SPP Southwest Power Pool

System Impact Study SPP-2004-006-2 For Network Service Requested By Southwestern Public Service Company

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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1. Executive Summary

Southwestern Public Service Company 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 ATC and upgrades required may vary from these results due to the status of three higher priority requests. The higher priority requests include a SECI to SPS 150 MW request, a SECI to SPS 300 MW request, and a SPS to EDDY 200 MW request. Additional analysis was performed with the higher priority requests and assigned upgrades included in the models. The outcome of the higher priority requests 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 for Scenario 1 and 2, respectively. Tables 2.1 and 2.2 lists the SPP voltage violations caused or impacted by the transfers modeled for 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 nine worst contingencies based on the tie line power factor for the 2005, 2007, and 2010 Summer Peak models, 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 requests and assigned upgrades included in the 2010 Summer Peak model determined that no upgrades would be needed through 6/1/2011, assuming a 0.95 lagging power factor at the ties and a Network load forecast of 376 MW for 2010 Summer Peak. Figure 3 includes plots of the two most limiting contingencies with the higher priority requests and assigned upgrades included.

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 and the 50 MVAR capacitor bank at Swisher 230 kV 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.

2. Introduction

Southwestern Public Service Company 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 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 across the SPS and LP&L tie lines. 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 tie line lagging power factor. Additional analysis was performed with the higher priority requests and assigned upgrades included in the 2010 Summer Peak and 2010/11 Winter Peak. The outcome of the higher priority requests 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, AECI, 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 AECI, 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 SPS to LP&L 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 assigned upgrades 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-2004-006-2 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 for 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 for 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.

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.

Other additional plots added to the figures include, two additional plots added to Figures 2 and 3 to determine the effects on the most limiting event with a subset of the required upgrades modeled and all the required upgrades modeled. The required upgrades for the Network Service are summarized in Table 6. Also, two additional plots were added to Figure 3 to determine the effects on the two most limiting events with the higher priority requests and assigned upgrades modeled. These additional plots illustrate the impact of the required upgrades and the higher priority service on the SPS to LP&L 230 kV tie line limits.

No SPP or Non-SPP thermal overloads or voltage violation were caused or impacted by the modeling the required upgrades listed in Table 6.

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 and the 50 MVAR capacitor bank at Swisher 230 kV 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 requests also requires a new Tuco 345/115 kV transformer which would eliminate the need for a second Tuco 230/115 kV transformer.

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.

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 nine worst contingencies based on the tie line power factor for the 2005, 2007, and 2010 Summer Peak models, 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 requests and assigned upgrades included in the 2010 Summer Peak model determined that no upgrades would be needed through 6/1/2011, assuming a 0.95 lagging power factor at the ties and a Network load forecast of 376 MW for 2010 Summer Peak. Figure 3 includes plots of the two most limiting contingencies with the higher priority requests and assigned upgrades included.

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 and the 50 MVAR capacitor bank at Swisher 230 kV 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 1: SPS to LP&L Tie Line MW Limits for 2005 Summer Peak Scenario 2 (Includes LP&L Limitations)

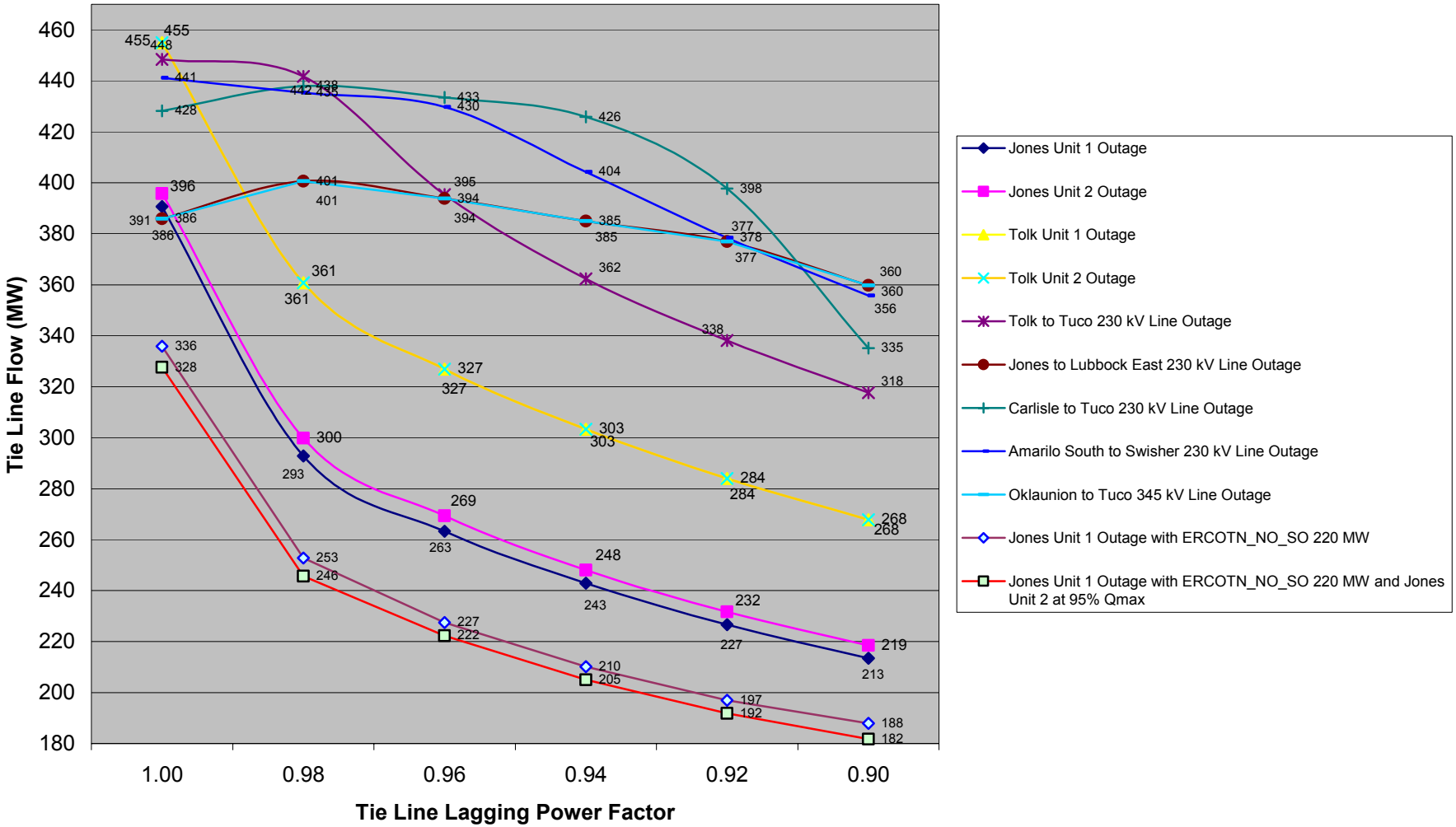


Figure 2: SPS to LP&L Tie Line MW Limits for 2007 Summer Peak Scenario 2 (Includes LP&L Limitations)

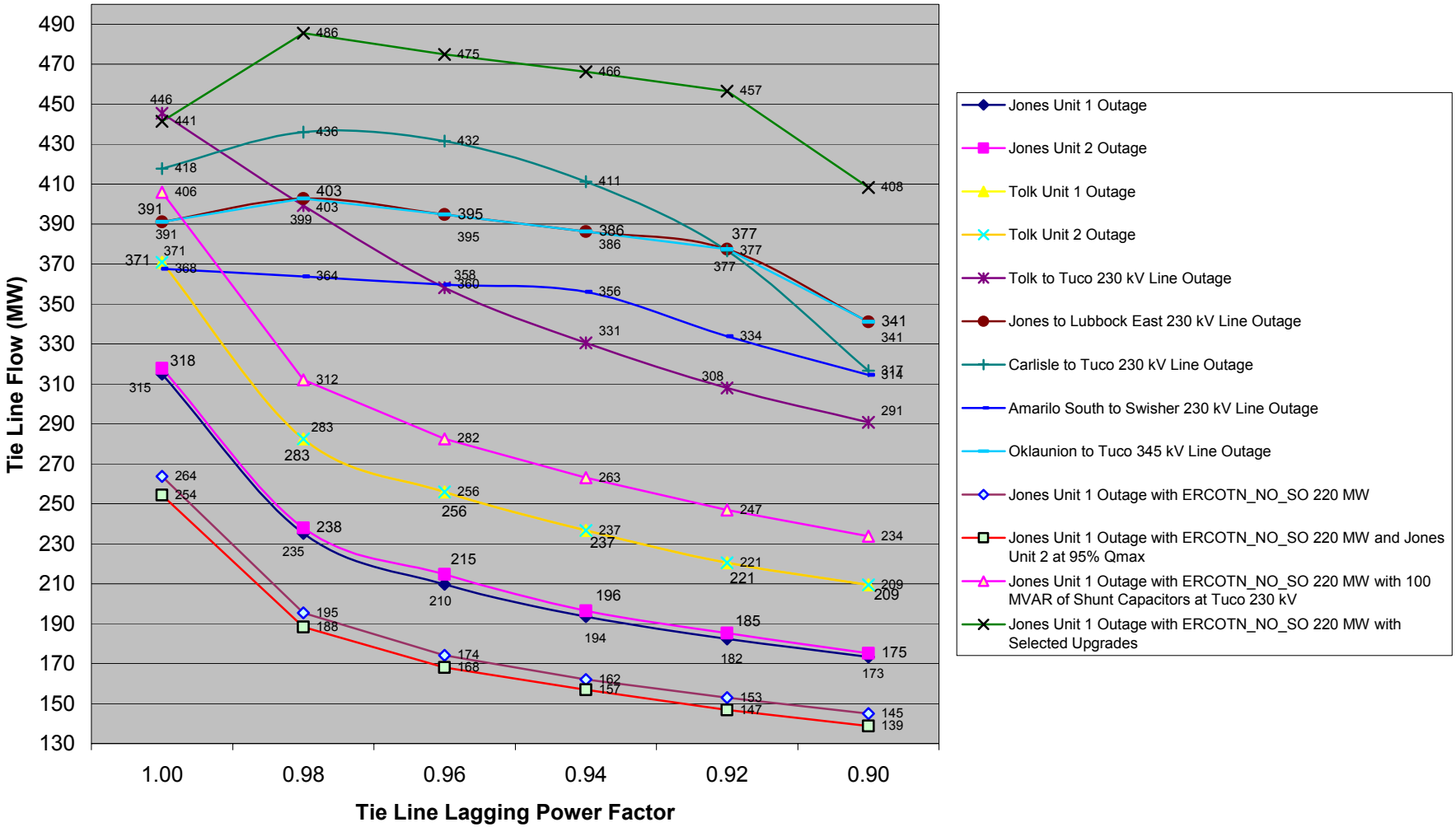


Figure 3: SPS to LP&L Tie Line MW Limits for 2010 Summer Peak Scenario 2 (Includes LP&L Limitations)

