 230 CKT1	321	"	
10SP*	321	SPS	51687 LUBE2 69.0	1.0091	0.8176	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51687 LUBE2 69.0	1.0063	0.8605	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	321	"	
10SP*	321	SPS	51688 LUBE3 115	1.0208	0.7766	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51688 LUBE3 115	1.0242	0.8124	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	321	"	
10SP*	321	SPS	51689 LUBE6 230	0.9825	0.6759	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51689 LUBE6 230	0.9880	0.7012	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	321	"	
10SP*	321	SPS	51689 LUBE6 230	0.9878	0.7812	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 50509 LP-MLWK269.0 CKT1	321	"	
10SP*	321	SPS	51689 LUBE6 230	0.9880	0.7812	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 51647 CARLISL6 230 CKT1	321	"	
10SP*	321	SPS	51689 LUBE6 230	0.9879	0.7925	OPEN LINE FROM BUS 50521 LP-HOLL6 230 TO BUS 51699 JONES6 230 CKT1	321	"	
10SP*	321	SPS	51699 JONES6 230	0.9869	0.6918	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51699 JONES6 230	0.9910	0.7168	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	321	"	
10SP*	321	SPS	51699 JONES6 230	0.9910	0.7995	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 50509 LP-MLWK269.0 CKT1	321	"	
10SP*	321	SPS	51699 JONES6 230	0.9910	0.7995	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 51647 CARLISL6 230 CKT1	321	"	
10SP*	321	SPS	51699 JONES6 230	0.9910	0.8155	OPEN LINE FROM BUS 50521 LP-HOLL6 230 TO BUS 51699 JONES6 230 CKT1	321	"	
10SP*	321	SPS	51733 SUNDOWN6 230	0.984	0.8443	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51746 SP-YUMA3 115	1.0209	0.8354	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51746 SP-YUMA3 115	1.0277	0.8520	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	321	"	
10SP*	321	SPS	51762 WOLFRTHE 230	1.0278	0.8585	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51762 WOLFRTHE 230	1.0335	0.8669	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	321	"	
10SP*	321	SPS	51763 WOLFRTHE 230	0.9796	0.7183	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	321	"	
10SP*	321	SPS	51763 WOLFRTHE 230	0.9791	0.7471	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51763 WOLFRTHE 230	0.9828	0.8347	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 50509 LP-MLWK269.0 CKT1	321	"	
10SP*	321	SPS	51763 WOLFRTHE 230	0.9827	0.8347	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 51647 CARLISL6 230 CKT1	321	"	
10SP*	321	SPS	51763 WOLFRTHE 230	0.9828	0.8410	OPEN LINE FROM BUS 50521 LP-HOLL6 230 TO BUS 51699 JONES6 230 CKT1	321	"	
10SP*	321	SPS	51767 POSEYT2 69.0	0.9994	0.8052	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51767 POSEYT2 69.0	0.9966	0.8489	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	321	"	
10SP*	321	SPS	51791 YANCYT2 69.0	1.0128	0.7378	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51791 YANCYT2 69.0	1.0087	0.7832	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	321	"	
10SP*	321	SPS	51804 LYNNCO3 115	1.0173	0.7435	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51804 LYNNCO3 115	1.0196	0.7801	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	321	"	
10SP*	321	SPS	51804 LYNNCO3 115	1.0199	0.8930	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 51647 CARLISL6 230 CKT1	321	"	
10SP*	321	SPS	51804 LYNNCO3 115	1.0199	0.8931	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 50509 LP-MLWK269.0 CKT1	321	"	
10SP*	321	SPS	51810 GRASSLN3 115	1.0237	0.7817	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51810 GRASSLN3 115	1.0252	0.7883	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	321	"	
10SP*	321	SPS	51810 GRASSLN3 115	1.0254	0.8994	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 51647 CARLISL6 230 CKT1	321	"	
10SP*	321	SPS	51810 GRASSLN3 115	1.0254	0.8995	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 50509 LP-MLWK269.0 CKT1	321	"	
10SP*	321	SPS	51811 GRASSLN6 230	0.986	0.6946	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51811 GRASSLN6 230	0.9902	0.7211	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	321	"	
10SP*	321	SPS	51811 GRASSLN6 230	0.9903	0.8033	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 51647 CARLISL6 230 CKT1	321	"	
10SP*	321	SPS	51811 GRASSLN6 230	0.9903	0.8033	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 50509 LP-MLWK269.0 CKT1	321	"	
10SP*	321	SPS	51811 GRASSLN6 230	0.9903	0.8172	OPEN LINE FROM BUS 50521 LP-HOLL6 230 TO BUS 51699 JONES6 230 CKT1	321	"	
10SP*	321	SPS	51815 GRAHAM2 69.0	1.0298	0.7321	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51815 GRAHAM2 69.0	1.0314	0.7834	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	321	"	
10SP*	321	SPS	51816 GRAHAM3 115	1.0119	0.7221	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51816 GRAHAM3 115	1.0134	0.7626	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	321	"	
10SP*	321	SPS	51816 GRAHAM3 115	1.0136	0.8823	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 51647 CARLISL6 230 CKT1	321	"	
10SP*	321	SPS	51816 GRAHAM3 115	1.0136	0.8823	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 50509 LP-MLWK269.0 CKT1	321	"	
10SP*	321	SPS	51816 GRAHAM3 115	1.0136	0.8955	OPEN LINE FROM BUS 50521 LP-HOLL6 230 TO BUS 51699 JONES6 230 CKT1	321	"	
10SP*	321	SPS	51825 BG-YNT2 69.0	1.0119	0.7364	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51825 BG-YNT2 69.0	1.0078	0.7819	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	321	"	
10SP*	321	SPS	51857 BG-JST2 69.0	1.0254	0.7234	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51857 BG-JST2 69.0	1.0270	0.7757	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	321	"	
10SP*	321	SPS	51861 BORDEN6 230	0.989	0.7211	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51861 BORDEN6 230	0.9928	0.7476	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTHE 230 CKT1	321	"	
10SP*	321	SPS	51861 BORDEN6 230	0.9928	0.8205	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 51647 CARLISL6 230 CKT1	321	"	
10SP*	321	SPS	51861 BORDEN6 230	0.9928	0.8205	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 50509 LP-MLWK269.0 CKT1	321	"	
10SP*	321	SPS	51861 BORDEN6 230	0.9928	0.8326	OPEN LINE FROM BUS 50521 LP-HOLL6 230 TO BUS 51699 JONES6 230 CKT1	321	"	
10SP*	321	SPS	52036 DOSS3 115	1.0056	0.8772	OPEN LINE FROM BUS 51996 AMERADA3 115 TO BUS 52036 DOSS3 115 CKT1	321	"	

Study Case	Transfer Amount (MW)	AREA	Monitored Bus with Violation	BC Voltage (PU)	TC Voltage (PU)	Outaged Branch Causing Voltage Violation	ATC (MW)	Solution	Estimated Cost
10SP*	321		Contingency Not Converged			OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	N/A	Contingency Converged with Selected Upgrades, No Limitations Identified	
10SP*	321		Contingency Not Converged			OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	N/A	"	
10SP*	321		Contingency Not Converged			OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51534 [TUCO7 345.00] CKT 1	N/A	"	
10SP*	321		Contingency Not Converged			OPEN LINE FROM BUS 54119 [O.K.U.-7345.00] TO BUS 51534 [TUCO7 345.00] CKT 1	N/A	"	
10SP*	321		Contingency Not Converged			REMOVE UNIT 1 FROM BUS 51441 [TOLK1 124.000] DISPATCH	N/A	"	
10SP*	321		Contingency Not Converged			REMOVE UNIT 1 FROM BUS 51442 [TOLK2 124.000] DISPATCH	N/A	"	
10SP*	321		Contingency Not Converged			REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	N/A	"	
10WP*	189		NONE IDENTIFIED				189		
								Total Estimated Engineering and Construction Cost	\$11,700,000

* Study Cases include higher priority service (SUNC to SPS 150 MW) with required network upgrades.