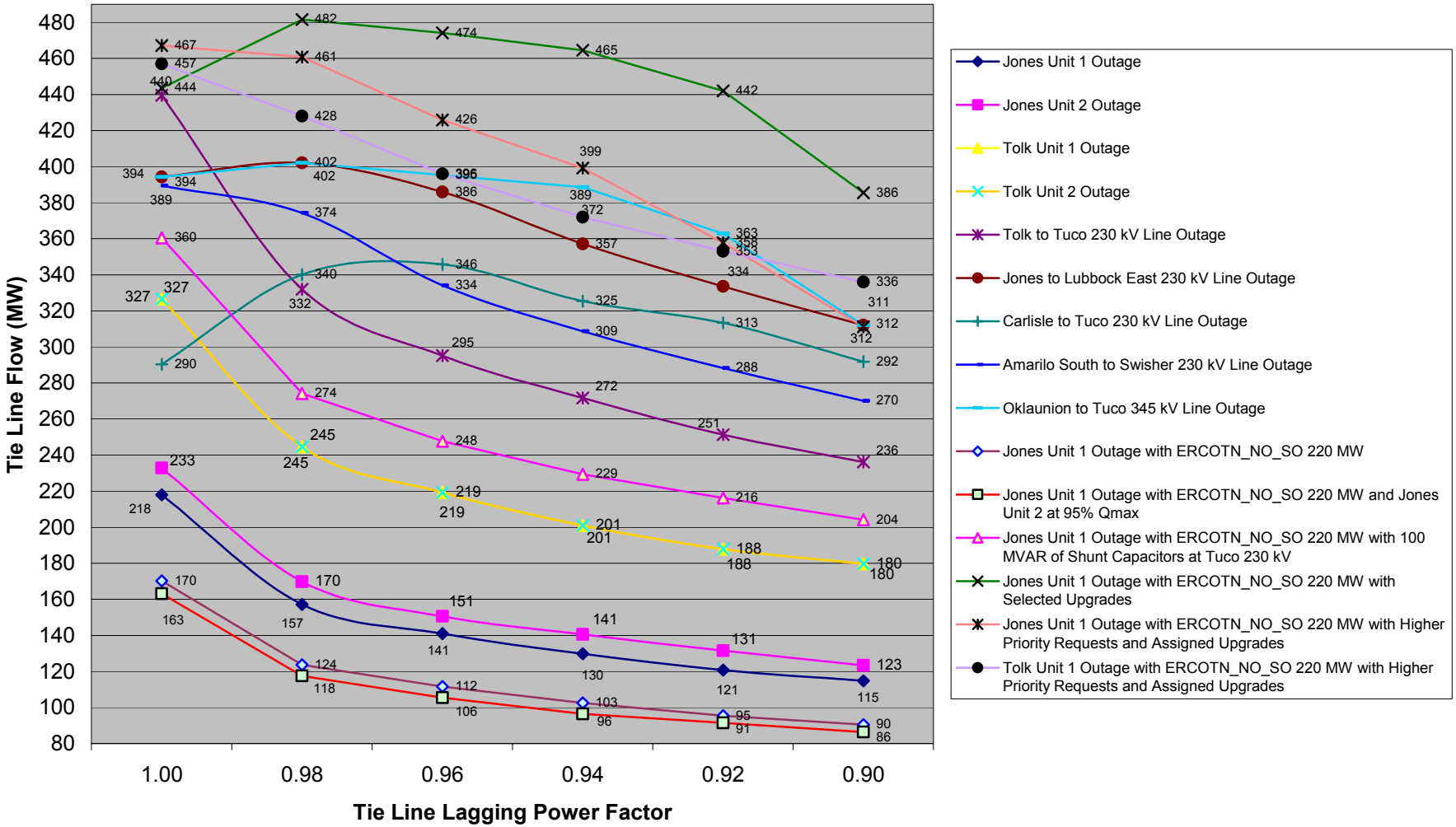


Figure 4: SPS to LP&L Tie Line MW Limits for 2007 Summer Peak Scenario 2 with incremental upgrades modeled (Includes LP&L Limitations)

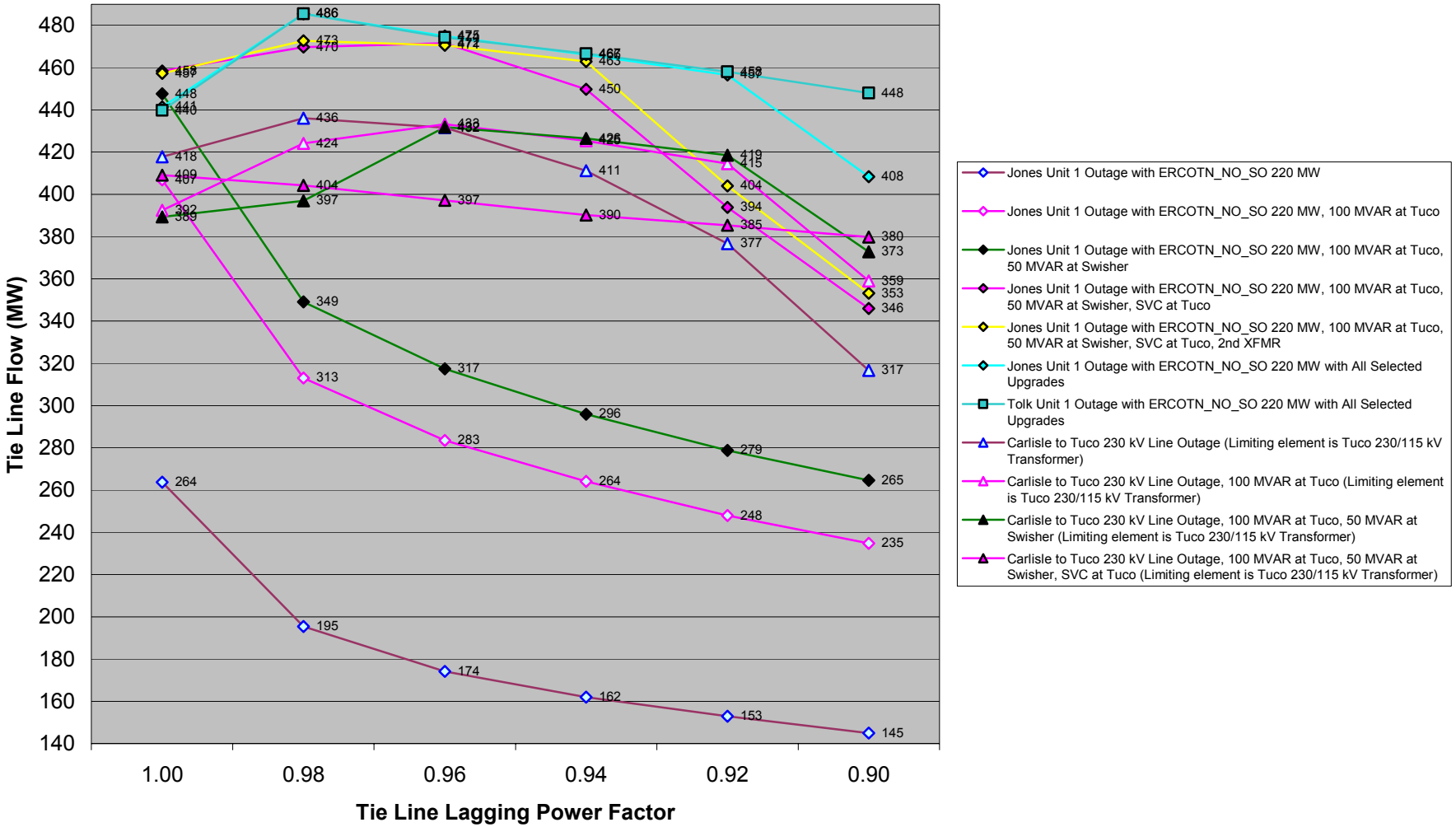
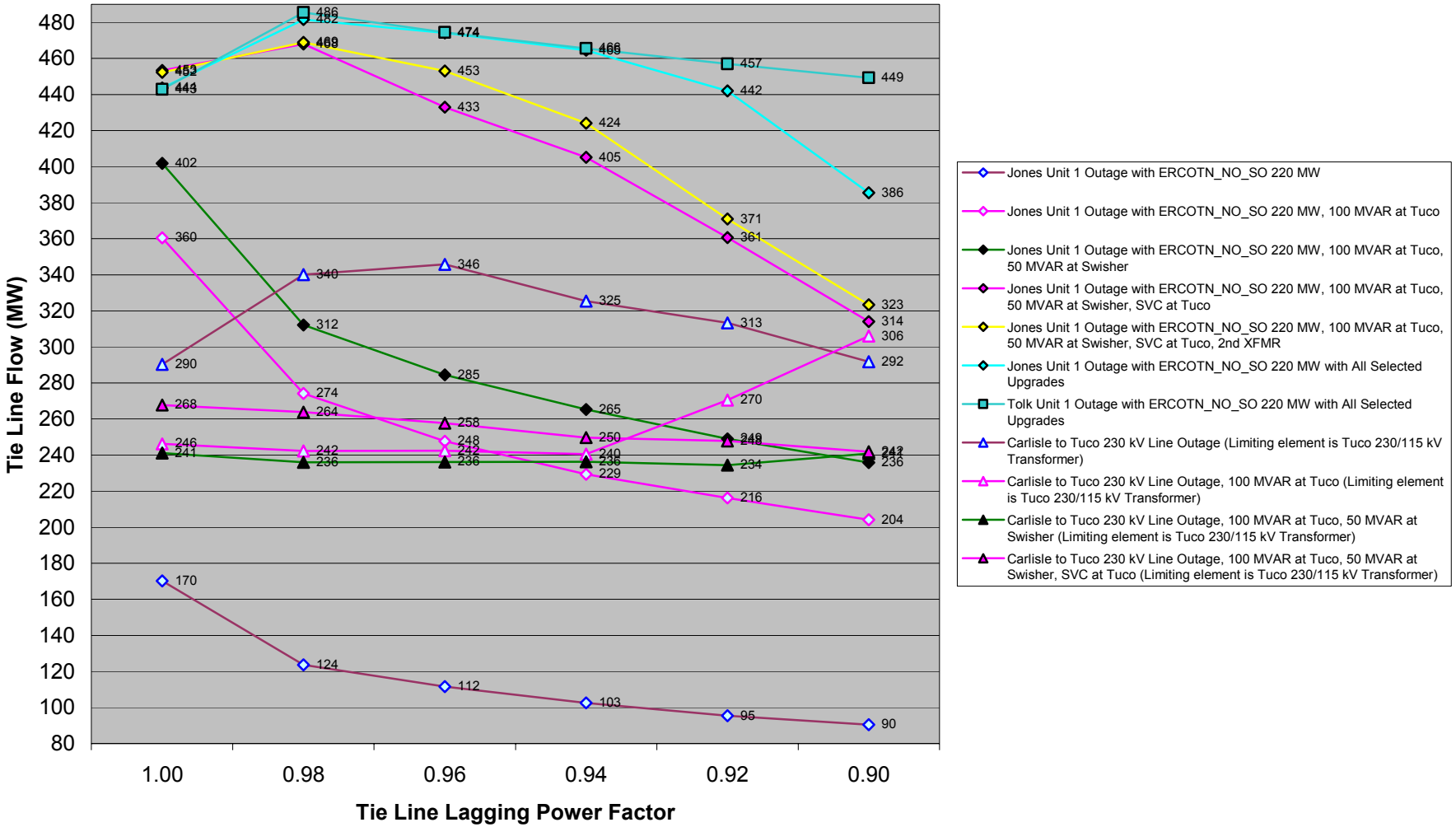


Figure 5: SPS to LP&L Tie Line MW Limits for 2010 Summer Peak Scenario 2 with incremental upgrades modeled (Includes LP&L Limitations)



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 - X 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. Excld 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 - X Phase shift adjustment
   _ Flat start
   _ Lock DC taps
   _ Lock switched shunts

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	
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 450 MW and SPS to EDDY 200 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	51647 CARLISL6 230	0.959433	0.870236	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	0.97863	0.869611	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	274	"	
05SH	224	SPS	51647 CARLISL6 230	0.983865	0.882617	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	0.985555	0.886502	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	0.947394	0.868486	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	0.97867	0.86581	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	292	"	
07WP	171	SPS	51689 LUBE6 230	0.993401	0.894579	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	171	Not a Load Serving Bus	
10SP	321	SPS	51533 TUCO6 230	0.971866	0.858235	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	132	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	0.971866	0.858235	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	0.971866	0.858799	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	133	"	
10SP	321	SPS	51533 TUCO6 230	0.971866	0.858799	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	133	"	
10SP	321	SPS	51533 TUCO6 230	0.972329	0.861949	OPEN LINE FROM BUS 51733 [SUNDOWN6230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	138	"	
10SP	321	SPS	51525 LH-FLYD269.0	0.993086	0.897787	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	0.993409	0.898144	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	315	"	
10SP	321	SPS	51525 LH-FLYD269.0	0.993086	0.898632	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	316	"	
10SP	321	SPS	51523 SFLOYD2 69.0	0.993409	0.898989	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	318	"	
10SP	321	SPS	51321 SWISHER6 230	0.955468	0.884493	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	0.955468	0.885552	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	321	"	
10SP	321	SPS	51321 SWISHER6 230	0.955739	0.887665	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	321	"	
10SP	321	SPS	51321 SWISHER6 230	0.955741	0.887801	OPEN LINE FROM BUS 50524 [LP-WADS269.000] TO BUS 50527 [LP-WADS6230.00] CKT 1	321	"	
10SP	321	SPS	51321 SWISHER6 230	0.957967	0.893443	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	321	"	
10SP	321	SPS	51360 COX3 115	0.978446	0.895618	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	321	"	
10SP	321	SPS	51360 COX3 115	0.978446	0.896262	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	321	"	
10SP	321	SPS	51366 LH-COX3 115	0.978524	0.895806	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	321	"	
10SP	321	SPS	51366 LH-COX3 115	0.978523	0.89645	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	321	"	
10SP	321	SPS	51518 FLOYD3 115	0.990559	0.893887	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	321	"	
10SP	321	SPS	51518 FLOYD3 115	0.990559	0.894588	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	321	"	
10SP	321	SPS	51534 TUCO7 345	0.990111	0.888066	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	321	"	
10SP	321	SPS	51534 TUCO7 345	0.990111	0.888579	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	321	"	
10SP	321	SPS	51534 TUCO7 345	0.990528	0.891409	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	321	"	
10SP	321	SPS	51534 TUCO7 345	0.990529	0.891606	OPEN LINE FROM BUS 50524 [LP-WADS269.000] TO BUS 50527 [LP-WADS6230.00] CKT 1	321	"	
10SP	321	SPS	51564 CROSBY3 115	1.000758	0.890203	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	321	"	
10SP	321	SPS	51564 CROSBY3 115	1.000758	0.890938	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	321	"	
10SP	321	SPS	51564 CROSBY3 115	1.002069	0.895019	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	321	"	
10SP	321	SPS	51564 CROSBY3 115	1.002096	0.895113	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	321	"	
10SP	321	SPS	51647 CARLISL6 230	0.911395	0.844319	OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	321	"	
10SP	321	SPS	51647 CARLISL6 230	0.959776	0.797865	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	321	"	
10SP	321	SPS	51647 CARLISL6 230	0.959776	0.798417	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	321	"	
10SP	321	SPS	51647 CARLISL6 230	0.961189	0.802586	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	321	"	
10SP	321	SPS	51647 CARLISL6 230	0.961191	0.802809	OPEN LINE FROM BUS 50524 [LP-WADS269.000] TO BUS 50527 [LP-WADS6230.00] CKT 1	321	"	
10SP	321	SPS	51681 LUBS6 230	0.98624	0.811259	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	321	"	
10SP	321	SPS	51681 LUBS6 230	0.986242	0.811328	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	321	"	
10SP	321	SPS	51681 LUBS6 230	0.986153	0.819437	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	321	"	
10SP	321	SPS	51681 LUBS6 230	0.986153	0.820016	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	321	"	
10SP	321	SPS	51689 LUBE6 230	0.987924	0.796201	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	321	"	
10SP	321	SPS	51689 LUBE6 230	0.987926	0.796273	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	321	"	
10SP	321	SPS	51689 LUBE6 230	0.987939	0.803034	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	321	"	
10SP	321	SPS	51689 LUBE6 230	0.987939	0.803633	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	321	"	
10SP	321	SPS	51689 LUBE6 230	0.987442	0.827254	OPEN LINE FROM BUS 51435 [TOLKE6 230.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51699 JONES6 230	0.991	0.81689	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	321	"	
10SP	321	SPS	51699 JONES6 230	0.991	0.816961	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	321	"	
10SP	321	SPS	51699 JONES6 230	0.991	0.828545	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	321	"	
10SP	321	SPS	51699 JONES6 230	0.991	0.829146	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	0.982036	0.842193	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	321	"	
10SP	321	SPS	51763 WOLFRTH6 230	0.982044	0.842252	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	321	"	
10SP	321	SPS	51763 WOLFRTH6 230	0.981561	0.845323	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	321	"	
10SP	321	SPS	51763 WOLFRTH6 230	0.981561	0.845775	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	321	"	
10SP	321	SPS	51811 GRASSLN6 230	0.991215	0.81919	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	321	"	
10SP	321	SPS	51811 GRASSLN6 230	0.991217	0.819262	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	321	"	
10SP	321	SPS	51811 GRASSLN6 230	0.991121	0.829074	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	321	"	
10SP	321	SPS	51811 GRASSLN6 230	0.991122	0.829677	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	321	"	
10SP	321	SPS	51816 GRAHAM3 115	1.01646	0.899085	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	321	"	
10SP	321	SPS	51816 GRAHAM3 115	1.016469	0.899186	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	321	"	
10SP	321	SPS	51861 BORDEN6 230	0.994328	0.834844	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	321	"	
10SP	321	SPS	51861 BORDEN6 230	0.99433	0.834912	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	321	"	
10SP	321	SPS	51861 BORDEN6 230	0.994233	0.843648	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	321	"	
10SP	321	SPS	51861 BORDEN6 230	0.994233	0.844214	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	321	"	
10SP	321	SPS	52036 DOSS3 115	1.005547	0.877784	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	
10SP	321		Contingency Not Converged			OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	N/A	"	
								Total Estimated Engineering and Construction Cost	$17,300,000
10SP*	321	SPS	51647 CARLISL6 230	0.898438	0.865658	OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	321	Not a Load Serving Bus	
10SP*	321	SPS	51689 LUBE6 230	0.982111	0.863882	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	321	"	
10WP	189	SPS	51689 LUBE6 230	0.989864	0.892132	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	321	Not a Load Serving Bus	
10WP*	189	SPS	51689 LUBE6 230	1.023102	0.895963	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	321	"	
* Study Cases include higher priority service (SUNC to SPS 450 MW and SPS to EDDY 200 MW) with required network upgrades.								Total Estimated Engineering and Construction Cost	$0

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	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	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	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	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	
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	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	
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	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	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	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	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	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	100	12.5	108.6	32.9	BASE CASE	
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	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	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	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	
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	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	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	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	
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	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	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	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	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	37.2	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	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	100	18.2	109.0	28.3	BASE CASE	
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	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			Contingency Not Converged					50518 LP-SINT6 230 to 51681 LUBS6 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			Contingency Not Converged					50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	
10WP	189			NONE IDENTIFIED						
10SP*	321	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	140	14.2	131.0	50.9	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	
10SP*	321	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	140	14.2	131.0	50.9	50518 LP-SINT6 230 to 51681 LUBS6 230 CKT 1	
10SP*	321	SPS	SPS	50513 LP-COOP2 69 to 50516 LP-SLAT2 69 CKT 1	54	31.6	124.3	15.6	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	18.4	126.7	47.2	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	18.4	126.7	47.2	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	
10SP*	321	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	140	12.6	125.4	49.2	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	12.6	125.4	49.2	50527 LP-WADS6 230 to 51689 LUBE6 230 CKT 1	
10SP*	321	SPS	SPS	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	140	17.1	123.1	46.3	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	17.1	123.1	46.2	50527 LP-WADS6 230 to 51689 LUBE6 230 CKT 1	
10SP*	321	SPS	SPS	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	140	17.7	119.9	44.6	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	
10SP*	321	SPS	SPS	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	140	17.7	119.9	44.6	50518 LP-SINT6 230 to 51681 LUBS6 230 CKT 1	
10SP*	321	SPS	SPS	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	140	16.6	118.0	44.3	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	16.6	118.0	44.3	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	21.3	117.0	41.7	BASE CASE	
10SP*	321	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	140	12.1	116.8	45.7	BASE CASE	
10SP*	321	SPS	SPS	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	140	19.9	106.3	37.7	BASE CASE	
10SP*	321	SPS	SPS	50516 LP-SLAT2 69 to 50517 LP-SINT2 69 CKT 1	143	51.3	100.1	21.7	50513 LP-COOP2 69 to 50524 LP-WADS2 69 CKT 1	
10WP*	189			NONE IDENTIFIED						

* Study Cases include higher priority service (SUNC to SPS 450 MW and SPS to EDDY 200 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	0.864622	0.84381	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
05SP	274	SPS	50507 LP-MLWK6 230	0.959246	0.870057	OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
05SP	274	SPS	50521 LP-HOLL6 230	0.988495	0.895347	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
05SP	274	SPS	50527 LP-WADS6 230	1.076891	0.855544	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
05SP	274	SPS	50527 LP-WADS6 230	0.978837	0.869482	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
05SH	224	SPS	50507 LP-MLWK6 230	0.98371	0.882456	OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
05SH	224	SPS	50527 LP-WADS6 230	0.985647	0.886535	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	0.864597	0.83269	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
07SP	292	SPS	50507 LP-MLWK6 230	0.947213	0.868295	OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
07SP	292	SPS	50518 LP-SINT6 230	0.929161	0.885102	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
07SP	292	SPS	50521 LP-HOLL6 230	0.988414	0.874384	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
07SP	292	SPS	50527 LP-WADS6 230	1.076791	0.834018	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
07SP	292	SPS	50527 LP-WADS6 230	0.978877	0.865616	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
07WP	171	SPS	50527 LP-WADS6 230	0.993563	0.894727	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50503 LP-ERSK269.0	1.024633	0.441133	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP	321	SPS	50503 LP-ERSK269.0	1.024685	0.401054	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50503 LP-ERSK269.0	1.024685	0.400333	OPEN LINE FROM BUS 50524 [LP-WADS269.000] TO BUS 50527 [LP-WADS6230.00] CKT 1	
10SP	321	SPS	50503 LP-ERSK269.0	1.027794	0.405681	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP	321	SPS	50503 LP-ERSK269.0	1.027793	0.405385	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50504 LP-MACK269.0	1.028728	0.45861	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP	321	SPS	50504 LP-MACK269.0	1.028822	0.411315	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50504 LP-MACK269.0	1.028822	0.41059	OPEN LINE FROM BUS 50524 [LP-WADS269.000] TO BUS 50527 [LP-WADS6230.00] CKT 1	
10SP	321	SPS	50504 LP-MACK269.0	1.032439	0.415619	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP	321	SPS	50504 LP-MACK269.0	1.032438	0.415316	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50506 LP-NES2 69.0	1.029477	0.471808	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP	321	SPS	50506 LP-NES2 69.0	1.029038	0.416585	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50506 LP-NES2 69.0	1.029038	0.415859	OPEN LINE FROM BUS 50524 [LP-WADS269.000] TO BUS 50527 [LP-WADS6230.00] CKT 1	
10SP	321	SPS	50506 LP-NES2 69.0	1.032992	0.424702	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP	321	SPS	50506 LP-NES2 69.0	1.03299	0.424392	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50507 LP-MLWK6 230	0.866925	0.348134	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
10SP	321	SPS	50507 LP-MLWK6 230	0.959514	0.796361	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP	321	SPS	50507 LP-MLWK6 230	0.959514	0.795808	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50507 LP-MLWK6 230	0.960976	0.800768	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP	321	SPS	50507 LP-MLWK6 230	0.960974	0.800546	OPEN LINE FROM BUS 50527 LP-WADS6 230 TO BUS 51689 LUBE6 230 CKT1	
10SP	321	SPS	50509 LP-MLWK269.0	1.005633	0.403933	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	
10SP	321	SPS	50509 LP-MLWK269.0	1.005633	0.403836	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
10SP	321	SPS	50509 LP-MLWK269.0	1.021833	0.416188	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP	321	SPS	50509 LP-MLWK269.0	1.021833	0.415472	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50509 LP-MLWK269.0	1.022639	0.422634	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50510 LP-VCKS269.0	1.013789	0.422354	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP	321	SPS	50510 LP-VCKS269.0	1.019867	0.400825	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50510 LP-VCKS269.0	1.019867	0.400105	OPEN LINE FROM BUS 50524 [LP-WADS269.000] TO BUS 50527 [LP-WADS6230.00] CKT 1	
10SP	321	SPS	50510 LP-VCKS269.0	1.022343	0.406508	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP	321	SPS	50510 LP-VCKS269.0	1.022341	0.406214	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50511 LP-THOM 69.0	1.014074	0.428394	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP	321	SPS	50511 LP-THOM 69.0	1.018622	0.398993	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50511 LP-THOM 69.0	1.018622	0.398274	OPEN LINE FROM BUS 50524 [LP-WADS269.000] TO BUS 50527 [LP-WADS6230.00] CKT 1	
10SP	321	SPS	50511 LP-THOM 69.0	1.021373	0.40623	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP	321	SPS	50511 LP-THOM 69.0	1.021371	0.405933	OPEN LINE FROM BUS 51733 [SUNDOWN6230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50512 LP-MCCU269.0	1.015243	0.433415	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP	321	SPS	50512 LP-MCCU269.0	1.018999	0.401404	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50512 LP-MCCU269.0	1.018999	0.400684	OPEN LINE FROM BUS 50524 [LP-WADS269.000] 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	1.02217	0.404848	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP	321	SPS	50512 LP-MCCU269.0	1.022168	0.404552	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50513 LP-COOP269.0	1.024505	0.467974	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP	321	SPS	50513 LP-COOP269.0	1.025278	0.419395	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50513 LP-COOP269.0	1.025278	0.418669	OPEN LINE FROM BUS 50524 [LP-WADS269.000] TO BUS 50527 [LP-WADS6230.00] CKT 1	
10SP	321	SPS	50513 LP-COOP269.0	1.029262	0.419625	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP	321	SPS	50513 LP-COOP269.0	1.029261	0.41932	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50515 LP-CHAL269.0	1.018208	0.445768	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP	321	SPS	50515 LP-CHAL269.0	1.020729	0.404753	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50515 LP-CHAL269.0	1.020729	0.404031	OPEN LINE FROM BUS 50524 [LP-WADS269.000] TO BUS 50527 [LP-WADS6230.00] CKT 1	
10SP	321	SPS	50515 LP-CHAL269.0	1.023831	0.414222	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP	321	SPS	50515 LP-CHAL269.0	1.02383	0.413917	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50516 LP-SLAT269.0	1.024474	0.47681	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP	321	SPS	50516 LP-SLAT269.0	1.024996	0.423324	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50516 LP-SLAT269.0	1.024996	0.422598	OPEN LINE FROM BUS 50524 [LP-WADS269.000] TO BUS 50527 [LP-WADS6230.00] CKT 1	
10SP	321	SPS	50516 LP-SLAT269.0	1.028645	0.434458	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP	321	SPS	50516 LP-SLAT269.0	1.028644	0.43414	OPEN LINE FROM BUS 51435 [TOLKE6 230.00] TO BUS 51533 [TUCO6 230.00] CKT 1	
10SP	321	SPS	50517 LP-SINT269.0	1.02832	0.501832	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP	321	SPS	50517 LP-SINT269.0	1.027969	0.440574	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50517 LP-SINT269.0	1.027969	0.439849	OPEN LINE FROM BUS 50524 [LP-WADS269.000] TO BUS 50527 [LP-WADS6230.00] CKT 1	
10SP	321	SPS	50517 LP-SINT269.0	1.031211	0.45562	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP	321	SPS	50517 LP-SINT269.0	1.03121	0.455295	OPEN LINE FROM BUS 50891 [HARRNG1124.000] TO BUS 50907 [HARRNG6 230.00] CKT 1	
10SP	321	SPS	50518 LP-SINT6 230	0.985486	0.801253	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	
10SP	321	SPS	50518 LP-SINT6 230	0.985484	0.801183	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
10SP	321	SPS	50518 LP-SINT6 230	0.985488	0.807897	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP	321	SPS	50518 LP-SINT6 230	0.985488	0.80732	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50518 LP-SINT6 230	0.986046	0.811843	OPEN LINE FROM BUS 50891 [HARRNG1124.000] TO BUS 50907 [HARRNG6 230.00] CKT 1	
10SP	321	SPS	50520 LP-HOLL269.0	1.034418	0.518325	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP	321	SPS	50520 LP-HOLL269.0	1.032717	0.44029	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50520 LP-HOLL269.0	1.032717	0.439564	OPEN LINE FROM BUS 50524 [LP-WADS269.000] TO BUS 50527 [LP-WADS6230.00] CKT 1	
10SP	321	SPS	50520 LP-HOLL269.0	1.037461	0.461322	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP	321	SPS	50520 LP-HOLL269.0	1.03746	0.460997	OPEN LINE FROM BUS 50892 [HARRNG2124.000] TO BUS 50907 [HARRNG6 230.00] CKT 1	
10SP	321	SPS	50521 LP-HOLL6 230	0.990634	0.806672	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	
10SP	321	SPS	50521 LP-HOLL6 230	0.990634	0.806601	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
10SP	321	SPS	50521 LP-HOLL6 230	0.98237	0.389046	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50521 LP-HOLL6 230	0.990798	0.820023	OPEN LINE FROM BUS 50524 [LP-WADS269.000] TO BUS 50527 [LP-WADS6230.00] CKT 1	
10SP	321	SPS	50521 LP-HOLL6 230	0.990798	0.819666	OPEN LINE FROM BUS 50892 [HARRNG2124.000] TO BUS 50907 [HARRNG6 230.00] CKT 1	
10SP	321	SPS	50523 LP-BRND269.0	1.023	0.431702	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP	321	SPS	50523 LP-BRND269.0	1.023	0.396754	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50523 LP-BRND269.0	1.023	0.396036	OPEN LINE FROM BUS 50524 [LP-WADS269.000] TO BUS 50527 [LP-WADS6230.00] CKT 1	
10SP	321	SPS	50523 LP-BRND269.0	1.02569	0.401654	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP	321	SPS	50523 LP-BRND269.0	1.025689	0.401361	OPEN LINE FROM BUS 51733 [SUNDOWN6230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50524 LP-WADS269.0	1.028842	0.513404	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP	321	SPS	50524 LP-WADS269.0	1.027998	0.450405	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50524 LP-WADS269.0	1.027998	0.449677	OPEN LINE FROM BUS 50524 [LP-WADS269.000] TO BUS 50527 [LP-WADS6230.00] CKT 1	
10SP	321	SPS	50524 LP-WADS269.0	1.033623	0.439381	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP	321	SPS	50524 LP-WADS269.0	1.033621	0.439065	OPEN LINE FROM BUS 50892 [HARRNG2124.000] TO BUS 50907 [HARRNG6 230.00] CKT 1	
10SP	321	SPS	50526 LP-OLIV269.0	1.018095	0.459507	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP	321	SPS	50526 LP-OLIV269.0	1.019263	0.409985	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50526 LP-OLIV269.0	1.019263	0.409265	OPEN LINE FROM BUS 50524 [LP-WADS269.000] TO BUS 50527 [LP-WADS6230.00] CKT 1	
10SP	321	SPS	50526 LP-OLIV269.0	1.022433	0.421625	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP	321	SPS	50526 LP-OLIV269.0	1.022431	0.421315	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50527 LP-WADS6 230	0.98799	0.793211	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	
10SP	321	SPS	50527 LP-WADS6 230	0.987988	0.793139	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	0.98803	0.799973	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50527 LP-WADS6 230	0.98803	0.799375	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP	321	SPS	50527 LP-WADS6 230	1.076689	0.378504	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	0.990011	0.892251	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP*	321	SPS	50507 LP-MLWK6 230	0.86461	0.799579	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
10SP*	321	SPS	50518 LP-SINT6 230	0.929168	0.860671	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
10SP*	321	SPS	50507 LP-MLWK6 230	0.898348	0.865423	OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
10SP*	321	SPS	50521 LP-HOLL6 230	0.980772	0.857377	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP*	321	SPS	50527 LP-WADS6 230	1.076555	0.816127	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP*	321	SPS	50527 LP-WADS6 230	0.982371	0.863623	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10WP*	189	SPS	50527 LP-WADS6 230	1.023314	0.89612	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	