Study Case	Transfer Amount (MW)	From Area	To Area	Monitored Branch Over 100% Rate B	Rate <MVA>	BC % Loading	TC % Loading	%TDF	Outaged Branch Causing Overload	Comments
05SP	274	SPS	SPS	50513 LP-COOP2 69 to 50516 LP-SLAT2 69 CKT 1	54	31.2	106.0	14.7	50513 LP-COOP2 69 to 50524 LP-WADS2 69 CKT 1	
05SP	274	SPS	SPS	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	140	17.1	107.7	46.3	50521 LP-HOLL6 230 to 51699 JONES6 230 CKT 1	
05SP	274	SPS	SPS	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	140	17.1	107.6	46.2	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	
05SP	274	SPS	SPS	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	140	16.8	104.4	44.8	50527 LP-WADS6 230 to 51689 LUBE6 230 CKT 1	
05SP	274	SPS	SPS	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	140	16.8	104.3	44.7	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	
05SP	274	SPS	SPS	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	100	19.5	100.6	29.6	BASE CASE	
05SP	274	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	140	14.0	111.9	50.0	50518 LP-SINT6 230 to 51681 LUBS6 230 CKT 1	
05SP	274	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	140	14.0	111.8	50.0	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	
05SP	274	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	140	12.4	105.6	47.6	50527 LP-WADS6 230 to 51689 LUBE6 230 CKT 1	
05SP	274	SPS	SPS	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	140	15.2	102.2	44.5	50518 LP-SINT6 230 to 51681 LUBS6 230 CKT 1	
05SP	274	SPS	SPS	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	140	15.2	102.1	44.4	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	
05SH	224			NONE IDENTIFIED						
05FA	159			NONE IDENTIFIED						
05WP	159			NONE IDENTIFIED						
07SP	292	SPS	SPS	50513 LP-COOP2 69 to 50516 LP-SLAT2 69 CKT 1	54	31.4	119.0	16.2	50513 LP-COOP2 69 to 50524 LP-WADS2 69 CKT 1	
07SP	292	SPS	SPS	50513 LP-COOP2 69 to 50524 LP-WADS2 69 CKT 1	143	37.1	135.4	48.1	50507 LP-MLWK6 230 to 50509 LP-MLWK2 69 CKT 1	
07SP	292	SPS	SPS	50513 LP-COOP2 69 to 50524 LP-WADS2 69 CKT 1	143	37.1	135.4	48.2	50507 LP-MLWK6 230 to 51647 CARLISL6 230 CKT 1	
07SP	292	SPS	SPS	50513 LP-COOP2 69 to 50524 LP-WADS2 69 CKT 1	143	35.6	128.9	45.7	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	
07SP	292	SPS	SPS	50513 LP-COOP2 69 to 50524 LP-WADS2 69 CKT 1	143	35.6	128.8	45.7	50518 LP-SINT6 230 to 51681 LUBS6 230 CKT 1	
07SP	292	SPS	SPS	50513 LP-COOP2 69 to 50524 LP-WADS2 69 CKT 1	143	33.1	108.4	36.9	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	
07SP	292	SPS	SPS	50516 LP-SLAT2 69 to 50517 LP-SINT2 69 CKT 1	143	37.4	108.6	34.9	50507 LP-MLWK6 230 to 50509 LP-MLWK2 69 CKT 1	
07SP	292	SPS	SPS	50516 LP-SLAT2 69 to 50517 LP-SINT2 69 CKT 1	143	37.4	108.6	34.9	50507 LP-MLWK6 230 to 51647 CARLISL6 230 CKT 1	
07SP	292	SPS	SPS	50516 LP-SLAT2 69 to 50517 LP-SINT2 69 CKT 1	143	35.8	106.0	34.4	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	
07SP	292	SPS	SPS	50516 LP-SLAT2 69 to 50517 LP-SINT2 69 CKT 1	143	35.8	105.9	34.3	50527 LP-WADS6 230 to 51689 LUBE6 230 CKT 1	
07SP	292	SPS	SPS	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	140	17.2	147.4	62.4	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	
07SP	292	SPS	SPS	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	140	17.2	147.3	62.4	50521 LP-HOLL6 230 to 51699 JONES6 230 CKT 1	
07SP	292	SPS	SPS	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	140	16.8	142.1	60.1	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	
07SP	292	SPS	SPS	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	140	16.8	142.1	60.1	50527 LP-WADS6 230 to 51689 LUBE6 230 CKT 1	
07SP	292	SPS	SPS	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	140	18.3	124.8	51.1	50507 LP-MLWK6 230 to 50509 LP-MLWK2 69 CKT 1	
07SP	292	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	140	14.1	145.9	63.2	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	
07SP	292	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	140	14.1	145.8	63.1	50518 LP-SINT6 230 to 51681 LUBS6 230 CKT 1	
07SP	292	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	140	12.5	142.0	62.1	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	
07SP	292	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	140	12.5	142.0	62.1	50527 LP-WADS6 230 to 51689 LUBE6 230 CKT 1	
07SP	292	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	140	12.2	121.0	52.2	50507 LP-MLWK6 230 to 50509 LP-MLWK2 69 CKT 1	
07SP	292	SPS	SPS	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	140	14.0	135.0	58.0	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	
07SP	292	SPS	SPS	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	140	14.0	134.9	58.0	50521 LP-HOLL6 230 to 51699 JONES6 230 CKT 1	
07SP	292	SPS	SPS	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	140	15.2	133.5	56.7	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	
07SP	292	SPS	SPS	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	140	15.2	133.5	56.7	50518 LP-SINT6 230 to 51681 LUBS6 230 CKT 1	
07SP	292	SPS	SPS	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	140	13.6	114.3	48.3	50507 LP-MLWK6 230 to 50509 LP-MLWK2 69 CKT 1	
07SP	292			Contingency Not Converged					REMOVE UNIT 1 FROM BUS 51441 [TOLK1 124.000] DISPATCH	
07SP	292			Contingency Not Converged					REMOVE UNIT 1 FROM BUS 51442 [TOLK2 124.000] DISPATCH	
07WP	171			NONE IDENTIFIED						
10SP	321	SPS	SPS	50503 LP-ERSK2 69 to 50504 LP-MACK2 69 CKT 1	107	61.6	106.9	15.1	50512 LP-MCCU2 69 to 50513 LP-COOP2 69 CKT 1	
10SP	321	SPS	SPS	50513 LP-COOP2 69 to 50516 LP-SLAT2 69 CKT 1	54	31.3	191.6	27.0	50513 LP-COOP2 69 to 50524 LP-WADS2 69 CKT 1	
10SP	321	SPS	SPS	50513 LP-COOP2 69 to 50516 LP-SLAT2 69 CKT 1	54	64.4	112.2	8.0	50516 LP-SLAT2 69 to 50517 LP-SINT2 69 CKT 1	
10SP	321	SPS	SPS	50513 LP-COOP2 69 to 50524 LP-WADS2 69 CKT 1	143	47.0	157.5	49.2	50516 LP-SLAT2 69 to 50517 LP-SINT2 69 CKT 1	
10SP	321	SPS	SPS	50513 LP-COOP2 69 to 50524 LP-WADS2 69 CKT 1	143	28.8	129.6	44.9	50509 LP-MLWK2 69 to 50510 LP-VCKS2 69 CKT 1	
10SP	321	SPS	SPS	50513 LP-COOP2 69 to 50524 LP-WADS2 69 CKT 1	143	37.9	126.3	39.4	51533 TUCO6 230 to 51647 CARLISL6 230 CKT 1	
10SP	321	SPS	SPS	50513 LP-COOP2 69 to 50524 LP-WADS2 69 CKT 1	143	33.1	119.3	38.4	51041 AMARLS6 230 to 51321 SWISHER6 230 CKT 1	
10SP	321	SPS	SPS	50513 LP-COOP2 69 to 50524 LP-WADS2 69 CKT 1	143	33.0	119.0	38.3	51396 LC-SOL3 115 to 51418 PLANTX3 115 CKT 1	
10SP	321	SPS	SPS	50513 LP-COOP2 69 to 50524 LP-WADS2 69 CKT 1	108	43.7	111.7	22.9	BASE CASE	
10SP	321	SPS	SPS	50515 LP-CHAL2 69 to 50526 LP-OLIV2 69 CKT 1	107	37.5	100.3	20.9	50516 LP-SLAT2 69 to 50517 LP-SINT2 69 CKT 1	
10SP	321	SPS	SPS	50516 LP-SLAT2 69 to 50517 LP-SINT2 69 CKT 1	143	51.1	157.3	47.3	50513 LP-COOP2 69 to 50524 LP-WADS2 69 CKT 1	
10SP	321	SPS	SPS	50516 LP-SLAT2 69 to 50517 LP-SINT2 69 CKT 1	143	57.5	150.4	41.4	50517 LP-SINT2 69 to 50526 LP-OLIV2 69 CKT 1	
10SP	321	SPS	SPS	50516 LP-SLAT2 69 to 50517 LP-SINT2 69 CKT 1	143	31.6	105.3	32.8	50509 LP-MLWK2 69 to 50510 LP-VCKS2 69 CKT 1	
10SP	321	SPS	SPS	50516 LP-SLAT2 69 to 50517 LP-SINT2 69 CKT 1	143	38.2	104.3	29.5	51689 LUBE6 230 to 51699 JONES6 230 CKT 1	
10SP	321	SPS	SPS	50516 LP-SLAT2 69 to 50517 LP-SINT2 69 CKT 1	143	38.0	102.9	28.9	51533 TUCO6 230 to 51647 CARLISL6 230 CKT 1	
10SP	321	SPS	SPS	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	100	20.4	124.1	32.3	BASE CASE	
10SP	321	SPS	SPS	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	140	23.5	120.5	42.3	51689 LUBE6 230 to 51699 JONES6 230 CKT 1	