* Study Cases include higher priority service (SUNC to SPS 450 MW and SPS to EDDY 200 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	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	
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-HCLI2 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			NONE IDENTIFIED						321		
10WP*	189			NONE IDENTIFIED						189		
											Total Estimated Engineering and Construction Cost	$0

* Study Cases include higher priority service (SUNC to SPS 450 MW and SPS to EDDY 200 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 TUCO6 230	0.97	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 TUCO6 230	0.9705	0.8814	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	140	"	
05SP	274	SPS	51533 TUCO6 230	0.9613	0.9028	REMOVE UNIT 1 FROM BUS 51441 [TOLK1 124.000] DISPATCH	170	"	
05SP	274	SPS	51533 TUCO6 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 TUCO7 345	0.9751	0.8875	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	274	"	
05SP	274	SPS	51534 TUCO7 345	0.9756	0.8909	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	274	"	
05SP	274	SPS	51534 TUCO7 345	0.9518	0.8931	REMOVE UNIT 1 FROM BUS 51441 [TOLK1 124.000] DISPATCH	274	"	
05SP	274	SPS	51534 TUCO7 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	0.849	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	274	"	
05SP	274	SPS	51647 CARLISL6 230	0.962654	0.862155	OPEN LINE FROM BUS 51533 [TUCO6 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 LUBS6 230	0.9771	0.8525	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	274	"	
05SP	274	SPS	51681 LUBS6 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	0.979573	0.862596	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [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 WOLFRTH6 230	0.9764	0.875	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	274	"	
05SP	274	SPS	51763 WOLFRTH6 230	0.9773	0.8797	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	274	"	
05SP	274	SPS	51811 GRASSLN6 230	0.981	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	0.985	0.8683	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	274	"	
05SP	274	SPS	51861 BORDEN6 230	0.9863	0.873	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	274	"	
05SH	224	SPS	51689 LUBE6 230	0.990775	0.888479	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 TUCO6 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 TUCO6 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	0.805	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 TUCO6 230	0.979517	0.857353	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 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	0.7632	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	133	"	
07SP	292	SPS	51777 SOUTHLN269.0	1.0122	0.7674	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	0.789	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	0.785	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	"	

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	51819 YANCY2 69.0	1.0135	0.7895	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	148	"	
07SP	292	SPS	51672 WHEELOC3 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	0.792	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 WHEELOC3 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	0.782	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	0.795	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	0.79	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	158	"	
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	0.802	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	1.024	0.8199	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	177	"	
07SP	292	SPS	51557 SP-ACUF269.0	1.0168	0.825	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	1.0091	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	0.965	0.8619	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	184	"	
07SP	292	SPS	51803 LYNNCO2 69.0	1.039	0.8186	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	184	"	
07SP	292	SPS	50501 MU-FLDY269.0	1.0281	0.825	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	1.004	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	1.023	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	"	

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	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	1.039	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	0.867	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	0.8462	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	194	"	
07SP	292	SPS	51652 DOUD3 115	1.0137	0.8429	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	194	"	
07SP	292	SPS	51569 HENDRIC269.0	1.023	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 DOUD3 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	0.844	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	0.999	0.866	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	0.962	0.8817	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	225	"	
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	1.027	0.873	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	0.911547	0.889004	OPEN LINE FROM BUS 51401 [HALECO2 69.000] TO BUS 51402 [HALECO3 115.00] 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	0.989	0.8891	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	260	"	
07SP	292	SPS	51337 NPLNV2 69.0	0.907076	0.88477	OPEN LINE FROM BUS 51316 [KRESS3 115.00] TO BUS 51320 [SWISHER3115.00] CKT 1	262	"	

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	51335 LH-PL&M269.0	0.909019	0.886762	OPEN LINE FROM BUS 51316 [KRESS3 115.00] TO BUS 51320 [SWISHER3115.00] CKT 1	262	"	
07SP	292	SPS	51339 WPLNV2 69.0	0.915513	0.893423	OPEN LINE FROM BUS 51401 [HALECO2 69.000] TO BUS 51402 [HALECO3 115.00] 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	0.906815	0.885141	OPEN LINE FROM BUS 51320 [SWISHER3115.00] TO BUS 51321 [SWISHER6230.00] CKT 1	269	"	
07SP	292	SPS	51335 LH-PL&M269.0	0.908765	0.887133	OPEN LINE FROM BUS 51320 [SWISHER3115.00] TO BUS 51321 [SWISHER6230.00] 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	0.894	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	274	"	
07SP	292	SPS	51341 PLAINVW269.0	0.9931	0.894	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	0.897	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	285	"	
07SP	292	SPS	51341 PLAINVW269.0	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	0.916546	0.891944	OPEN LINE FROM BUS 50915 [NICHOL6 230.00] TO BUS 51041 [AMARLS6 230.00] 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	0.943828	0.871321	OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51534 [TUCO7 345.00] CKT 1	292	"	
07SP	292	SPS	51321 SWISHER6 230	0.943829	0.871443	OPEN LINE FROM BUS 54119 [O.K.U.-7345.00] TO BUS 51534 [TUCO7 345.00] CKT 1	292	"	
07SP	292	SPS	51321 SWISHER6 230	0.961931	0.881294	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] 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	0.883	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	0.987	0.801	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51518 FLOYD3 115	1.001075	0.899789	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] 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	0.843	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	0.799	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51534 TUCO7 345	0.958104	0.864891	OPEN LINE FROM BUS 54119 [O.K.U.-7345.00] TO BUS 51534 [TUCO7 345.00] CKT 1	292	"	
07SP	292	SPS	51534 TUCO7 345	0.99261	0.88116	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	292	"	
07SP	292	SPS	51534 TUCO7 345	0.992613	0.881361	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	292	"	
07SP	292	SPS	51559 FLOYDT3 115	0.9952	0.807	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	"	
07SP	292	SPS	51564 CROSBY3 115	1.007578	0.890999	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	292	"	
07SP	292	SPS	51564 CROSBY3 115	1.00759	0.891379	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	292	"	
07SP	292	SPS	51564 CROSBY3 115	1.007564	0.891634	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	"	

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	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	0.727	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51647 CARLISL6 230	0.968478	0.79699	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	292	"	
07SP	292	SPS	51647 CARLISL6 230	0.968486	0.797253	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	292	"	
07SP	292	SPS	51647 CARLISL6 230	0.968707	0.799165	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	0.8554	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	0.9681	0.7141	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51681 LUBS6 230	0.9698	0.7185	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51681 LUBS6 230	0.986657	0.801531	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	292	"	
07SP	292	SPS	51681 LUBS6 230	0.986832	0.801612	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	292	"	
07SP	292	SPS	51681 LUBS6 230	0.986937	0.80945	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	1.021	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	0.988881	0.786713	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	292	"	
07SP	292	SPS	51689 LUBE6 230	0.9887	0.786797	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	292	"	
07SP	292	SPS	51689 LUBE6 230	0.98887	0.789201	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	0.991	0.804552	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	292	"	
07SP	292	SPS	51699 JONES6 230	0.991	0.804634	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	292	"	
07SP	292	SPS	51699 JONES6 230	0.991	0.811237	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	0.8559	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51762 WOLFRTH3 115	1.0221	0.8752	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51762 WOLFRTH3 115	1.0226	0.8786	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51763 WOLFRTH6 230	0.9697	0.7648	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51763 WOLFRTH6 230	0.9709	0.7683	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51763 WOLFRTH6 230	0.98418	0.838559	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	292	"	
07SP	292	SPS	51763 WOLFRTH6 230	0.984309	0.838627	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	292	"	
07SP	292	SPS	51763 WOLFRTH6 230	0.984314	0.841845	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	292	"	
07SP	292	SPS	51767 POSEYT2 69.0	1.0014	0.8329	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51767 POSEYT2 69.0	1.0013	0.8389	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	1.024822	0.898925	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	292	"	
07SP	292	SPS	51804 LYNNCO3 115	1.024871	0.899035	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	0.792	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	0.973	0.723	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	292	"	
07SP	292	SPS	51811 GRASSLN6 230	0.99159	0.808567	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	292	"	
07SP	292	SPS	51811 GRASSLN6 230	0.991598	0.80865	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	292	"	
07SP	292	SPS	51811 GRASSLN6 230	0.99164	0.814252	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	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	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	1.019193	0.890885	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	292	"	
07SP	292	SPS	51816 GRAHAM3 115	1.019233	0.890999	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	292	"	
07SP	292	SPS	51816 GRAHAM3 115	1.019558	0.896427	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	1.014	0.7829	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	292	"	
07SP	292	SPS	51825 BG-YNT2 69.0	1.014	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	"	
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	0.99464	0.825595	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	292	"	
07SP	292	SPS	51861 BORDEN6 230	0.994649	0.825674	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	292	"	
07SP	292	SPS	51861 BORDEN6 230	0.994679	0.830437	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	0.951	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	0.901393	0.727787	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	0.933132	0.691315	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	0.965686	0.65883	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	69	"	
10SP	321	SPS	51523 SFLOYD2 69.0	0.966019	0.659313	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	69	"	
10SP	321	SPS	51533 TUCO6 230	0.967857	0.780481	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	0.967857	0.780481	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	0.955279	0.721649	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	0.974793	0.783525	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	0.639	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-HETL269.0	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	0.967191	0.738004	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	0.98746	0.691496	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	0.966609	0.746826	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	1.00849	0.652083	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	98	"	
10SP	321	SPS	51331 LH-SLVR269.0	0.96721	0.747623	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	98	"	
10SP	321	SPS	51775 SP-SLAT269.0	1.008688	0.654826	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	99	"	
10SP	321	SPS	51339 WPLNV2 69.0	0.958449	0.769347	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	0.606	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	100	"	
10SP	321	SPS	51807 LG-CNTR269.0	1.018	0.6392	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	100	"	
10SP	321	SPS	51777 SOUTHLN269.0	1.011109	0.656125	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	100	"	
10SP	321	SPS	51513 IRICK2 69.0	0.992395	0.698587	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	101	"	

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	50548 CR-TRIN4 138	1.03139	0.615139	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	101	"	
10SP	321	SPS	51777 SOUTHLN269.0	1.011306	0.658856	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	101	"	
10SP	321	SPS	50555 CR-PHIL4 138	1.034837	0.610075	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	102	"	
10SP	321	SPS	50554 CR-MCDN4 138	1.034636	0.610797	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	102	"	
10SP	321	SPS	50558 CR-TATE4 138	1.035237	0.609974	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	1.037458	0.611229	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	104	"	
10SP	321	SPS	50551 CR-PMBR4 138	1.037808	0.611505	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	104	"	
10SP	321	SPS	51779 LG-HCKB269.0	1.014186	0.660965	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	104	"	
10SP	321	SPS	51629 VICKER2 69.0	0.96849	0.757146	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] 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	1.03198	0.626998	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	105	"	
10SP	321	SPS	51779 LG-HCKB269.0	1.014383	0.663683	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	0.97526	0.745898	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	105	"	
10SP	321	SPS	50552 CR-STIL4 138	1.039462	0.615152	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	106	"	
10SP	321	SPS	50548 CR-TRIN4 138	1.038985	0.617553	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	0.971965	0.754068	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	106	"	
10SP	321	SPS	50557 CR-STLA4 138	1.038948	0.618539	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	106	"	
10SP	321	SPS	51775 SP-SLAT269.0	1.010628	0.675908	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	106	"	
10SP	321	SPS	51627 SP-IDAL269.0	0.969736	0.758743	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	106	"	
10SP	321	SPS	51515 BARWISE269.0	0.996607	0.704688	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	106	"	
10SP	321	SPS	50555 CR-PHIL4 138	1.042551	0.612546	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	106	"	
10SP	321	SPS	50554 CR-MCDN4 138	1.042337	0.613259	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	106	"	
10SP	321	SPS	50558 CR-TATE4 138	1.042958	0.612452	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	107	"	
10SP	321	SPS	50543 CR-REED4 138	1.030191	0.638255	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	107	"	
10SP	321	SPS	51629 VICKER2 69.0	0.967261	0.764792	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	107	"	
10SP	321	SPS	50542 CR-LNWL4 138	1.034246	0.631407	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	107	"	
10SP	321	SPS	51801 LG-NH&W269.0	1.024	0.6521	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	107	"	
10SP	321	SPS	51627 SP-IDAL269.0	0.976498	0.747521	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 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	0.967353	0.766546	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	108	"	
10SP	321	SPS	50549 CR-NWSC4 138	1.045199	0.613702	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	108	"	
10SP	321	SPS	50551 CR-PMBR4 138	1.04555	0.613978	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	108	"	
10SP	321	SPS	51775 SP-SLAT269.0	1.008781	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	1.030662	0.644499	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	109	"	
10SP	321	SPS	51627 SP-IDAL269.0	0.968509	0.766374	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	109	"	
10SP	321	SPS	51672 WHEELOC3 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	1.003978	0.697694	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	109	"	
10SP	321	SPS	51777 SOUTHLN269.0	1.013241	0.679842	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	109	"	
10SP	321	SPS	50546 CR-LANG4 138	1.038734	0.630691	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	109	"	
10SP	321	SPS	50545 CR-GRAD4 138	1.039431	0.629339	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	109	"	
10SP	321	SPS	51339 WPLNV2 69.0	0.966156	0.771728	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	109	"	
10SP	321	SPS	50540 CR-BUCH4 138	1.036744	0.636836	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	110	"	
10SP	321	SPS	51627 SP-IDAL269.0	0.968601	0.768124	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	110	"	
10SP	321	SPS	51853 BG-JUST269.0	1.004151	0.700044	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	110	"	
10SP	321	SPS	50552 CR-STIL4 138	1.04718	0.617612	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	110	"	
10SP	321	SPS	51664 ALLEN3 115	1.0091	0.6916	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	110	"	
10SP	321	SPS	50539 CR-RUSS4 138	1.035028	0.64299	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	111	"	
10SP	321	SPS	50557 CR-STLA4 138	1.046613	0.620975	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	1.037484	0.640506	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	111	"	
10SP	321	SPS	51851 BG-GARZ269.0	1.005753	0.700513	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	111	"	
10SP	321	SPS	51777 SOUTHLN269.0	1.011398	0.690384	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	111	"	
10SP	321	SPS	50542 CR-LNWL4 138	1.041687	0.633728	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	0.6986	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	112	"	

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	1.000836	0.71086	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	112	"	
10SP	321	SPS	50501 MU-FLDY269.0	1.001023	0.711086	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	112	"	
10SP	321	SPS	51851 BG-GARZ269.0	1.005926	0.702851	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	112	"	
10SP	321	SPS	50534 CR-VEAL4 138	1.03211	0.654563	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	1.016311	0.684549	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	113	"	
10SP	321	SPS	51513 IRICK2 69.0	1.0197	0.6795	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	113	"	
10SP	321	SPS	50538 CR-KOCH4 138	1.037887	0.646712	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	113	"	
10SP	321	SPS	51337 NPLNV2 69.0	0.956634	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	1.046239	0.633049	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	1.044146	0.63914	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	0.702	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	114	"	
10SP	321	SPS	51337 NPLNV2 69.0	0.9593	0.793	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	114	"	
10SP	321	SPS	50555 CR-PHIL4 138	1.038531	0.650839	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	115	"	
10SP	321	SPS	51855 BG-FLUV269.0	1.024987	0.675351	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	1.014475	0.695029	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	115	"	
10SP	321	SPS	50548 CR-TRIN4 138	1.036569	0.655478	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	115	"	
10SP	321	SPS	50539 CR-RUSS4 138	1.04233	0.645243	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	115	"	
10SP	321	SPS	50554 CR-MCDN4 138	1.038925	0.651665	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	115	"	
10SP	321	SPS	51853 BG-JUST269.0	1.005801	0.711902	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	116	"	
10SP	321	SPS	51855 BG-FLUV269.0	1.025183	0.678051	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	116	"	
10SP	321	SPS	51819 YANCY2 69.0	1.009211	0.706605	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	116	"	
10SP	321	SPS	50534 CR-VEAL4 138	1.039233	0.656719	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	117	"	
10SP	321	SPS	51819 YANCY2 69.0	1.009382	0.708915	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	117	"	
10SP	321	SPS	50549 CR-NWSC4 138	1.042284	0.652319	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	117	"	
10SP	321	SPS	50551 CR-PMBR4 138	1.042777	0.652612	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	1.009123	0.711099	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	0.958562	0.798921	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	118	"	
10SP	321	SPS	51851 BG-GARZ269.0	1.007572	0.714652	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	1.009292	0.713355	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	119	"	
10SP	321	SPS	50545 CR-GRAD4 138	1.037562	0.665695	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	119	"	
10SP	321	SPS	50552 CR-STIL4 138	1.044688	0.655886	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	0.671	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	120	"	
10SP	321	SPS	51759 LG-TWD2 69.0	1.028533	0.683634	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	120	"	
10SP	321	SPS	51783 DIEKEMP269.0	1.028651	0.683813	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	0.692	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	1.004231	0.726035	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	120	"	
10SP	321	SPS	50557 CR-STLA4 138	1.044543	0.658831	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	1.028726	0.686282	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	121	"	
10SP	321	SPS	51373 LH-LST2 69.0	0.980892	0.765868	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	121	"	
10SP	321	SPS	51783 DIEKEMP269.0	1.028844	0.68646	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	121	"	
10SP	321	SPS	50543 CR-REED4 138	1.036275	0.674988	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	121	"	
10SP	321	SPS	50542 CR-LNWL4 138	1.040338	0.669105	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	121	"	
10SP	321	SPS	51349 SPLNV2 69.0	0.970483	0.784793	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	0.692	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	1.011018	0.720572	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	123	"	
10SP	321	SPS	51851 BG-GARZ269.0	1.006006	0.728724	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	123	"	
10SP	321	SPS	51793 GARZA2 69.0	1.031798	0.687679	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	0.680222	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	123	"	
10SP	321	SPS	50546 CR-LANG4 138	1.044661	0.669291	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	124	"	