Study Case	Transfer Amount (MW)	From Area	To Area	Monitored Branch Over 100% Rate B	Rate <MVA>	BC % Loading	TC % Loading	%TDF	Outaged Branch Causing Overload	Comments
10SP	321	SPS	SPS	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	140	11.6	118.1	46.5	50509 LP-MLWK2 69 to 50510 LP-VCKS2 69 CKT 1	
10SP	321	SPS	SPS	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	140	17.1	114.5	42.5	50513 LP-COOP2 69 to 50524 LP-WADS2 69 CKT 1	
10SP	321	SPS	SPS	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	140	19.3	108.7	39.0	51533 TUCO6 230 to 51647 CARLISL6 230 CKT 1	
10SP	321	SPS	SPS	50517 LP-SINT2 69 to 50526 LP-OLIV2 69 CKT 1	143	49.0	122.7	32.9	50516 LP-SLAT2 69 to 50517 LP-SINT2 69 CKT 1	
10SP	321	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	100	11.9	122.2	34.4	BASE CASE	
10SP	321	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	140	19.0	120.3	44.2	51689 LUBE6 230 to 51699 JONES6 230 CKT 1	
10SP	321	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	140	5.1	114.7	47.8	50509 LP-MLWK2 69 to 50510 LP-VCKS2 69 CKT 1	
10SP	321	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	140	13.1	106.3	40.7	51533 TUCO6 230 to 51647 CARLISL6 230 CKT 1	
10SP	321	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	140	8.2	105.5	42.4	50516 LP-SLAT2 69 to 50517 LP-SINT2 69 CKT 1	
10SP	321	SPS	SPS	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	100	16.8	114.5	30.4	BASE CASE	
10SP	321	SPS	SPS	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	140	8.7	107.8	43.2	50509 LP-MLWK2 69 to 50510 LP-VCKS2 69 CKT 1	
10SP	321	SPS	SPS	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	140	13.3	103.1	39.2	50516 LP-SLAT2 69 to 50517 LP-SINT2 69 CKT 1	
10SP	321	SPS	SPS	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	140	12.3	100.3	38.4	50517 LP-SINT2 69 to 50526 LP-OLIV2 69 CKT 1	
10SP	321			Contingency Not Converged					REMOVE UNIT 1 FROM BUS 51441 [TOLK1 124.000] DISPATCH	
10SP	321			Contingency Not Converged					REMOVE UNIT 1 FROM BUS 51442 [TOLK2 124.000] DISPATCH	
10SP	321			Contingency Not Converged					REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	
10SP	321			Contingency Not Converged					50507 LP-MLWK6 230 to 50509 LP-MLWK2 69 CKT 1	
10SP	321			Contingency Not Converged					50507 LP-MLWK6 230 to 51647 CARLISL6 230 CKT 1	
10SP	321			Contingency Not Converged					50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	
10SP	321			Contingency Not Converged					50518 LP-SINT6 230 to 51681 LUBS6 230 CKT 1	
10SP	321			Contingency Not Converged					50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	
10SP	321			Contingency Not Converged					50521 LP-HOLL6 230 to 51699 JONES6 230 CKT 1	
10SP	321			Contingency Not Converged					50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	
10SP	321			Contingency Not Converged					50527 LP-WADS6 230 to 51689 LUBE6 230 CKT 1	
10SP	321			Contingency Not Converged					51533 TUCO6 230 to 51534 TUCO7 345 CKT 1	
10SP	321			Contingency Not Converged					51435 TOLKE6 230 to 51533 TUCO6 230 CKT 1	
10SP	321			Contingency Not Converged					51733 SUNDOWN6 230 to 51763 WOLFRTH6 230 CKT 1	
10SP	321			Contingency Not Converged					54119 O.K.U.-7 345 to 51534 TUCO7 345 CKT 1	
10WP	189			NONE IDENTIFIED						
10SP*	321	SPS	SPS	50513 LP-COOP269.0 to 50516 LP-SLAT269.0 CKT 1	54	30.9	138.9	18.2	50513 LP-COOP269.0 to 50524 LP-WADS269.0 CKT1	
10SP*	321	SPS	SPS	50513 LP-COOP269.0 to 50524 LP-WADS269.0 CKT 1	143	37.1	144.2	47.7	50507 LP-MLWK6 230 to 51647 CARLISL6 230 CKT1	
10SP*	321	SPS	SPS	50513 LP-COOP269.0 to 50524 LP-WADS269.0 CKT 1	143	37.1	144.2	47.7	50507 LP-MLWK6 230 to 50509 LP-MLWK269.0 CKT1	
10SP*	321	SPS	SPS	50513 LP-COOP269.0 to 50524 LP-WADS269.0 CKT 1	143	33.0	118.2	38.0	51733 SUNDOWN6 230 to 51763 WOLFRTH6 230 CKT1	
10SP*	321	SPS	SPS	50513 LP-COOP269.0 to 50524 LP-WADS269.0 CKT 1	143	31.4	116.2	37.8	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
10SP*	321	SPS	SPS	50517 LP-COOP269.0 to 50524 LP-WADS269.0 CKT 1	143	33.1	114.6	36.3	50520 LP-HOLL269.0 to 50521 LP-HOLL6 230 CKT1	
10SP*	321	SPS	SPS	50516 LP-SLAT269.0 to 50517 LP-SINT269.0 CKT 1	143	37.5	115.9	34.9	50507 LP-MLWK6 230 to 51647 CARLISL6 230 CKT1	
10SP*	321	SPS	SPS	50516 LP-SLAT269.0 to 50517 LP-SINT269.0 CKT 1	143	37.4	115.8	34.9	50507 LP-MLWK6 230 to 50509 LP-MLWK269.0 CKT1	
10SP*	321	SPS	SPS	50516 LP-SLAT269.0 to 50517 LP-SINT269.0 CKT 1	143	35.6	112.4	34.2	50524 LP-WADS269.0 to 50527 LP-WADS6 230 CKT1	
10SP*	321	SPS	SPS	50516 LP-SLAT269.0 to 50517 LP-SINT269.0 CKT 1	143	35.6	112.4	34.2	50527 LP-WADS6 230 to 51689 LUBE6 230 CKT1	
10SP*	321	SPS	SPS	50516 LP-SLAT269.0 to 50517 LP-SINT269.0 CKT 1	143	50.8	112.0	27.3	50513 LP-COOP269.0 to 50524 LP-WADS269.0 CKT1	
10SP*	321	SPS	SPS	50517 LP-SINT269.0 to 50518 LP-SINT6 230 CKT 1	140	17.5	155.4	60.1	50520 LP-HOLL269.0 to 50521 LP-HOLL6 230 CKT1	
10SP*	321	SPS	SPS	50517 LP-SINT269.0 to 50518 LP-SINT6 230 CKT 1	140	17.5	155.2	60.0	50521 LP-HOLL6 230 to 51699 JONES6 230 CKT1	
10SP*	321	SPS	SPS	50517 LP-SINT269.0 to 50518 LP-SINT6 230 CKT 1	140	16.0	150.1	58.5	50524 LP-WADS269.0 to 50527 LP-WADS6 230 CKT1	
10SP*	321	SPS	SPS	50517 LP-SINT269.0 to 50518 LP-SINT6 230 CKT 1	140	16.0	150.1	58.5	50527 LP-WADS6 230 to 51689 LUBE6 230 CKT1	
10SP*	321	SPS	SPS	50517 LP-SINT269.0 to 50518 LP-SINT6 230 CKT 1	140	18.9	132.0	49.3	50507 LP-MLWK6 230 to 50509 LP-MLWK269.0 CKT1	
10SP*	321	SPS	SPS	50520 LP-HOLL269.0 to 50521 LP-HOLL6 230 CKT 1	140	12.3	149.8	60.0	50524 LP-WADS269.0 to 50527 LP-WADS6 230 CKT1	
10SP*	321	SPS	SPS	50520 LP-HOLL269.0 to 50521 LP-HOLL6 230 CKT 1	140	12.3	149.8	60.0	50527 LP-WADS6 230 to 51689 LUBE6 230 CKT1	
10SP*	321	SPS	SPS	50520 LP-HOLL269.0 to 50521 LP-HOLL6 230 CKT 1	140	12.7	127.8	50.2	50507 LP-MLWK6 230 to 50509 LP-MLWK269.0 CKT1	
10SP*	321	SPS	SPS	50520 LP-HOLL269.0 to 50521 LP-HOLL6 230 CKT 1	140	12.2	127.8	50.4	50507 LP-MLWK6 230 to 51647 CARLISL6 230 CKT1	
10SP*	321	SPS	SPS	50520 LP-HOLL269.0 to 50521 LP-HOLL6 230 CKT 1	100	11.7	115.6	32.4	BASE CASE	
10SP*	321	SPS	SPS	50524 LP-WADS269.0 to 50527 LP-WADS6 230 CKT 1	140	15.5	142.6	55.4	50520 LP-HOLL269.0 to 50521 LP-HOLL6 230 CKT1	
10SP*	321	SPS	SPS	50524 LP-WADS269.0 to 50527 LP-WADS6 230 CKT 1	140	15.5	142.5	55.4	50521 LP-HOLL6 230 to 51699 JONES6 230 CKT1	
10SP*	321	SPS	SPS	50524 LP-WADS269.0 to 50527 LP-WADS6 230 CKT 1	140	15.1	121.1	46.2	50507 LP-MLWK6 230 to 50509 LP-MLWK269.0 CKT1	
10SP*	321	SPS	SPS	50524 LP-WADS269.0 to 50527 LP-WADS6 230 CKT 1	140	15.9	121.1	45.9	50507 LP-MLWK6 230 to 51647 CARLISL6 230 CKT1	
10SP*	321	SPS	SPS	50524 LP-WADS269.0 to 50527 LP-WADS6 230 CKT 1	100	18.3	108.1	28.0	BASE CASE	
10SP*	321			Contingency Not Converged					50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	
10SP*	321			Contingency Not Converged					50518 LP-SINT6 230 to 51681 LUBS6 230 CKT 1	
10SP*	321			Contingency Not Converged					51533 TUCO6 230 to 51534 TUCO7 345 CKT 1	

Study Case	Transfer Amount (MW)	From Area	To Area	Monitored Branch Over 100% Rate B	Rate <MVA>	BC % Loading	TC % Loading	%TDF	Outaged Branch Causing Overload	Comments
10SP*	321			Contingency Not Converged					54119 O.K.U.-7 345 to 51534 TUCO7 345 CKT 1	
10SP*	321			Contingency Not Converged					REMOVE UNIT 1 FROM BUS 51441 [TOLK1 124.000] DISPATCH	
10SP*	321			Contingency Not Converged					REMOVE UNIT 1 FROM BUS 51442 [TOLK2 124.000] DISPATCH	
10SP*	321			Contingency Not Converged					REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	
10WP*	189			NONE IDENTIFIED						

* Study Cases include higher priority service (SUNC to SPS 150 MW) with required network upgrades.

Study Case	Transfer Amount (MW)	AREA	Monitored Bus with Violation	BC Voltage (PU)	TC Voltage (PU)	Outaged Branch Causing Voltage Violation	Comments
05SP	274	SPS	50507 LP-MLWK6 230	0.8667	0.7936	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
05SP	274	SPS	50518 LP-SINT6 230	0.9298	0.8335	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
05SP	274	SPS	50507 LP-MLWK6 230	0.9612	0.8439	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	
05SP	274	SPS	50507 LP-MLWK6 230	0.9616	0.8482	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
05SP	274	SPS	50527 LP-WADS6 230	0.9779	0.8431	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	
05SP	274	SPS	50518 LP-SINT6 230	0.9765	0.8495	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	
05SP	274	SPS	50527 LP-WADS6 230	0.9798	0.8490	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
05SP	274	SPS	50521 LP-HOLL6 230	0.9804	0.8501	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	
05SP	274	SPS	50507 LP-MLWK6 230	0.9625	0.8619	OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
05SP	274	SPS	50518 LP-SINT6 230	0.9779	0.8553	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
05SP	274	SPS	50521 LP-HOLL6 230	0.9892	0.8495	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
05SP	274	SPS	50521 LP-HOLL6 230	0.9820	0.8560	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
05SP	274	SPS	50511 LP-THOM 69.0	1.0167	0.8377	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	
05SP	274	SPS	50510 LP-VCKS269.0	1.0182	0.8381	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	
05SP	274	SPS	50512 LP-MCCU269.0	1.0172	0.8390	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	
05SP	274	SPS	50523 LP-BRND269.0	1.0230	0.8367	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	
05SP	274	SPS	50527 LP-WADS6 230	1.0751	0.8110	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
05SP	274	SPS	50509 LP-MLWK269.0	1.0193	0.8403	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	
05SP	274	SPS	50515 LP-CHAL269.0	1.0184	0.8423	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	
05SP	274	SPS	50503 LP-ERSK269.0	1.0240	0.8399	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	
05SP	274	SPS	50526 LP-OLIV269.0	1.0167	0.8436	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	
05SP	274	SPS	50527 LP-WADS6 230	0.9797	0.8624	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
05SP	274	SPS	50511 LP-THOM 69.0	1.0169	0.8477	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
05SP	274	SPS	50510 LP-VCKS269.0	1.0184	0.8481	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
05SP	274	SPS	50512 LP-MCCU269.0	1.0174	0.8490	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
05SP	274	SPS	50523 LP-BRND269.0	1.0230	0.8467	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
05SP	274	SPS	50504 LP-MACK269.0	1.0273	0.8467	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	
05SP	274	SPS	50509 LP-MLWK269.0	1.0195	0.8502	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
05SP	274	SPS	50503 LP-ERSK269.0	1.0241	0.8498	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
05SP	274	SPS	50513 LP-COOP269.0	1.0232	0.8503	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	
05SP	274	SPS	50515 LP-CHAL269.0	1.0186	0.8523	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
05SP	274	SPS	50526 LP-OLIV269.0	1.0169	0.8535	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
05SP	274	SPS	50506 LP-NES2 69.0	1.0272	0.8508	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	
05SP	274	SPS	50516 LP-SLAT269.0	1.0224	0.8527	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	
05SP	274	SPS	50507 LP-MLWK6 230	0.9560	0.8789	REMOVE UNIT 1 FROM BUS 51441 [TOLK1 124.000] DISPATCH	
05SP	274	SPS	50504 LP-MACK269.0	1.0275	0.8566	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
05SP	274	SPS	50517 LP-SINT269.0	1.0251	0.8596	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	
05SP	274	SPS	50513 LP-COOP269.0	1.0234	0.8602	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
05SP	274	SPS	50506 LP-NES2 69.0	1.0274	0.8606	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
05SP	274	SPS	50516 LP-SLAT269.0	1.0226	0.8625	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
05SP	274	SPS	50524 LP-WADS269.0	1.0253	0.8660	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	
05SP	274	SPS	50520 LP-HOLL269.0	1.0301	0.8660	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	
05SP	274	SPS	50517 LP-SINT269.0	1.0254	0.8692	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
05SP	274	SPS	50524 LP-WADS269.0	1.0256	0.8756	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
05SP	274	SPS	50520 LP-HOLL269.0	1.0303	0.8755	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
05SH	224	SPS	50527 LP-WADS6 230	0.9908	0.8885	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
05FA	159		NONE IDENTIFIED				
05WP	159		NONE IDENTIFIED				
07SP	292	SPS	50507 LP-MLWK6 230	0.8666	0.3932	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
07SP	292	SPS	50518 LP-SINT6 230	0.9298	0.3988	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
07SP	292	SPS	50521 LP-HOLL6 230	0.9893	0.4363	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
07SP	292	SPS	50509 LP-MLWK269.0	1.0053	0.4561	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
07SP	292	SPS	50509 LP-MLWK269.0	1.0053	0.4563	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	
07SP	292	SPS	50526 LP-OLIV269.0	1.0151	0.4157	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	