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	51793 GARZA2 69.0	1.031992	0.690322	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	124	"	
10SP	321	SPS	51855 BG-FLUV269.0	1.027098	0.69874	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	124	"	
10SP	321	SPS	50540 CR-BUCH4 138	1.042804	0.674249	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	1.010911	0.724753	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	1.041139	0.679287	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	1.038246	0.688726	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	127	"	
10SP	321	SPS	51855 BG-FLUV269.0	1.025274	0.709115	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	127	"	
10SP	321	SPS	51525 LH-FLYD269.0	0.989489	0.763789	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	127	"	
10SP	321	SPS	51819 YANCY2 69.0	1.009462	0.734485	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	128	"	
10SP	321	SPS	51523 SFLOYD2 69.0	0.989813	0.764209	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	128	"	
10SP	321	SPS	51371 LH-CDRH269.0	0.9923	0.7608	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	128	"	
10SP	321	SPS	51623 SP-HETL269.0	0.989697	0.76493	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 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	1.018469	0.721981	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	0.983031	0.775876	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	129	"	
10SP	321	SPS	51345 WESTRID269.0	0.974433	0.789449	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	1.018639	0.724223	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	1.030624	0.706566	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	129	"	
10SP	321	SPS	51783 DIEKEMP269.0	1.030742	0.70674	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	130	"	
10SP	321	SPS	51799 LG-NWM2 69.0	1.009371	0.738378	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	130	"	
10SP	321	SPS	51555 SP-SHLW269.0	0.985005	0.776472	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	131	"	
10SP	321	SPS	51349 SPLNV2 69.0	0.978084	0.787121	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	131	"	
10SP	321	SPS	51525 LH-FLYD269.0	0.998176	0.758301	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	131	"	
10SP	321	SPS	51523 SFLOYD2 69.0	0.998498	0.758724	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	132	"	
10SP	321	SPS	51525 LH-FLYD269.0	0.998287	0.759652	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	132	"	
10SP	321	SPS	51623 SP-HETL269.0	0.981821	0.783333	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	1.028817	0.716743	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	133	"	
10SP	321	SPS	51783 DIEKEMP269.0	1.028934	0.716914	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	133	"	
10SP	321	SPS	51523 SFLOYD2 69.0	0.998608	0.760075	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	133	"	
10SP	321	SPS	51793 GARZA2 69.0	1.033887	0.710556	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	133	"	
10SP	321	SPS	51329 BRISCOE269.0	0.958529	0.817237	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	0.981911	0.785043	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	134	"	
10SP	321	SPS	51331 LH-SLVR269.0	0.959136	0.81796	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	1.023278	0.729715	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	0.987615	0.779857	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	135	"	
10SP	321	SPS	51543 ALLMON2 69.0	0.987626	0.77987	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	135	"	
10SP	321	SPS	51341 PLAINVW269.0	0.9967	0.7675	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	135	"	
10SP	321	SPS	51807 LG-CNTR269.0	1.020252	0.735545	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	136	"	
10SP	321	SPS	51827 LG-DRAW269.0	1.023446	0.731926	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	136	"	
10SP	321	SPS	51557 SP-ACUF269.0	1.015418	0.743012	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	136	"	
10SP	321	SPS	51793 GARZA2 69.0	1.032082	0.720703	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	136	"	
10SP	321	SPS	51381 SPRINGL269.0	0.993459	0.774346	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	1.024407	0.733081	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	1.024574	0.735266	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	138	"	
10SP	321	SPS	51345 WESTRID269.0	0.982009	0.791767	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	138	"	
10SP	321	SPS	51553 WHTE&MN269.0	0.989566	0.782306	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 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	1.034663	0.724588	OPEN LINE FROM BUS 50554 [CR-MCDN4138.00] TO BUS 50555 [CR-PHIL4138.00] CKT 1	139	"	

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	51675 ACCO2 69.0	1.0367	0.722	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	139	"	
10SP	321	SPS	51371 LH-CDRH269.0	0.992087	0.780538	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	140	"	
10SP	321	SPS	51616 STANTN3 115	0.994484	0.777651	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 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	"	
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	0.992373	0.780913	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	140	"	
10SP	321	SPS	50554 CR-MCDN4 138	1.03728	0.723102	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	0.723	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	140	"	
10SP	321	SPS	51807 LG-CNTR269.0	1.018717	0.749088	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	141	"	
10SP	321	SPS	50549 CR-NWSC4 138	1.040344	0.723528	OPEN LINE FROM BUS 50554 [CR-MCDN4138.00] TO BUS 50555 [CR-PHIL4138.00] CKT 1	142	"	
10SP	321	SPS	51827 LG-DRAW269.0	1.025047	0.743088	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	142	"	
10SP	321	SPS	50551 CR-PMBR4 138	1.040765	0.723665	OPEN LINE FROM BUS 50554 [CR-MCDN4138.00] TO BUS 50555 [CR-PHIL4138.00] CKT 1	142	"	
10SP	321	SPS	50545 CR-GRAD4 138	1.035001	0.731038	OPEN LINE FROM BUS 50554 [CR-MCDN4138.00] TO BUS 50555 [CR-PHIL4138.00] CKT 1	143	"	
10SP	321	SPS	51541 SP-BECT269.0	0.991792	0.785187	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	143	"	
10SP	321	SPS	51773 SLATON2 69.0	0.99849	0.776837	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 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 OLTON2 69.0	0.997666	0.779891	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	144	"	
10SP	321	SPS	50543 CR-REED4 138	1.033256	0.736245	OPEN LINE FROM BUS 50554 [CR-MCDN4138.00] TO BUS 50555 [CR-PHIL4138.00] CKT 1	144	"	
10SP	321	SPS	50542 CR-LNWL4 138	1.036974	0.732181	OPEN LINE FROM BUS 50554 [CR-MCDN4138.00] TO BUS 50555 [CR-PHIL4138.00] CKT 1	144	"	
10SP	321	SPS	50552 CR-STIL4 138	1.042267	0.725755	OPEN LINE FROM BUS 50554 [CR-MCDN4138.00] TO BUS 50555 [CR-PHIL4138.00] CKT 1	144	"	
10SP	321	SPS	51773 SLATON2 69.0	0.991891	0.78757	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	144	"	
10SP	321	SPS	51801 LG-NH&W269.0	1.026167	0.746301	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	145	"	
10SP	321	SPS	50557 CR-STLA4 138	1.041893	0.727343	OPEN LINE FROM BUS 50554 [CR-MCDN4138.00] TO BUS 50555 [CR-PHIL4138.00] CKT 1	145	"	
10SP	321	SPS	51642 INDIANA3 115	0.997139	0.781874	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	145	"	
10SP	321	SPS	51569 HENDRIC269.0	1.0219	0.75211	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	145	"	
10SP	321	SPS	51567 LH-CROS269.0	1.021998	0.752243	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	145	"	
10SP	321	SPS	51613 STANTN2 69.0	1.000153	0.778809	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	145	"	
10SP	321	SPS	50538 CR-KOCH4 138	1.033477	0.739562	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	0.963939	0.823769	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	0.999304	0.78203	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	0.993563	0.789528	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	147	"	
10SP	321	SPS	51786 SP-WDRW3 115	1.026817	0.750361	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	147	"	
10SP	321	SPS	51786 SP-WDRW3 115	1.02564	0.751884	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	147	"	
10SP	321	SPS	51341 PLAINVW269.0	0.996429	0.786971	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	148	"	
10SP	321	SPS	50546 CR-LANG4 138	1.041549	0.734115	OPEN LINE FROM BUS 50554 [CR-MCDN4138.00] TO BUS 50555 [CR-PHIL4138.00] CKT 1	148	"	
10SP	321	SPS	50540 CR-BUCH4 138	1.039457	0.736735	OPEN LINE FROM BUS 50554 [CR-MCDN4138.00] TO BUS 50555 [CR-PHIL4138.00] CKT 1	148	"	
10SP	321	SPS	51672 WHEELOC3 115	1.011475	0.769698	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	148	"	
10SP	321	SPS	51786 SP-WDRW3 115	1.025763	0.753418	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	148	"	
10SP	321	SPS	50539 CR-RUSS4 138	1.037627	0.739659	OPEN LINE FROM BUS 50554 [CR-MCDN4138.00] TO BUS 50555 [CR-PHIL4138.00] CKT 1	148	"	
10SP	321	SPS	51827 LG-DRAW269.0	1.023523	0.756454	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	148	"	
10SP	321	SPS	51773 SLATON2 69.0	0.990694	0.794893	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	0.995422	0.789822	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	149	"	
10SP	321	SPS	50534 CR-VEAL4 138	1.034434	0.745181	OPEN LINE FROM BUS 50554 [CR-MCDN4138.00] TO BUS 50555 [CR-PHIL4138.00] CKT 1	149	"	
10SP	321	SPS	51393 SP-HALF269.0	0.984715	0.802651	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	149	"	
10SP	321	SPS	51664 ALLEN3 115	1.012606	0.771192	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	150	"	
10SP	321	SPS	51773 SLATON2 69.0	0.990783	0.796575	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	1.024651	0.759527	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	151	"	
10SP	321	SPS	51674 SP-QUAK3 115	1.010694	0.77551	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	151	"	
10SP	321	SPS	51786 SP-WDRW3 115	1.020243	0.765065	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	151	"	
10SP	321	SPS	51613 STANTN2 69.0	0.992367	0.796843	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	152	"	
10SP	321	SPS	51365 AIKENT2 69.0	0.999012	0.789724	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	152	"	
10SP	321	SPS	51543 ALLMON2 69.0	0.9902	0.7998	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	152	"	
10SP	321	SPS	51545 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	0.997263	0.792189	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	152	"	
10SP	321	SPS	51803 LYNNCO2 69.0	1.036277	0.750138	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	153	"	

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	51613 STANTN2 69.0	0.992457	0.798521	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	153	"	
10SP	321	SPS	51563 CROSBY2 69.0	1.027707	0.760069	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	153	"	
10SP	321	SPS	51337 NPLNV2 69.0	0.9553	0.840005	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	1.036442	0.752268	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	154	"	
10SP	321	SPS	51672 WHEELOC3 115	1.019699	0.770796	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	154	"	
10SP	321	SPS	51672 WHEELOC3 115	1.019857	0.77219	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	155	"	
10SP	321	SPS	51553 WHTE&MN269.0	0.9921	0.8022	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	156	"	
10SP	321	SPS	51353 EPLNV2 69.0	1.000996	0.792813	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	156	"	
10SP	321	SPS	51339 WPLNV2 69.0	0.983562	0.811576	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	0.785	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	156	"	
10SP	321	SPS	51664 ALLEN3 115	1.02082	0.772288	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	1.020979	0.773678	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	157	"	
10SP	321	SPS	51672 WHEELOC3 115	1.019797	0.776464	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	158	"	
10SP	321	SPS	51393 SP-HALF269.0	0.992199	0.804924	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	158	"	
10SP	321	SPS	51329 BRISCOE269.0	0.966139	0.831835	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	158	"	
10SP	321	SPS	51769 LEWTER2 69.0	1.008409	0.789819	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	159	"	
10SP	321	SPS	51674 SP-QUAK3 115	1.019668	0.778834	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	160	"	
10SP	321	SPS	51685 PLANTRS269.0	1.008651	0.790098	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	160	"	
10SP	321	SPS	51331 LH-SLVR269.0	0.96674	0.832544	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	160	"	
10SP	321	SPS	51335 LH-PL&M269.0	0.957231	0.842205	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	160	"	
10SP	321	SPS	51664 ALLEN3 115	1.020919	0.777944	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	0.805	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	160	"	
10SP	321	SPS	51497 SP-ABRN269.0	1.003852	0.795622	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	160	"	
10SP	321	SPS	51674 SP-QUAK3 115	1.019846	0.780197	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	161	"	
10SP	321	SPS	51803 LYNNCO2 69.0	1.038015	0.763023	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	161	"	
10SP	321	SPS	51769 LEWTER2 69.0	1.00188	0.800355	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	162	"	
10SP	321	SPS	51685 PLANTRS269.0	1.002124	0.800634	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	163	"	
10SP	321	SPS	51337 NPLNV2 69.0	0.885873	0.846648	OPEN LINE FROM BUS 51316 [KRESS3 115.00] TO BUS 51320 [SWISHER3115.00] CKT 1	164	"	
10SP	321	SPS	51335 LH-PL&M269.0	0.887957	0.84883	OPEN LINE FROM BUS 51316 [KRESS3 115.00] TO BUS 51320 [SWISHER3115.00] CKT 1	164	"	
10SP	321	SPS	51367 LH-AIKN269.0	1.019196	0.786633	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	1.011626	0.794294	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	1.019305	0.78793	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	0.782	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	166	"	
10SP	321	SPS	51495 COUNTL2 69.0	1.009842	0.797993	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	166	"	
10SP	321	SPS	51674 SP-QUAK3 115	1.019459	0.789454	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	1.005531	0.802996	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	167	"	
10SP	321	SPS	51658 MURPHY3 115	1.012829	0.796315	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	167	"	
10SP	321	SPS	51769 LEWTER2 69.0	1.000696	0.807554	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	167	"	
10SP	321	SPS	51499 HALECN2 69.0	1.005635	0.803126	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	167	"	
10SP	321	SPS	51685 PLANTRS269.0	1.00094	0.807834	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	168	"	
10SP	321	SPS	51803 LYNNCO2 69.0	1.036518	0.775942	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	1.005124	0.804746	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	168	"	
10SP	321	SPS	51557 SP-ACUF269.0	1.012257	0.798303	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	168	"	
10SP	321	SPS	51557 SP-ACUF269.0	1.013635	0.797392	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	169	"	
10SP	321	SPS	51769 LEWTER2 69.0	1.000784	0.809207	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	169	"	
10SP	321	SPS	51367 LH-AIKN269.0	1.020067	0.792016	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	169	"	
10SP	321	SPS	51373 LH-LST2 69.0	0.97295	0.834486	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	169	"	
10SP	321	SPS	51685 PLANTRS269.0	1.001028	0.809486	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	169	"	
10SP	321	SPS	51658 MURPHY3 115	1.00971	0.801883	OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	169	"	
10SP	321	SPS	51337 NPLNV2 69.0	0.959184	0.84709	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	169	"	
10SP	321	SPS	51557 SP-ACUF269.0	1.012358	0.799848	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	170	"	

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	51551 SP-NDE2 69.0	0.9998	0.8118	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	170	"	
10SP	321	SPS	51359 COX2 69.0	1.009296	0.803532	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	171	"	
10SP	321	SPS	51513 IRICK2 69.0	1.015524	0.798087	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	171	"	
10SP	321	SPS	51741 AMOCSL6 230	0.982656	0.827134	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	0.793	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	172	"	
10SP	321	SPS	51513 IRICK2 69.0	1.023974	0.792856	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	0.971498	0.838235	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	172	"	
10SP	321	SPS	51625 SP-ERSK3 115	1.011989	0.803769	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	0.79	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	173	"	
10SP	321	SPS	51513 IRICK2 69.0	1.024082	0.794142	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	173	"	
10SP	321	SPS	51691 CLUTTER269.0	1.003945	0.811893	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	174	"	
10SP	321	SPS	51625 SP-ERSK3 115	1.010022	0.806798	OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	174	"	
10SP	321	SPS	51646 CARLISL3 115	1.010852	0.806629	OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	174	"	
10SP	321	SPS	51642 INDIANA3 115	1.007735	0.810029	OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	175	"	
10SP	321	SPS	51691 CLUTTER269.0	1.004033	0.813534	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	0.961107	0.849272	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	175	"	
10SP	321	SPS	51616 STANTN3 115	1.008716	0.813075	OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	178	"	
10SP	321	SPS	51669 BATTNS2 69.0	1.026578	0.79891	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	178	"	
10SP	321	SPS	51515 BARWISE269.0	1.028049	0.798196	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	1.015383	0.808708	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	179	"	
10SP	321	SPS	51569 HENDRIC269.0	1.018761	0.806717	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	180	"	
10SP	321	SPS	51515 BARWISE269.0	1.028156	0.799474	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	180	"	
10SP	321	SPS	51569 HENDRIC269.0	1.020129	0.805815	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	180	"	
10SP	321	SPS	51567 LH-CROS269.0	1.018859	0.806841	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	180	"	
10SP	321	SPS	51567 LH-CROS269.0	1.020228	0.80594	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	180	"	
10SP	321	SPS	51349 SPLNV2 69.0	0.995256	0.8261	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	181	"	
10SP	321	SPS	51569 HENDRIC269.0	1.018861	0.808245	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	181	"	
10SP	321	SPS	51567 LH-CROS269.0	1.01896	0.80837	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	1.023729	0.805488	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	182	"	
10SP	321	SPS	51329 BRISCOE269.0	0.976769	0.84164	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	182	"	
10SP	321	SPS	51741 AMOCSL6 230	0.976962	0.84151	OPEN LINE FROM BUS 51741 [AMOCSL6 230.00] TO BUS 51891 [YOAKUM6 230.00] CKT 1	182	"	
10SP	321	SPS	51669 BATTNS2 69.0	1.025537	0.805481	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	183	"	
10SP	321	SPS	51658 MURPHY3 115	1.023958	0.806759	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	1.028911	0.803497	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	184	"	
10SP	321	SPS	51331 LH-SLVR269.0	0.977362	0.84234	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	184	"	
10SP	321	SPS	51669 BATTNS2 69.0	1.025655	0.807179	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	185	"	
10SP	321	SPS	51527 LH-HARM269.0	1.023759	0.808745	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	185	"	
10SP	321	SPS	50501 MU-FLDY269.0	1.023942	0.808956	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	185	"	
10SP	321	SPS	51652 DOUD3 115	1.011584	0.818093	OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	185	"	
10SP	321	SPS	51527 LH-HARM269.0	1.032135	0.803585	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	1.032319	0.803796	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	1.016031	0.816415	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	187	"	
10SP	321	SPS	51527 LH-HARM269.0	1.032243	0.804853	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	187	"	
10SP	321	SPS	51501 LH-HALC269.0	1.008	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	1.032426	0.805064	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	187	"	
10SP	321	SPS	51669 BATTNS2 69.0	1.025255	0.810252	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	187	"	
10SP	321	SPS	51642 INDIANA3 115	1.02102	0.813411	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	187	"	
10SP	321	SPS	51616 STANTN3 115	1.021214	0.813774	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	188	"	
10SP	321	SPS	51642 INDIANA3 115	1.021241	0.814602	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	188	"	
10SP	321	SPS	51652 DOUD3 115	1.01566	0.818713	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	189	"	
10SP	321	SPS	51616 STANTN3 115	1.021427	0.814954	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	189	"	