Study Case	Transfer Amount (MW)	AREA	Monitored Bus with Violation	BC Voltage (PU)	TC Voltage (PU)	Outaged Branch Causing Voltage Violation	Comments
07SP	292	SPS	50526 LP-OLIV269.0	1.0152	0.4162	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.000] CKT 1	
07SP	292	SPS	50511 LP-THOM 69.0	1.0166	0.4129	OPEN LINE FROM BUS 50518 [LP-SINT6230.000] TO BUS 51681 [LUBS6 230.00] CKT 1	
07SP	292	SPS	50511 LP-THOM 69.0	1.0166	0.4134	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.000] CKT 1	
07SP	292	SPS	50515 LP-CHAL269.0	1.0175	0.4145	OPEN LINE FROM BUS 50518 [LP-SINT6230.000] TO BUS 51681 [LUBS6 230.00] CKT 1	
07SP	292	SPS	50515 LP-CHAL269.0	1.0175	0.4150	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.000] CKT 1	
07SP	292	SPS	50512 LP-MCCU269.0	1.0176	0.4196	OPEN LINE FROM BUS 50518 [LP-SINT6230.000] TO BUS 51681 [LUBS6 230.00] CKT 1	
07SP	292	SPS	50512 LP-MCCU269.0	1.0177	0.4201	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.000] CKT 1	
07SP	292	SPS	50510 LP-VCKS269.0	1.0187	0.4174	OPEN LINE FROM BUS 50518 [LP-SINT6230.000] TO BUS 51681 [LUBS6 230.00] CKT 1	
07SP	292	SPS	50510 LP-VCKS269.0	1.0187	0.4180	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.000] CKT 1	
07SP	292	SPS	50523 LP-BRND269.0	1.0230	0.4162	OPEN LINE FROM BUS 50518 [LP-SINT6230.000] TO BUS 51681 [LUBS6 230.00] CKT 1	
07SP	292	SPS	50523 LP-BRND269.0	1.0230	0.4167	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.000] CKT 1	
07SP	292	SPS	50516 LP-SLAT269.0	1.0210	0.4285	OPEN LINE FROM BUS 50518 [LP-SINT6230.000] TO BUS 51681 [LUBS6 230.00] CKT 1	
07SP	292	SPS	50516 LP-SLAT269.0	1.0210	0.4290	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.000] CKT 1	
07SP	292	SPS	50503 LP-ERSK269.0	1.0242	0.4211	OPEN LINE FROM BUS 50518 [LP-SINT6230.000] TO BUS 51681 [LUBS6 230.00] CKT 1	
07SP	292	SPS	50503 LP-ERSK269.0	1.0242	0.4216	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.000] CKT 1	
07SP	292	SPS	50509 LP-MLWK269.0	1.0215	0.4326	OPEN LINE FROM BUS 50518 [LP-SINT6230.000] TO BUS 51681 [LUBS6 230.00] CKT 1	
07SP	292	SPS	50509 LP-MLWK269.0	1.0215	0.4331	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.000] CKT 1	
07SP	292	SPS	50517 LP-SINT269.0	1.0228	0.4387	OPEN LINE FROM BUS 50518 [LP-SINT6230.000] TO BUS 51681 [LUBS6 230.00] CKT 1	
07SP	292	SPS	50517 LP-SINT269.0	1.0228	0.4392	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.000] CKT 1	
07SP	292	SPS	50513 LP-COOP269.0	1.0237	0.4384	OPEN LINE FROM BUS 50518 [LP-SINT6230.000] TO BUS 51681 [LUBS6 230.00] CKT 1	
07SP	292	SPS	50513 LP-COOP269.0	1.0237	0.4389	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.000] CKT 1	
07SP	292	SPS	50511 LP-THOM 69.0	1.0199	0.4551	OPEN LINE FROM BUS 50521 [LP-HOLL6230.000] TO BUS 51699 [JONES6 230.00] CKT 1	
07SP	292	SPS	50511 LP-THOM 69.0	1.0199	0.4556	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.000] CKT 1	
07SP	292	SPS	50512 LP-MCCU269.0	1.0204	0.4575	OPEN LINE FROM BUS 50521 [LP-HOLL6230.000] TO BUS 51699 [JONES6 230.00] CKT 1	
07SP	292	SPS	50512 LP-MCCU269.0	1.0204	0.4579	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.000] CKT 1	
07SP	292	SPS	50504 LP-MACK269.0	1.0277	0.4318	OPEN LINE FROM BUS 50518 [LP-SINT6230.000] TO BUS 51681 [LUBS6 230.00] CKT 1	
07SP	292	SPS	50504 LP-MACK269.0	1.0277	0.4323	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.000] CKT 1	
07SP	292	SPS	50510 LP-VCKS269.0	1.0213	0.4567	OPEN LINE FROM BUS 50521 [LP-HOLL6230.000] TO BUS 51699 [JONES6 230.00] CKT 1	
07SP	292	SPS	50510 LP-VCKS269.0	1.0214	0.4572	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.000] CKT 1	
07SP	292	SPS	50511 LP-THOM 69.0	1.0212	0.4613	OPEN LINE FROM BUS 50527 [LP-WADS6230.000] TO BUS 51689 [LUBE6 230.00] CKT 1	
07SP	292	SPS	50526 LP-OLIV269.0	1.0201	0.4654	OPEN LINE FROM BUS 50521 [LP-HOLL6230.000] TO BUS 51699 [JONES6 230.00] CKT 1	
07SP	292	SPS	50526 LP-OLIV269.0	1.0201	0.4658	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.000] CKT 1	
07SP	292	SPS	50506 LP-NES2 69.0	1.0276	0.4388	OPEN LINE FROM BUS 50518 [LP-SINT6230.000] TO BUS 51681 [LUBS6 230.00] CKT 1	
07SP	292	SPS	50506 LP-NES2 69.0	1.0277	0.4393	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.000] CKT 1	
07SP	292	SPS	50523 LP-BRND269.0	1.0239	0.4531	OPEN LINE FROM BUS 50521 [LP-HOLL6230.000] TO BUS 51699 [JONES6 230.00] CKT 1	
07SP	292	SPS	50515 LP-CHAL269.0	1.0218	0.4608	OPEN LINE FROM BUS 50521 [LP-HOLL6230.000] TO BUS 51699 [JONES6 230.00] CKT 1	
07SP	292	SPS	50512 LP-MCCU269.0	1.0220	0.4601	OPEN LINE FROM BUS 50527 [LP-WADS6230.000] TO BUS 51689 [LUBE6 230.00] CKT 1	
07SP	292	SPS	50523 LP-BRND269.0	1.0239	0.4536	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.000] CKT 1	
07SP	292	SPS	50515 LP-CHAL269.0	1.0218	0.4612	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.000] CKT 1	
07SP	292	SPS	50510 LP-VCKS269.0	1.0224	0.4614	OPEN LINE FROM BUS 50527 [LP-WADS6230.000] TO BUS 51689 [LUBE6 230.00] CKT 1	
07SP	292	SPS	50507 LP-MLWK6 230	0.9501	0.7222	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	
07SP	292	SPS	50523 LP-BRND269.0	1.0254	0.4571	OPEN LINE FROM BUS 50527 [LP-WADS6230.000] TO BUS 51689 [LUBE6 230.00] CKT 1	
07SP	292	SPS	50503 LP-ERSK269.0	1.0257	0.4573	OPEN LINE FROM BUS 50521 [LP-HOLL6230.000] TO BUS 51699 [JONES6 230.00] CKT 1	
07SP	292	SPS	50503 LP-ERSK269.0	1.0257	0.4578	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.000] CKT 1	
07SP	292	SPS	50515 LP-CHAL269.0	1.0233	0.4690	OPEN LINE FROM BUS 50527 [LP-WADS6230.000] TO BUS 51689 [LUBE6 230.00] CKT 1	
07SP	292	SPS	50526 LP-OLIV269.0	1.0218	0.4755	OPEN LINE FROM BUS 50527 [LP-WADS6230.000] TO BUS 51689 [LUBE6 230.00] CKT 1	
07SP	292	SPS	50509 LP-MLWK269.0	1.0239	0.4694	OPEN LINE FROM BUS 50521 [LP-HOLL6230.000] TO BUS 51699 [JONES6 230.00] CKT 1	
07SP	292	SPS	50507 LP-MLWK6 230	0.9505	0.7255	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
07SP	292	SPS	50503 LP-ERSK269.0	1.0274	0.4610	OPEN LINE FROM BUS 50527 [LP-WADS6230.000] TO BUS 51689 [LUBE6 230.00] CKT 1	
07SP	292	SPS	50524 LP-WADS269.0	1.0269	0.4728	OPEN LINE FROM BUS 50518 [LP-SINT6230.000] TO BUS 51681 [LUBS6 230.00] CKT 1	
07SP	292	SPS	50513 LP-COOP269.0	1.0266	0.4743	OPEN LINE FROM BUS 50521 [LP-HOLL6230.000] TO BUS 51699 [JONES6 230.00] CKT 1	
07SP	292	SPS	50524 LP-WADS269.0	1.0269	0.4733	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.000] CKT 1	
07SP	292	SPS	50516 LP-SLAT269.0	1.0259	0.4778	OPEN LINE FROM BUS 50521 [LP-HOLL6230.000] TO BUS 51699 [JONES6 230.00] CKT 1	
07SP	292	SPS	50516 LP-SLAT269.0	1.0259	0.4783	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.000] CKT 1	

Study Case	Transfer Amount (MW)	AREA	Monitored Bus with Violation	BC Voltage (PU)	TC Voltage (PU)	Outaged Branch Causing Voltage Violation	Comments
07SP	292	SPS	50504 LP-MACK269.0	1.0299	0.4669	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
07SP	292	SPS	50504 LP-MACK269.0	1.0299	0.4674	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
07SP	292	SPS	50513 LP-COOP269.0	1.0287	0.4739	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
07SP	292	SPS	50520 LP-HOLL269.0	1.0307	0.4675	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
07SP	292	SPS	50513 LP-COOP269.0	1.0288	0.4741	OPEN LINE FROM BUS 50524 [LP-WADS269.000] TO BUS 50527 [LP-WADS6230.00] CKT 1	
07SP	292	SPS	50520 LP-HOLL269.0	1.0307	0.4680	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	
07SP	292	SPS	50506 LP-NE52 69.0	1.0301	0.4718	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
07SP	292	SPS	50506 LP-NE52 69.0	1.0301	0.4722	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
07SP	292	SPS	50504 LP-MACK269.0	1.0318	0.4703	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
07SP	292	SPS	50516 LP-SLAT269.0	1.0278	0.4875	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
07SP	292	SPS	50506 LP-NE52 69.0	1.0322	0.4786	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
07SP	292	SPS	50517 LP-SINT269.0	1.0286	0.4931	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
07SP	292	SPS	50517 LP-SINT269.0	1.0286	0.4936	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
07SP	292	SPS	50524 LP-WADS269.0	1.0327	0.4917	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
07SP	292	SPS	50524 LP-WADS269.0	1.0328	0.4919	OPEN LINE FROM BUS 50524 [LP-WADS269.000] TO BUS 50527 [LP-WADS6230.00] CKT 1	
07SP	292	SPS	50524 LP-WADS269.0	1.0296	0.5019	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
07SP	292	SPS	50520 LP-HOLL269.0	1.0338	0.4930	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
07SP	292	SPS	50520 LP-HOLL269.0	1.0338	0.4934	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
07SP	292	SPS	50517 LP-SINT269.0	1.0303	0.5061	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
07SP	292	SPS	50527 LP-WADS6 230	0.9694	0.6966	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	
07SP	292	SPS	50518 LP-SINT6 230	0.9675	0.7072	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	
07SP	292	SPS	50520 LP-HOLL269.0	1.0362	0.5110	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
07SP	292	SPS	50527 LP-WADS6 230	0.9710	0.7011	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
07SP	292	SPS	50518 LP-SINT6 230	0.9692	0.7116	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
07SP	292	SPS	50527 LP-WADS6 230	1.0757	0.4239	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
07SP	292	SPS	50521 LP-HOLL6 230	0.9717	0.7067	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	
07SP	292	SPS	50521 LP-HOLL6 230	0.9732	0.7112	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
07SP	292	SPS	50507 LP-MLWK6 230	0.9682	0.7950	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
07SP	292	SPS	50507 LP-MLWK6 230	0.9682	0.7952	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	
07SP	292	SPS	50527 LP-WADS6 230	0.9887	0.7840	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	
07SP	292	SPS	50527 LP-WADS6 230	0.9889	0.7839	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
07SP	292	SPS	50518 LP-SINT6 230	0.9858	0.7925	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
07SP	292	SPS	50518 LP-SINT6 230	0.9862	0.7926	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	
07SP	292	SPS	50521 LP-HOLL6 230	0.9907	0.7954	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	
07SP	292	SPS	50521 LP-HOLL6 230	0.9909	0.7953	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
07SP	292		Contingency Not Converged			REMOVE UNIT 1 FROM BUS 51441 [TOLK1 124.000] DISPATCH	
07SP	292		Contingency Not Converged			REMOVE UNIT 1 FROM BUS 51442 [TOLK2 124.000] DISPATCH	
07WP	171		NONE IDENTIFIED				
10SP	321	SPS	50507 LP-MLWK6 230	0.9364	0.6404	OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
10SP	321	SPS	50507 LP-MLWK6 230	0.9377	0.6528	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
10SP	321	SPS	50527 LP-WADS6 230	0.9586	0.6129	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
10SP	321	SPS	50518 LP-SINT6 230	0.9572	0.6262	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
10SP	321	SPS	50511 LP-THOM 69.0	1.0155	0.3521	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
10SP	321	SPS	50512 LP-MCCU269.0	1.0157	0.3553	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
10SP	321	SPS	50510 LP-VCKS269.0	1.0168	0.3525	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
10SP	321	SPS	50509 LP-MLWK269.0	1.0166	0.3592	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
10SP	321	SPS	50515 LP-CHAL269.0	1.0174	0.3596	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
10SP	321	SPS	50526 LP-OLIV269.0	1.0160	0.3662	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
10SP	321	SPS	50523 LP-BRND269.0	1.0230	0.3519	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
10SP	321	SPS	50521 LP-HOLL6 230	0.9617	0.6254	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
10SP	321	SPS	50503 LP-ERSK269.0	1.0237	0.3573	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
10SP	321	SPS	50513 LP-COOP269.0	1.0216	0.3759	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
10SP	321	SPS	50516 LP-SLAT269.0	1.0216	0.3799	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
10SP	321	SPS	50504 LP-MACK269.0	1.0266	0.3689	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	

Study Case	Transfer Amount (MW)	AREA	Monitored Bus with Violation	BC Voltage (PU)	TC Voltage (PU)	Outaged Branch Causing Voltage Violation	Comments
10SP	321	SPS	50506 LP-NE2 69.0	1.0267	0.3772	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
10SP	321	SPS	50511 LP-THOM 69.0	1.0196	0.4068	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50512 LP-MCCU269.0	1.0200	0.4097	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50510 LP-VCKS269.0	1.0207	0.4084	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50517 LP-SINT269.0	1.0247	0.3981	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
10SP	321	SPS	50524 LP-WADS269.0	1.0225	0.4079	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
10SP	321	SPS	50523 LP-BRND269.0	1.0236	0.4061	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50515 LP-CHAL269.0	1.0219	0.4131	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50526 LP-OLIV269.0	1.0205	0.4185	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50511 LP-THOM 69.0	1.0200	0.4288	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50509 LP-MLWK269.0	1.0222	0.4210	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50511 LP-THOM 69.0	1.0201	0.4304	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50503 LP-ERSK269.0	1.0255	0.4110	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50527 LP-WADS6 230	0.9749	0.6081	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50512 LP-MCCU269.0	1.0205	0.4318	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50510 LP-VCKS269.0	1.0212	0.4297	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50512 LP-MCCU269.0	1.0205	0.4334	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50510 LP-VCKS269.0	1.0213	0.4312	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50523 LP-BRND269.0	1.0240	0.4283	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50515 LP-CHAL269.0	1.0222	0.4360	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50526 LP-OLIV269.0	1.0208	0.4420	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50523 LP-BRND269.0	1.0240	0.4298	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50515 LP-CHAL269.0	1.0222	0.4376	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50526 LP-OLIV269.0	1.0208	0.4436	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50511 LP-THOM 69.0	1.0201	0.4464	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	
10SP	321	SPS	50520 LP-HOLL269.0	1.0301	0.4106	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
10SP	321	SPS	50509 LP-MLWK269.0	1.0230	0.4390	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50512 LP-MCCU269.0	1.0205	0.4495	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	
10SP	321	SPS	50509 LP-MLWK269.0	1.0230	0.4405	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50510 LP-VCKS269.0	1.0213	0.4472	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	
10SP	321	SPS	50513 LP-COOP269.0	1.0265	0.4290	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50503 LP-ERSK269.0	1.0259	0.4336	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50516 LP-SLAT269.0	1.0263	0.4324	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50503 LP-ERSK269.0	1.0259	0.4352	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50504 LP-MACK269.0	1.0299	0.4223	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50523 LP-BRND269.0	1.0240	0.4459	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	
10SP	321	SPS	50515 LP-CHAL269.0	1.0222	0.4537	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	
10SP	321	SPS	50526 LP-OLIV269.0	1.0208	0.4597	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	
10SP	321	SPS	50509 LP-MLWK269.0	1.0230	0.4562	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	
10SP	321	SPS	50506 LP-NE2 69.0	1.0304	0.4301	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50513 LP-COOP269.0	1.0203	0.4693	OPEN LINE FROM BUS 50513 [LP-COOP269.000] TO BUS 50524 [LP-WADS269.000] CKT 1	
10SP	321	SPS	50503 LP-ERSK269.0	1.0259	0.4513	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	
10SP	321	SPS	50513 LP-COOP269.0	1.0268	0.4522	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50513 LP-COOP269.0	1.0268	0.4538	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50516 LP-SLAT269.0	1.0265	0.4562	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50516 LP-SLAT269.0	1.0265	0.4578	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50504 LP-MACK269.0	1.0302	0.4453	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50517 LP-SINT269.0	1.0294	0.4497	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50504 LP-MACK269.0	1.0303	0.4469	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50506 LP-NE2 69.0	1.0307	0.4535	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50506 LP-NE2 69.0	1.0307	0.4551	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50524 LP-WADS269.0	1.0294	0.4603	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50516 LP-SLAT269.0	1.0265	0.4739	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	
10SP	321	SPS	50504 LP-MACK269.0	1.0303	0.4631	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	

Study Case	Transfer Amount (MW)	AREA	Monitored Bus with Violation	BC Voltage (PU)	TC Voltage (PU)	Outaged Branch Causing Voltage Violation	Comments
10SP	321	SPS	50517 LP-SINT269.0	1.0295	0.4740	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50506 LP-NE52 69.0	1.0307	0.4713	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	
10SP	321	SPS	50517 LP-SINT269.0	1.0295	0.4756	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50520 LP-HOLL269.0	1.0348	0.4624	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50524 LP-WADS269.0	1.0296	0.4840	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50524 LP-WADS269.0	1.0296	0.4856	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50507 LP-MLWK6 230	0.9554	0.7241	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	
10SP	321	SPS	50517 LP-SINT269.0	1.0295	0.4916	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	
10SP	321	SPS	50524 LP-WADS269.0	1.0296	0.5017	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	
10SP	321	SPS	50520 LP-HOLL269.0	1.0349	0.4864	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50520 LP-HOLL269.0	1.0350	0.4880	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50507 LP-MLWK6 230	0.9605	0.7182	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50507 LP-MLWK6 230	0.9607	0.7191	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50520 LP-HOLL269.0	1.0350	0.5041	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	
10SP	321	SPS	50518 LP-SINT6 230	0.9864	0.6603	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50527 LP-WADS6 230	0.9885	0.6585	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50521 LP-HOLL6 230	0.9908	0.6687	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50527 LP-WADS6 230	0.9886	0.6764	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50527 LP-WADS6 230	0.9886	0.6776	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50518 LP-SINT6 230	0.9860	0.6879	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50518 LP-SINT6 230	0.9860	0.6891	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50521 LP-HOLL6 230	0.9908	0.6881	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50521 LP-HOLL6 230	0.9908	0.6892	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50518 LP-SINT6 230	0.9860	0.7009	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	
10SP	321	SPS	50521 LP-HOLL6 230	0.9908	0.7013	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	
10SP	321		Contingency Not Converged			OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	
10SP	321		Contingency Not Converged			OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
10SP	321		Contingency Not Converged			OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	
10SP	321		Contingency Not Converged			OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
10SP	321		Contingency Not Converged			OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP	321		Contingency Not Converged			OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321		Contingency Not Converged			OPEN LINE FROM BUS 50524 [LP-WADS269.000] TO BUS 50527 [LP-WADS6230.00] CKT 1	
10SP	321		Contingency Not Converged			OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP	321		Contingency Not Converged			OPEN LINE FROM BUS 51435 [TOLKE6 230.00] TO BUS 51533 [TUCO6 230.00] CKT 1	
10SP	321		Contingency Not Converged			OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51534 [TUCO7 345.00] CKT 1	
10SP	321		Contingency Not Converged			OPEN LINE FROM BUS 51733 [SUNDOWN6230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321		Contingency Not Converged			OPEN LINE FROM BUS 54119 [O.K.U.-7345.00] TO BUS 51534 [TUCO7 345.00] CKT 1	
10SP	321		Contingency Not Converged			REMOVE UNIT 1 FROM BUS 51441 [TOLK1 124.000] DISPATCH	
10SP	321		Contingency Not Converged			REMOVE UNIT 1 FROM BUS 51442 [TOLK2 124.000] DISPATCH	
10SP	321		Contingency Not Converged			REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	
10WP	189	SPS	50527 LP-WADS6 230	0.9928	0.8942	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP*	321	SPS	50503 LP-ERSK269.0	1.0245	0.3929	OPEN LINE FROM BUS 50521 LP-HOLL6 230 TO BUS 51699 JONES6 230 CKT1	
10SP*	321	SPS	50503 LP-ERSK269.0	1.0245	0.3937	OPEN LINE FROM BUS 50520 LP-HOLL269.0 TO BUS 50521 LP-HOLL6 230 CKT1	
10SP*	321	SPS	50503 LP-ERSK269.0	1.0272	0.3960	OPEN LINE FROM BUS 50527 LP-WADS6 230 TO BUS 51689 LUBE6 230 CKT1	
10SP*	321	SPS	50503 LP-ERSK269.0	1.0272	0.3961	OPEN LINE FROM BUS 50524 LP-WADS269.0 TO BUS 50527 LP-WADS6 230 CKT1	
10SP*	321	SPS	50503 LP-ERSK269.0	1.0238	0.4201	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 50509 LP-MLWK269.0 CKT1	
10SP*	321	SPS	50504 LP-MACK269.0	1.0283	0.4032	OPEN LINE FROM BUS 50521 LP-HOLL6 230 TO BUS 51699 JONES6 230 CKT1	
10SP*	321	SPS	50504 LP-MACK269.0	1.0283	0.4039	OPEN LINE FROM BUS 50520 LP-HOLL269.0 TO BUS 50521 LP-HOLL6 230 CKT1	
10SP*	321	SPS	50504 LP-MACK269.0	1.0317	0.4059	OPEN LINE FROM BUS 50527 LP-WADS6 230 TO BUS 51689 LUBE6 230 CKT1	
10SP*	321	SPS	50504 LP-MACK269.0	1.0317	0.4060	OPEN LINE FROM BUS 50524 LP-WADS269.0 TO BUS 50527 LP-WADS6 230 CKT1	
10SP*	321	SPS	50504 LP-MACK269.0	1.0277	0.4376	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 50509 LP-MLWK269.0 CKT1	
10SP*	321	SPS	50506 LP-NE52 69.0	1.0284	0.4085	OPEN LINE FROM BUS 50521 LP-HOLL6 230 TO BUS 51699 JONES6 230 CKT1	
10SP*	321	SPS	50506 LP-NE52 69.0	1.0284	0.4093	OPEN LINE FROM BUS 50520 LP-HOLL269.0 TO BUS 50521 LP-HOLL6 230 CKT1	

Study Case	Transfer Amount (MW)	AREA	Monitored Bus with Violation	BC Voltage (PU)	TC Voltage (PU)	Outaged Branch Causing Voltage Violation	Comments
10SP*	321	SPS	50506 LP-NES2 69.0	1.0322	0.4150	OPEN LINE FROM BUS 50527 LP-WADS6 230 TO BUS 51689 LUBE6 230 CKT1	
10SP*	321	SPS	50506 LP-NES2 69.0	1.0322	0.4151	OPEN LINE FROM BUS 50524 LP-WADS269.0 TO BUS 50527 LP-WADS6 230 CKT1	
10SP*	321	SPS	50506 LP-NES2 69.0	1.0276	0.4482	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
10SP*	321	SPS	50507 LP-MLWK6 230	0.8656	0.3303	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 51647 CARLISL6 230 CKT1	
10SP*	321	SPS	50507 LP-MLWK6 230	0.9784	0.7081	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
10SP*	321	SPS	50507 LP-MLWK6 230	0.9910	0.7424	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTH6 230 CKT1	
10SP*	321	SPS	50507 LP-MLWK6 230	0.9913	0.8039	OPEN LINE FROM BUS 50521 LP-HOLL6 230 TO BUS 51699 JONES6 230 CKT1	
10SP*	321	SPS	50507 LP-MLWK6 230	0.9913	0.8042	OPEN LINE FROM BUS 50520 LP-HOLL269.0 TO BUS 50521 LP-HOLL6 230 CKT1	
10SP*	321	SPS	50509 LP-MLWK269.0	1.0046	0.3831	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 50509 LP-MLWK269.0 CKT1	
10SP*	321	SPS	50509 LP-MLWK269.0	1.0041	0.3832	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 51647 CARLISL6 230 CKT1	
10SP*	321	SPS	50509 LP-MLWK269.0	1.0230	0.4071	OPEN LINE FROM BUS 50521 LP-HOLL6 230 TO BUS 51699 JONES6 230 CKT1	
10SP*	321	SPS	50509 LP-MLWK269.0	1.0230	0.4079	OPEN LINE FROM BUS 50520 LP-HOLL269.0 TO BUS 50521 LP-HOLL6 230 CKT1	
10SP*	321	SPS	50509 LP-MLWK269.0	1.0233	0.4122	OPEN LINE FROM BUS 50527 LP-WADS6 230 TO BUS 51689 LUBE6 230 CKT1	
10SP*	321	SPS	50510 LP-VCKS269.0	1.0201	0.3924	OPEN LINE FROM BUS 50521 LP-HOLL6 230 TO BUS 51699 JONES6 230 CKT1	
10SP*	321	SPS	50510 LP-VCKS269.0	1.0201	0.3932	OPEN LINE FROM BUS 50520 LP-HOLL269.0 TO BUS 50521 LP-HOLL6 230 CKT1	
10SP*	321	SPS	50510 LP-VCKS269.0	1.0222	0.3965	OPEN LINE FROM BUS 50527 LP-WADS6 230 TO BUS 51689 LUBE6 230 CKT1	
10SP*	321	SPS	50510 LP-VCKS269.0	1.0222	0.3966	OPEN LINE FROM BUS 50524 LP-WADS269.0 TO BUS 50527 LP-WADS6 230 CKT1	
10SP*	321	SPS	50510 LP-VCKS269.0	1.0128	0.4014	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 50509 LP-MLWK269.0 CKT1	
10SP*	321	SPS	50511 LP-THOM 69.0	1.0186	0.3907	OPEN LINE FROM BUS 50521 LP-HOLL6 230 TO BUS 51699 JONES6 230 CKT1	
10SP*	321	SPS	50511 LP-THOM 69.0	1.0186	0.3915	OPEN LINE FROM BUS 50520 LP-HOLL269.0 TO BUS 50521 LP-HOLL6 230 CKT1	
10SP*	321	SPS	50511 LP-THOM 69.0	1.0209	0.3964	OPEN LINE FROM BUS 50527 LP-WADS6 230 TO BUS 51689 LUBE6 230 CKT1	
10SP*	321	SPS	50511 LP-THOM 69.0	1.0209	0.3965	OPEN LINE FROM BUS 50524 LP-WADS269.0 TO BUS 50527 LP-WADS6 230 CKT1	
10SP*	321	SPS	50511 LP-THOM 69.0	1.0130	0.4075	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 50509 LP-MLWK269.0 CKT1	
10SP*	321	SPS	50512 LP-MCCU269.0	1.0188	0.3932	OPEN LINE FROM BUS 50521 LP-HOLL6 230 TO BUS 51699 JONES6 230 CKT1	
10SP*	321	SPS	50512 LP-MCCU269.0	1.0188	0.3940	OPEN LINE FROM BUS 50520 LP-HOLL269.0 TO BUS 50521 LP-HOLL6 230 CKT1	
10SP*	321	SPS	50512 LP-MCCU269.0	1.0218	0.3951	OPEN LINE FROM BUS 50527 LP-WADS6 230 TO BUS 51689 LUBE6 230 CKT1	
10SP*	321	SPS	50512 LP-MCCU269.0	1.0218	0.3952	OPEN LINE FROM BUS 50524 LP-WADS269.0 TO BUS 50527 LP-WADS6 230 CKT1	
10SP*	321	SPS	50512 LP-MCCU269.0	1.0141	0.4124	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 50509 LP-MLWK269.0 CKT1	
10SP*	321	SPS	50513 LP-COOP269.0	1.0285	0.4100	OPEN LINE FROM BUS 50527 LP-WADS6 230 TO BUS 51689 LUBE6 230 CKT1	
10SP*	321	SPS	50513 LP-COOP269.0	1.0285	0.4101	OPEN LINE FROM BUS 50524 LP-WADS269.0 TO BUS 50527 LP-WADS6 230 CKT1	
10SP*	321	SPS	50513 LP-COOP269.0	1.0246	0.4113	OPEN LINE FROM BUS 50521 LP-HOLL6 230 TO BUS 51699 JONES6 230 CKT1	
10SP*	321	SPS	50513 LP-COOP269.0	1.0246	0.4121	OPEN LINE FROM BUS 50520 LP-HOLL269.0 TO BUS 50521 LP-HOLL6 230 CKT1	
10SP*	321	SPS	50513 LP-COOP269.0	1.0234	0.4468	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
10SP*	321	SPS	50515 LP-CHAL269.0	1.0203	0.3966	OPEN LINE FROM BUS 50521 LP-HOLL6 230 TO BUS 51699 JONES6 230 CKT1	
10SP*	321	SPS	50515 LP-CHAL269.0	1.0203	0.3974	OPEN LINE FROM BUS 50520 LP-HOLL269.0 TO BUS 50521 LP-HOLL6 230 CKT1	
10SP*	321	SPS	50515 LP-CHAL269.0	1.0230	0.4044	OPEN LINE FROM BUS 50527 LP-WADS6 230 TO BUS 51689 LUBE6 230 CKT1	
10SP*	321	SPS	50515 LP-CHAL269.0	1.0230	0.4045	OPEN LINE FROM BUS 50524 LP-WADS269.0 TO BUS 50527 LP-WADS6 230 CKT1	
10SP*	321	SPS	50515 LP-CHAL269.0	1.0171	0.4248	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 50509 LP-MLWK269.0 CKT1	
10SP*	321	SPS	50516 LP-SLAT269.0	1.0242	0.4152	OPEN LINE FROM BUS 50521 LP-HOLL6 230 TO BUS 51699 JONES6 230 CKT1	
10SP*	321	SPS	50516 LP-SLAT269.0	1.0242	0.4160	OPEN LINE FROM BUS 50520 LP-HOLL269.0 TO BUS 50521 LP-HOLL6 230 CKT1	
10SP*	321	SPS	50516 LP-SLAT269.0	1.0275	0.4247	OPEN LINE FROM BUS 50527 LP-WADS6 230 TO BUS 51689 LUBE6 230 CKT1	
10SP*	321	SPS	50516 LP-SLAT269.0	1.0275	0.4248	OPEN LINE FROM BUS 50524 LP-WADS269.0 TO BUS 50527 LP-WADS6 230 CKT1	
10SP*	321	SPS	50516 LP-SLAT269.0	1.0228	0.4508	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
10SP*	321	SPS	50517 LP-SINT269.0	1.0271	0.4325	OPEN LINE FROM BUS 50521 LP-HOLL6 230 TO BUS 51699 JONES6 230 CKT1	
10SP*	321	SPS	50517 LP-SINT269.0	1.0271	0.4332	OPEN LINE FROM BUS 50520 LP-HOLL269.0 TO BUS 50521 LP-HOLL6 230 CKT1	
10SP*	321	SPS	50517 LP-SINT269.0	1.0298	0.4458	OPEN LINE FROM BUS 50527 LP-WADS6 230 TO BUS 51689 LUBE6 230 CKT1	
10SP*	321	SPS	50517 LP-SINT269.0	1.0298	0.4459	OPEN LINE FROM BUS 50524 LP-WADS269.0 TO BUS 50527 LP-WADS6 230 CKT1	
10SP*	321	SPS	50517 LP-SINT269.0	1.0257	0.4689	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
10SP*	321	SPS	50518 LP-SINT6 230	0.9819	0.6842	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
10SP*	321	SPS	50518 LP-SINT6 230	0.9853	0.7017	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTH6 230 CKT1	
10SP*	321	SPS	50518 LP-SINT6 230	0.9855	0.7862	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 50509 LP-MLWK269.0 CKT1	
10SP*	321	SPS	50518 LP-SINT6 230	0.9851	0.7862	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 51647 CARLISL6 230 CKT1	
10SP*	321	SPS	50518 LP-SINT6 230	0.9857	0.7967	OPEN LINE FROM BUS 50521 LP-HOLL6 230 TO BUS 51699 JONES6 230 CKT1	
10SP*	321	SPS	50520 LP-HOLL269.0	1.0317	0.4322	OPEN LINE FROM BUS 50521 LP-HOLL6 230 TO BUS 51699 JONES6 230 CKT1	

Study Case	Transfer Amount (MW)	AREA	Monitored Bus with Violation	BC Voltage (PU)	TC Voltage (PU)	Outaged Branch Causing Voltage Violation	Comments
10SP*	321	SPS	50520 LP-HOLL269.0	1.0317	0.4329	OPEN LINE FROM BUS 50520 LP-HOLL269.0 TO BUS 50521 LP-HOLL6 230 CKT1	
10SP*	321	SPS	50520 LP-HOLL269.0	1.0364	0.4514	OPEN LINE FROM BUS 50527 LP-WADS6 230 TO BUS 51689 LUBE6 230 CKT1	
10SP*	321	SPS	50520 LP-HOLL269.0	1.0364	0.4515	OPEN LINE FROM BUS 50524 LP-WADS269.0 TO BUS 50527 LP-WADS6 230 CKT1	
10SP*	321	SPS	50520 LP-HOLL269.0	1.0309	0.4816	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
10SP*	321	SPS	50521 LP-HOLL6 230	0.9814	0.3825	OPEN LINE FROM BUS 50521 LP-HOLL6 230 TO BUS 51699 JONES6 230 CKT1	
10SP*	321	SPS	50521 LP-HOLL6 230	0.9867	0.6837	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
10SP*	321	SPS	50521 LP-HOLL6 230	0.9908	0.7088	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRT6 230 CKT1	
10SP*	321	SPS	50521 LP-HOLL6 230	0.9906	0.7893	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 50509 LP-MLWK269.0 CKT1	
10SP*	321	SPS	50521 LP-HOLL6 230	0.9907	0.7893	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 51647 CARLISL6 230 CKT1	
10SP*	321	SPS	50523 LP-BRND269.0	1.0230	0.3885	OPEN LINE FROM BUS 50521 LP-HOLL6 230 TO BUS 51699 JONES6 230 CKT1	
10SP*	321	SPS	50523 LP-BRND269.0	1.0230	0.3893	OPEN LINE FROM BUS 50520 LP-HOLL269.0 TO BUS 50521 LP-HOLL6 230 CKT1	
10SP*	321	SPS	50523 LP-BRND269.0	1.0253	0.3919	OPEN LINE FROM BUS 50527 LP-WADS6 230 TO BUS 51689 LUBE6 230 CKT1	
10SP*	321	SPS	50523 LP-BRND269.0	1.0253	0.3920	OPEN LINE FROM BUS 50524 LP-WADS269.0 TO BUS 50527 LP-WADS6 230 CKT1	
10SP*	321	SPS	50523 LP-BRND269.0	1.0224	0.4108	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 50509 LP-MLWK269.0 CKT1	
10SP*	321	SPS	50524 LP-WADS269.0	1.0327	0.4296	OPEN LINE FROM BUS 50527 LP-WADS6 230 TO BUS 51689 LUBE6 230 CKT1	
10SP*	321	SPS	50524 LP-WADS269.0	1.0327	0.4297	OPEN LINE FROM BUS 50524 LP-WADS269.0 TO BUS 50527 LP-WADS6 230 CKT1	
10SP*	321	SPS	50524 LP-WADS269.0	1.0267	0.4422	OPEN LINE FROM BUS 50521 LP-HOLL6 230 TO BUS 51699 JONES6 230 CKT1	
10SP*	321	SPS	50524 LP-WADS269.0	1.0267	0.4429	OPEN LINE FROM BUS 50520 LP-HOLL269.0 TO BUS 50521 LP-HOLL6 230 CKT1	
10SP*	321	SPS	50524 LP-WADS269.0	1.0251	0.4791	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
10SP*	321	SPS	50526 LP-OLIV269.0	1.0187	0.4020	OPEN LINE FROM BUS 50521 LP-HOLL6 230 TO BUS 51699 JONES6 230 CKT1	
10SP*	321	SPS	50526 LP-OLIV269.0	1.0187	0.4027	OPEN LINE FROM BUS 50520 LP-HOLL269.0 TO BUS 50521 LP-HOLL6 230 CKT1	
10SP*	321	SPS	50526 LP-OLIV269.0	1.0214	0.4120	OPEN LINE FROM BUS 50527 LP-WADS6 230 TO BUS 51689 LUBE6 230 CKT1	
10SP*	321	SPS	50526 LP-OLIV269.0	1.0214	0.4121	OPEN LINE FROM BUS 50524 LP-WADS269.0 TO BUS 50527 LP-WADS6 230 CKT1	
10SP*	321	SPS	50526 LP-OLIV269.0	1.0172	0.4366	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
10SP*	321	SPS	50527 LP-WADS6 230	1.0758	0.3704	OPEN LINE FROM BUS 50527 LP-WADS6 230 TO BUS 51689 LUBE6 230 CKT1	
10SP*	321	SPS	50527 LP-WADS6 230	0.9827	0.6735	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
10SP*	321	SPS	50527 LP-WADS6 230	0.9882	0.6988	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRT6 230 CKT1	
10SP*	321	SPS	50527 LP-WADS6 230	0.9879	0.7781	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 50509 LP-MLWK269.0 CKT1	
10SP*	321	SPS	50527 LP-WADS6 230	0.9881	0.7781	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 51647 CARLISL6 230 CKT1	
10SP*	321		Contingency Not Converged			OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	
10SP*	321		Contingency Not Converged			OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
10SP*	321		Contingency Not Converged			OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51534 [TUCO7 345.00] CKT 1	
10SP*	321		Contingency Not Converged			OPEN LINE FROM BUS 54119 [O.K.U.-7345.00] TO BUS 51534 [TUCO7 345.00] CKT 1	
10SP*	321		Contingency Not Converged			REMOVE UNIT 1 FROM BUS 51441 [TOLK1 124.000] DISPATCH	
10SP*	321		Contingency Not Converged			REMOVE UNIT 1 FROM BUS 51442 [TOLK2 124.000] DISPATCH	
10SP*	321		Contingency Not Converged			REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	
10WP*	189		NONE IDENTIFIED				

* Study Cases include higher priority service (SUNC to SPS 150 MW) with required network upgrades.

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 Table 5 - Network Load Totals
 and Tie Line MW Limits by Season

Southwest Power Pool
 System Impact Study

Study Case	Network Load MW	Network Load MVAR	Transfer Amount (MW)	Existing Service Modeled to Network Load (MW)	LP&L Tie MW Limit	LP&L Tie MW Limit @ 1.0 PF	LP&L Tie MW Limit @ 0.99 PF	LP&L Tie MW Limit @ 0.98 PF	LP&L Tie MW Limit @ 0.97 PF	LP&L Tie MW Limit @ 0.96 PF	LP&L Tie MW Limit @ 0.95 PF	LP&L Tie MW Limit @ 0.94 PF	LP&L Tie MW Limit @ 0.93 PF	LP&L Tie MW Limit @ 0.92 PF	LP&L Tie MW Limit @ 0.91 PF	LP&L Tie MW Limit @ 0.90 PF
05SP	329	50.7	274	55	N/A	337	273	254	241	228	220	211	204	198	193	189
05SH	279	43	224	55	279(1)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
05FA	214	33	159	55	214(1)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
05WP	214	33	159	55	214(1)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
07SP	347	53.5	292	55	N/A	265	213	196	184	175	169	163	158	154	149	146
07WP	226	34.8	171	55	226(1)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10SP	376	57.9	321	55	N/A	170	134	124	118	112	108	103	100	95	93	90
10WP	244	37.6	189	55	244(1)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10SP*	376	57.9	321	55	N/A	332	290	273	262	252	245	238	232	226	220	215
10WP*	244	37.6	189	55	244(1)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

* Study Cases include higher priority service (SUNC to SPS 150 MW) with required network upgrades.

(1) Maximum Amount Evaluated

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Table 6 - Summary of Upgrades Required
for Requested Service without Higher Priority
SECI to SPS 150 MW Request
and Assigned Upgrades Included

Southwest Power Pool
System Impact Study

Facility & Network Upgrade	Transmission Owner	Engineering & Construction Cost (\$)	Eng. & Const. Lead Time (Months)	Const. Only Lead Time (Months)	Date Needed (M/D/Y)	Scheduled Date In Service (M/D/Y)
*TUCO 230 kV Bus Voltage 2 50 MVAR Shunt Capacitors on 230 kV bus at TUCO	SPS	\$1,900,000	14	2	7/15/2005	6/1/2007
*TUCO 230 kV Bus Voltage 50 MVAR Shunt Capacitors on 230 kV bus at Swisher	SPS	\$1,100,000	14	2	7/15/2005	6/1/2007
TUCO 230 kV Bus Voltage Add +150/-50 SVC on 230 kV bus at TUCO	SPS	\$11,700,000	18	4	7/15/2005	6/1/2007
*TUCO 230/115 kV Transformer Add Second 230/115 kV Transformer	SPS	\$2,350,000	18	4	6/1/2008	6/1/2008
TUCO 230 kV Bus Voltage 50 MVAR Shunt Capacitors on 230 kV bus at Carlisle	SPS	\$1,400,000	14	2	7/15/2005	6/1/2007
TUCO 230 kV Bus Voltage 50 MVAR Shunt Capacitors on 230 kV bus at Lubbock South	SPS	\$1,200,000	14	2	7/15/2005	6/1/2007
Total		\$19,650,000				

*Upgrade Assigned to Higher Priority SECI to SPS 150 MW Request with an Scheduled In Service Date of 6/1/2007

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Table 7 - Summary of Upgrades Required
for Requested Service with Higher Priority
SECI to SPS 150 MW Request
and Assigned Upgrades Included

Southwest Power Pool
System Impact Study

Facility & Network Upgrade	Transmission Owner	Engineering & Construction Cost (\$)	Eng. & Const. Lead Time (Months)	Const. Only Lead Time (Months)	Date Needed (M/D/Y)	Scheduled Date In Service (M/D/Y)
TUCO 230 kV Bus Voltage Add +150/-50 SVC on 230 kV bus at TUCO	SPS	\$11,700,000	18	4	7/15/2005	6/1/2007
PALODU - RANDALL COUNTY INTERCHANGE 115KV Rebuild 9 miles of 115 kV circuit with 397 ACSR on T-0-102 structures.	SPS	\$1,170,000	11	7	6/1/2009	6/1/2009
HAPPY INTERCHANGE - PALODU 115KV Rebuild 24 miles of 115 kV circuit with 397 ACSR on T-0-102 structures.	SPS	\$3,130,000	11	7	6/1/2009	6/1/2009
Total		\$16,000,000				

Study Case	Transfer Amount (MW)	From Area	To Area	Monitored Branch Overload	Rate <MVA>	BC % Loading	TC % Loading	%TDF	Outaged Branch Causing Overload	ATC (MW)	Solution	Estimated Cost
05SP	274			NONE IDENTIFIED						274		
05SH	224			NONE IDENTIFIED						224		
05FA	159			NONE IDENTIFIED						159		
05WP	159			NONE IDENTIFIED						159		
07SP	292			NONE IDENTIFIED						292		
07WP	171			NONE IDENTIFIED						171		
10SP	321			Contingency Not Converged					50518 LP-SINT6 230 to 51681 LUBS6 230 CKT 1	N/A	Contingency Converged with Selected Upgrades, No Limitations Identified	
10SP	321			Contingency Not Converged					50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	N/A		
10WP	189			NONE IDENTIFIED						189		
											Total Estimated Engineering and Construction Cost	\$0
10SP*	321			NONE IDENTIFIED						321		
10WP*	189			NONE IDENTIFIED						189		
											Total Estimated Engineering and Construction Cost	\$0

* Study Cases include higher priority service (SUNC to SPS 150 MW) with required network upgrades.

Table 1.2a - Modeling Representation for Table 1.2
Includes Bus Numbers and Bus Names

Southwest Power Pool
System Impact Study

Study Case	Transfer Amount (MW)	From Area	To Area	Monitored Branch Over 100% Rate B	Rate <MVA>	BC % Loading	TC % Loading	%TDF	Outaged Branch Causing Overload	ATC (MW)	Solution	Estimated Cost
05SP	274			NONE IDENTIFIED						274		
05SH	224			NONE IDENTIFIED						224		
05FA	159			NONE IDENTIFIED						159		
05WP	159			NONE IDENTIFIED						159		
07SP	292			Contingency Not Converged					REMOVE UNIT 1 FROM BUS 51441 [TOLK1 124.000] DISPATCH	N/A		
07SP	292			Contingency Not Converged					REMOVE UNIT 1 FROM BUS 51442 [TOLK2 124.000] DISPATCH	N/A		
07WP	171			NONE IDENTIFIED						171		
10SP	321	SPS	SPS	51532 TUCO3 115 to 51533 TUCO6 230 CKT 1	252	95.3	108.3	10.2	51533 TUCO6 230 to 51647 CARLISL6 230 CKT 1	116	Add Second 230/115 kV Transformer	\$2,350,000
10SP	321	SPS	SPS	51020 RANDALL3 115 to 51021 RANDALL6 230 CKT 1	258.75	92.3	104.1	9.5	50915 NICHOL6 230 to 51041 AMARLS6 230 CKT 1	210	Relieved or Impact Removed by Selected Upgrades	
10SP	321	SPS	SPS	51966*MUSTGN3 115 51969 MUSTANG6 230 1	150	87.6	105.3	8.3	REMOVE UNIT 1 FROM BUS 51971 [MUSTG1 113.800] DISPATCH	225	"	
10SP	321	SPS	SPS	51966*MUSTGN3 115 51969 MUSTANG6 230 1	150	87.1	104.9	8.3	REMOVE UNIT 1 FROM BUS 51972 [MUSTG2 113.800] DISPATCH	233	"	
10SP	321	SPS	SPS	51020 RANDALL3 115 to 51082 PALODU 3 115 CKT 1	99	69.2	110.6	12.8	51041 AMARLS6 230 to 51321 SWISHER6 230 CKT 1	239	"	
10SP	321	SPS	SPS	51082 PALODU 3 115 to 51302 HAPPY3 115 CKT 1	99	67.6	109.1	12.8	51041 AMARLS6 230 to 51321 SWISHER6 230 CKT 1	251	"	
10SP	321	SPS	SPS	51532 TUCO3 115 to 51533 TUCO6 230 CKT 1	252	81.7	102.6	16.4	51533 TUCO6 230 to 51699 JONES6 230 CKT 1	282	"	
10SP	321	SPS	SPS	51360 COX3 115 to 51366 LH-COX3 115 CKT 1	90	59.9	104.6	12.5	51532 TUCO3 115 to 51533 TUCO6 230 CKT 1	288	"	
10SP	321	SPS	SPS	51366 LH-COX3 115 to 51402 HALECO3 115 CKT 1	90	60.1	104.5	12.5	51532 TUCO3 115 to 51533 TUCO6 230 CKT 1	288	"	
10SP	321	SPS	SPS	51366 LH-COX3 115 to 51402 HALECO3 115 CKT 1	90	54.9	101.2	13.0	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	313	"	
10SP	321	SPS	SPS	51360 COX3 115 to 51366 LH-COX3 115 CKT 1	90	54.6	101.2	13.1	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	313	"	
10SP	321	SPS	SPS	51652 DOUD3 115 to 51746 SP-YUMA3 115 CKT 1	161	54.3	101.2	23.5	51533 TUCO6 230 to 51647 CARLISL6 230 CKT 1	313	"	
10SP	321			Contingency Not Converged					REMOVE UNIT 1 FROM BUS 51441 [TOLK1 124.000] DISPATCH	N/A	Contingency Converged with Selected Upgrades, No Limitations Identified	
10SP	321			Contingency Not Converged					REMOVE UNIT 1 FROM BUS 51442 [TOLK2 124.000] DISPATCH	N/A	"	
10SP	321			Contingency Not Converged					REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	N/A	"	
10SP	321			Contingency Not Converged					50507 LP-MLWK6 230 to 50509 LP-MLWK2 69 CKT 1	N/A	"	
10SP	321			Contingency Not Converged					50507 LP-MLWK6 230 to 51647 CARLISL6 230 CKT 1	N/A	"	
10SP	321			Contingency Not Converged					50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	N/A	"	
10SP	321			Contingency Not Converged					50518 LP-SINT6 230 to 51681 LUBS6 230 CKT 1	N/A	"	
10SP	321			Contingency Not Converged					50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	N/A	"	
10SP	321			Contingency Not Converged					50521 LP-HOLL6 230 to 51699 JONES6 230 CKT 1	N/A	"	
10SP	321			Contingency Not Converged					50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	N/A	"	
10SP	321			Contingency Not Converged					50527 LP-WADS6 230 to 51689 LUBE6 230 CKT 1	N/A	"	
10SP	321			Contingency Not Converged					51533 TUCO6 230 to 51534 TUCO7 345 CKT 1	N/A	"	
10SP	321			Contingency Not Converged					51435 TOLKE6 230 to 51533 TUCO6 230 CKT 1	N/A	"	
10SP	321			Contingency Not Converged					51733 SUNDOWN6 230 to 51763 WOLFRTH6 230 CKT 1	N/A	"	
10SP	321			Contingency Not Converged					54119 O.K.U.-7 345 to 51534 TUCO7 345 CKT 1	N/A	"	
10WP	189			NONE IDENTIFIED						189		
											Total Estimated Engineering and Construction Cost ¹	\$2,350,000
10SP*	321	SPS	SPS	51020 RANDALL3 115 to 51082 PALODU 3 115 CKT 1	99	76.1	110.7	10.7	51041 AMARLS6 230 to 51321 SWISHER6 230 CKT1	222	Rebuild 9 miles of 115 kV circuit with 397 ACSR on T-0-102 structures.	\$1,170,000
10SP*	321	SPS	SPS	51082 PALODU 3 115 to 51302 HAPPY3 115 CKT 1	99	74.4	109.0	10.7	51041 AMARLS6 230 to 51321 SWISHER6 230 CKT1	237	Rebuild 24 miles of 115 kV circuit with 397 ACSR on T-0-102 structures.	\$3,130,000
10SP*	321	SPS	SPS	51020 RANDALL3 115 to 51021 RANDALL6 230 CKT 1	258.75	92.5	101.0	6.9	50915 NICHOL6 230 to 51041 AMARLS6 230 CKT1	282	Open Amarillo South 230/115KV Transformer to Relieve Facility	
10SP*	321			Contingency Not Converged					50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	N/A	Contingency Converged with Selected Upgrades, No Limitations Identified	
10SP*	321			Contingency Not Converged					50518 LP-SINT6 230 to 51681 LUBS6 230 CKT 1	N/A	"	
10SP*	321			Contingency Not Converged					51533 TUCO6 230 to 51534 TUCO7 345 CKT 1	N/A	"	
10SP*	321			Contingency Not Converged					54119 O.K.U.-7 345 to 51534 TUCO7 345 CKT 1	N/A	"	
10SP*	321			Contingency Not Converged					REMOVE UNIT 1 FROM BUS 51441 [TOLK1 124.000] DISPATCH	N/A	"	
10SP*	321			Contingency Not Converged					REMOVE UNIT 1 FROM BUS 51442 [TOLK2 124.000] DISPATCH	N/A	"	
10SP*	321			Contingency Not Converged					REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	N/A	"	
10WP*	189			NONE IDENTIFIED						189		
											Total Estimated Engineering and Construction Cost ¹	\$4,300,000

* Study Cases include higher priority service (SUNC to SPS 150 MW) with required network upgrades.