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	51345 WESTRID269.0	0.999123	0.830587	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	189	"	
10SP	321	SPS	51563 CROSBY2 69.0	1.024586	0.81412	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	190	"	
10SP	321	SPS	51563 CROSBY2 69.0	1.025947	0.813225	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	190	"	
10SP	321	SPS	51563 CROSBY2 69.0	1.024686	0.815634	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	191	"	
10SP	321	SPS	51675 ACCO2 69.0	1.035848	0.811	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	194	"	
10SP	321	SPS	51661 IVORY 269.0	1.036646	0.811978	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	195	"	
10SP	321	SPS	51625 SP-ERSK3 115	1.025894	0.819166	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	0.98043	0.848752	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	196	"	
10SP	321	SPS	51339 WPLNV2 69.0	0.99683	0.838453	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	0.982057	0.847952	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	1.026143	0.820384	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	197	"	
10SP	321	SPS	51646 CARLISL3 115	1.027241	0.820788	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	198	"	
10SP	321	SPS	51371 LH-CDRH269.0	0.984245	0.84785	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	198	"	
10SP	321	SPS	51369 LOCKNEY269.0	0.984534	0.848192	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	1.034817	0.817468	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	199	"	
10SP	321	SPS	51646 CARLISL3 115	1.027495	0.822011	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	199	"	
10SP	321	SPS	51661 IVORY 269.0	1.035616	0.818441	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	200	"	
10SP	321	SPS	51675 ACCO2 69.0	1.034934	0.819139	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	201	"	
10SP	321	SPS	51661 IVORY 269.0	1.035733	0.82011	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	202	"	
10SP	321	SPS	51675 ACCO2 69.0	1.034538	0.822166	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	1.029141	0.825678	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	204	"	
10SP	321	SPS	51771 SP-POSY269.0	1.029186	0.825714	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	204	"	
10SP	321	SPS	51652 DOUD3 115	1.026069	0.828297	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	205	"	
10SP	321	SPS	51661 IVORY 269.0	1.035336	0.823135	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	205	"	
10SP	321	SPS	51785 SP-WDRW269.0	1.027962	0.827347	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	205	"	
10SP	321	SPS	51771 SP-POSY269.0	1.028007	0.827383	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	205	"	
10SP	321	SPS	51652 DOUD3 115	1.026371	0.829519	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	206	"	
10SP	321	SPS	51785 SP-WDRW269.0	1.028085	0.829032	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	207	"	
10SP	321	SPS	51771 SP-POSY269.0	1.02813	0.829068	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	0.988645	0.853476	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	1.009112	0.843003	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	211	"	
10SP	321	SPS	50500 MU-TULI3 115	0.990457	0.855633	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	215	"	
10SP	321	SPS	51365 AIKENT2 69.0	0.991235	0.856185	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	1.022553	0.841841	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	218	"	
10SP	321	SPS	51771 SP-POSY269.0	1.022598	0.841878	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	0.990881	0.858335	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	220	"	
10SP	321	SPS	51325 KRESRU2 69.0	1.007	0.8513	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	221	"	
10SP	321	SPS	50500 MU-TULI3 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	0.993249	0.858842	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	1.008351	0.852443	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	223	"	
10SP	321	SPS	51325 KRESRU2 69.0	1.004487	0.854695	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	224	"	
10SP	321	SPS	51741 AMOCSL6 230	0.987627	0.862113	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	224	"	
10SP	321	SPS	51371 LH-CDRH269.0	0.99163	0.861874	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	227	"	
10SP	321	SPS	51741 AMOCSL6 230	0.98851	0.863238	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	227	"	
10SP	321	SPS	50500 MU-TULI3 115	0.916293	0.888044	OPEN LINE FROM BUS 51316 [KRESS3 115.00] TO BUS 51320 [SWISHER3115.00] CKT 1	227	"	
10SP	321	SPS	51369 LOCKNEY269.0	0.991916	0.862209	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	227	"	
10SP	321	SPS	50500 MU-TULI3 115	0.91652	0.888454	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	1.012176	0.856825	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	0.995975	0.867353	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	"	
10SP	321	SPS	51359 COX2 69.0	1.001619	0.868656	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	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	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	0.998559	0.87005	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	246	"	
10SP	321	SPS	51291 DS-#122 69.0	0.965864	0.880846	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	1.014802	0.867373	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	250	"	
10SP	321	SPS	51371 LH-CDRH269.0	1.001951	0.871292	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	250	"	
10SP	321	SPS	51369 LOCKNEY269.0	1.002234	0.871623	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	251	"	
10SP	321	SPS	51353 EPLNV2 69.0	1.000544	0.87263	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	0.867	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	254	"	
10SP	321	SPS	51393 SP-HALF269.0	1.022016	0.868786	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	256	"	
10SP	321	SPS	51341 PLAINVW269.0	1.006221	0.876673	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	263	"	
10SP	321	SPS	51365 AIKENT2 69.0	1.008796	0.879363	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	270	"	
10SP	321	SPS	51353 EPLNV2 69.0	1.010741	0.881891	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	276	"	
10SP	321	SPS	51359 COX2 69.0	1.008848	0.882275	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	276	"	
10SP	321	SPS	50500 MU-TULI3 115	0.995182	0.88641	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	1.021422	0.883488	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	283	"	
10SP	321	SPS	51745 SP-YUMA269.0	1.017691	0.884546	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	0.976992	0.891877	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	1.018954	0.891423	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	299	"	
10SP	321	SPS	51745 SP-YUMA269.0	1.030857	0.891672	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	302	"	
10SP	321	SPS	51745 SP-YUMA269.0	1.03122	0.893064	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	305	"	
10SP	321	SPS	51325 KRESRU2 69.0	1.003224	0.894914	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	306	"	
10SP	321	SPS	51293 HART2 69.0	0.9989	0.8972	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	312	"	
10SP	321	SPS	51041 AMARLS6 230	0.907809	0.854396	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	0.986872	0.869693	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51302 HAPPY3 115	0.9929	0.872	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51302 HAPPY3 115	0.923745	0.897705	OPEN LINE FROM BUS 51316 [KRESS3 115.00] TO BUS 51320 [SWISHER3115.00] CKT 1	321	"	
10SP	321	SPS	51302 HAPPY3 115	0.991346	0.898038	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	321	"	
10SP	321	SPS	51302 HAPPY3 115	0.923937	0.89806	OPEN LINE FROM BUS 51320 [SWISHER3115.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51310 TULIAT3 115	0.990879	0.856125	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	0.995601	0.886884	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	321	"	
10SP	321	SPS	51310 TULIAT3 115	0.916751	0.888517	OPEN LINE FROM BUS 51316 [KRESS3 115.00] TO BUS 51320 [SWISHER3115.00] CKT 1	321	"	
10SP	321	SPS	51310 TULIAT3 115	0.916978	0.888927	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	1.014854	0.867434	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	0.998307	0.841134	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51316 KRESS3 115	1.002952	0.873874	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	321	"	
10SP	321	SPS	51316 KRESS3 115	0.90925	0.878917	OPEN LINE FROM BUS 51316 [KRESS3 115.00] TO BUS 51320 [SWISHER3115.00] CKT 1	321	"	
10SP	321	SPS	51316 KRESS3 115	1.012072	0.879301	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51320 SWISHER3 115	1.006837	0.846104	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	0.909541	0.879414	OPEN LINE FROM BUS 51320 [SWISHER3115.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51320 SWISHER3 115	1.013649	0.885561	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	321	"	
10SP	321	SPS	51320 SWISHER3 115	1.023203	0.891298	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51321 SWISHER6 230	0.932633	0.760313	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	0.924566	0.819004	OPEN LINE FROM BUS 50915 [NICHOL6 230.00] TO BUS 51041 [AMARLS6 230.00] CKT 1	321	"	
10SP	321	SPS	51321 SWISHER6 230	0.955856	0.829072	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51321 SWISHER6 230	0.948231	0.829214	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	321	"	
10SP	321	SPS	51343 PLNVCO2 69.0	0.9955	0.7672	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51343 PLNVCO2 69.0	0.971161	0.785286	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	321	"	
10SP	321	SPS	51343 PLNVCO2 69.0	0.978765	0.787618	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51343 PLNVCO2 69.0	0.995942	0.826661	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51343 PLNVCO2 69.0	1.009041	0.853039	OPEN LINE FROM BUS 52205 [LEACO6 230.00] 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	51347 PLNVWT2 69.0	1.009	0.7853	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51347 PLNVWT2 69.0	0.985054	0.802996	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	321	"	
10SP	321	SPS	51347 PLNVWT2 69.0	0.992537	0.805269	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51347 PLNVWT2 69.0	1.009447	0.843351	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51347 PLNVWT2 69.0	1.02235	0.869133	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	0.712	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51360 COX3 115	0.945017	0.727534	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51360 COX3 115	0.960901	0.780792	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	321	"	
10SP	321	SPS	51360 COX3 115	0.97342	0.792038	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51360 COX3 115	0.982739	0.799587	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	0.945149	0.727974	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51366 LH-COX3 115	0.960928	0.780972	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	0.973487	0.792316	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51366 LH-COX3 115	0.982814	0.799931	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51387 LAMTON2 69.0	0.999613	0.782427	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	321	"	
10SP	321	SPS	51388 LAMTON3 115	0.904786	0.732026	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	0.929675	0.86558	OPEN LINE FROM BUS 51388 [LAMTON3 115.00] TO BUS 51396 [LC-SOL3 115.00] CKT 1	321	"	
10SP	321	SPS	51388 LAMTON3 115	0.966134	0.873851	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51388 LAMTON3 115	0.97421	0.89358	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	0.785	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51391 CORNER2 69.0	0.984757	0.802685	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	0.992241	0.804958	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51391 CORNER2 69.0	1.009155	0.843039	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51391 CORNER2 69.0	1.02206	0.868823	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51401 HALECO2 69.0	1.0102	0.787	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51401 HALECO2 69.0	0.986322	0.804634	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	0.993794	0.806901	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51401 HALECO2 69.0	1.010679	0.84489	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51401 HALECO2 69.0	1.023563	0.870614	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51402 HALECO3 115	0.987	0.8053	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51402 HALECO3 115	0.966656	0.818878	OPEN LINE FROM BUS 51396 [LC-SOL3 115.00] TO BUS 51418 [PLANTX3 115.00] CKT 1	321	"	
10SP	321	SPS	51402 HALECO3 115	0.972984	0.820636	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51402 HALECO3 115	0.98733	0.850364	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51402 HALECO3 115	0.998323	0.870911	OPEN LINE FROM BUS 52205 [LEACO6 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	1.002283	0.712904	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51517 FLOYD2 69.0	1.033537	0.80539	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51517 FLOYD2 69.0	1.033644	0.806656	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51517 FLOYD2 69.0	1.025172	0.810539	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51518 FLOYD3 115	0.98	0.6877	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51518 FLOYD3 115	0.950704	0.703489	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51518 FLOYD3 115	0.99496	0.780671	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51518 FLOYD3 115	0.995056	0.781743	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51518 FLOYD3 115	0.995731	0.785101	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	1.002056	0.712551	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51521 FLYDAT2 69.0	1.033319	0.805089	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51521 FLYDAT2 69.0	1.033426	0.806355	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51521 FLYDAT2 69.0	1.024951	0.810241	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51532 TUCO3 115	0.971702	0.738467	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51532 TUCO3 115	1.0174	0.7534	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51532 TUCO3 115	1.034711	0.833795	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51532 TUCO3 115	1.034817	0.834808	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51532 TUCO3 115	1.027932	0.839055	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51534 TUCO7 345	0.9556	0.7478	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	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	51534 TUCO7 345	0.979284	0.806203	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51534 TUCO7 345	0.986823	0.812092	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51534 TUCO7 345	0.986873	0.81274	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51534 TUCO7 345	0.98748	0.813488	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"	
10SP	321	SPS	51559 FLOYDT3 115	0.9885	0.7024	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51559 FLOYDT3 115	0.955682	0.711586	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51559 FLOYDT3 115	1.004068	0.792648	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51559 FLOYDT3 115	1.004166	0.793707	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51559 FLOYDT3 115	0.996727	0.797242	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
10SP	321	SPS	51564 CROSBY3 115	0.9898	0.659	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51564 CROSBY3 115	0.976528	0.709152	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51564 CROSBY3 115	1.004131	0.754442	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"	
10SP	321	SPS	51564 CROSBY3 115	1.00285	0.755217	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51564 CROSBY3 115	1.002944	0.756517	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51611 SW67872 69.0	0.985049	0.776507	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 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	1.001835	0.780999	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51617 SW67862 69.0	0.995256	0.791686	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"	
10SP	321	SPS	51617 SW67862 69.0	0.994063	0.798981	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51617 SW67862 69.0	0.994152	0.800655	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	0.993274	0.769646	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51621 SW67462 69.0	0.986633	0.780517	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"	
10SP	321	SPS	51621 SW67462 69.0	0.985428	0.787927	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51621 SW67462 69.0	0.985518	0.789627	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	1.002	0.8496	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51647 CARLISL6 230	0.936604	0.641627	OPEN LINE FROM BUS 51533 [TUCO6 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	0.719929	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51647 CARLISL6 230	0.960921	0.720804	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51647 CARLISL6 230	0.955634	0.725714	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	321	"	
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	1.039595	0.815811	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"	
10SP	321	SPS	51677 IVORYT 269.0	1.038568	0.822241	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51677 IVORYT 269.0	1.038684	0.823902	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51677 IVORYT 269.0	1.03829	0.826913	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51679 LUBS2 69.0	1.042	0.7297	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51679 LUBS2 69.0	1.041198	0.817885	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"	
10SP	321	SPS	51679 LUBS2 69.0	1.040173	0.824298	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51679 LUBS2 69.0	1.040289	0.825955	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51679 LUBS2 69.0	1.039895	0.828958	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	1.034519	0.765522	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"	
10SP	321	SPS	51680 LUBS3 115	1.033533	0.771042	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51680 LUBS3 115	1.033645	0.77247	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51680 LUBS3 115	1.027158	0.775069	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	0.987044	0.668118	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"	
10SP	321	SPS	51681 LUBS6 230	0.986533	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	0.986586	0.697069	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51681 LUBS6 230	0.986588	0.708813	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	1.015093	0.79873	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51687 LUBE2 69.0	1.008615	0.809121	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] 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	51687 LUBE2 69.0	1.007439	0.81623	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51687 LUBE2 69.0	1.007527	0.817862	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	1.020521	0.761139	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51688 LUBE3 115	1.032595	0.769618	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"	
10SP	321	SPS	51688 LUBE3 115	1.031455	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	1.03154	0.776853	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51689 LUBE6 230	0.974683	0.60957	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	0.988392	0.660939	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"	
10SP	321	SPS	51689 LUBE6 230	0.988463	0.678808	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51689 LUBE6 230	0.988473	0.679986	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	0.991	0.676867	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"	
10SP	321	SPS	51699 JONES6 230	0.991	0.696189	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51699 JONES6 230	0.991	0.697356	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51699 JONES6 230	0.991	0.709414	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	321	"	
10SP	321	SPS	51733 SUNDOWN6 230	0.98165	0.815877	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	0.978645	0.843487	OPEN LINE FROM BUS 51741 [AMOCSL6 230.00] TO BUS 51891 [YOAKUM6 230.00] CKT 1	321	"	
10SP	321	SPS	51733 SUNDOWN6 230	0.986974	0.852961	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51733 SUNDOWN6 230	0.987707	0.853958	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	1.018106	0.830942	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51746 SP-YUMA3 115	1.014556	0.831845	OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	321	"	
10SP	321	SPS	51746 SP-YUMA3 115	1.027087	0.838064	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51746 SP-YUMA3 115	1.027433	0.839281	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	1.027296	0.86029	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51762 WOLFRTH3 115	1.033421	0.862483	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51762 WOLFRTH3 115	1.033848	0.863677	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51762 WOLFRTH3 115	1.024961	0.864429	OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	321	"	
10SP	321	SPS	51763 WOLFRTH6 230	0.9604	0.699	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51763 WOLFRTH6 230	0.982703	0.752063	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51763 WOLFRTH6 230	0.983025	0.753161	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51763 WOLFRTH6 230	0.980409	0.756629	OPEN LINE FROM BUS 51419 [PLANTX6 230.00] TO BUS 51733 [SUNDOWN6230.00] CKT 1	321	"	
10SP	321	SPS	51763 WOLFRTH6 230	0.980757	0.763161	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	1.005511	0.785982	OPEN LINE FROM BUS 51532 [TUCO3 115.00] TO BUS 51533 [TUCO6 230.00] CKT 1	321	"	
10SP	321	SPS	51767 POSEYT2 69.0	0.998961	0.796578	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"	
10SP	321	SPS	51767 POSEYT2 69.0	0.997773	0.803816	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51767 POSEYT2 69.0	0.997862	0.805478	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	1.010603	0.708787	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51791 YANCYT2 69.0	1.010774	0.711087	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51791 YANCYT2 69.0	1.012407	0.722702	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"	
10SP	321	SPS	51791 YANCYT2 69.0	1.010853	0.736568	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	321	"	
10SP	321	SPS	51804 LYNNCO3 115	1.015	0.6533	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51804 LYNNCO3 115	1.021299	0.720578	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51804 LYNNCO3 115	1.021454	0.722387	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51804 LYNNCO3 115	1.022936	0.7315	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"	
10SP	321	SPS	51804 LYNNCO3 115	1.021526	0.742554	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	1.026217	0.722715	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51810 GRASSLN3 115	1.026383	0.724553	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51810 GRASSLN3 115	1.028017	0.738409	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"	
10SP	321	SPS	51810 GRASSLN3 115	1.026461	0.745484	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] 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	51811 GRASSLN6 230	0.9609	0.6323	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP	321	SPS	51811 GRASSLN6 230	0.990052	0.658148	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51811 GRASSLN6 230	0.99023	0.659574	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51811 GRASSLN6 230	0.990222	0.676698	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	321	"	
10SP	321	SPS	51811 GRASSLN6 230	0.99084	0.680341	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	1.032642	0.690172	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51815 GRAHAM2 69.0	1.032834	0.692798	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51815 GRAHAM2 69.0	1.034723	0.712906	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"	
10SP	321	SPS	51815 GRAHAM2 69.0	1.032924	0.722993	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	1.014472	0.689608	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51816 GRAHAM3 115	1.014646	0.691656	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51816 GRAHAM3 115	1.016349	0.707197	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"	
10SP	321	SPS	51816 GRAHAM3 115	1.014727	0.71508	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	1.009686	0.707289	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	1.009858	0.709596	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	1.011493	0.721243	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"	
10SP	321	SPS	51825 BG-YNT2 69.0	1.009937	0.735143	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	0.8996	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	1.028253	0.680624	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	1.028448	0.683304	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	1.030355	0.703832	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	321	"	
10SP	321	SPS	51857 BG-JST2 69.0	1.028538	0.714127	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	321	"	
10SP	321	SPS	51861 BORDEN6 230	0.993099	0.620503	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51861 BORDEN6 230	0.993577	0.622213	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	321	"	
10SP	321	SPS	51861 BORDEN6 230	0.993346	0.645939	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	0.995156	0.687495	OPEN LINE FROM BUS 50554 [CR-MCDN4138.00] TO BUS 50555 [CR-PHIL4138.00] CKT 1	321	"	
10SP	321	SPS	52036 DOSS3 115	1.005918	0.875079	OPEN LINE FROM BUS 51996 [AMERADA3115.00] TO BUS 52036 [DOSS3 115.00] CKT 1	321	"	
10SP	321	SPS	52231 MIDLND-6 230	1.15026	0.554542	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	
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 51699 [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 [TOLKE6 230.00] TO BUS 51533 [TUCO6 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 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 [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	SPS	51689 LUBE6 230	0.992595	0.894083	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	$0
10SP*	321	SPS	51533 TUCO6 230	1.0172	0.8526	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	180	Assuming a 0.95 PF at the SPS to LP&L ties, No additional Upgrades are required	
10SP*	321	SPS	51533 TUCO6 230	1.0172	0.8551	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	183	"	
10SP*	321	SPS	51775 SP-SLAT269.0	1.0064	0.8426	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	209	"	
10SP*	321	SPS	51777 SOUTHLN269.0	1.009	0.8458	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	214	"	
10SP*	321	SPS	51775 SP-SLAT269.0	1.0064	0.849	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	217	"	

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	51779 LG-HCKB269.0	1.0121	0.8495	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	221	"	
10SP*	321	SPS	51777 SOUTHLN269.0	1.009	0.8522	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	223	"	
10SP*	321	SPS	51853 BG-JUST269.0	1.0065	0.8563	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	228	"	
10SP*	321	SPS	51779 LG-HCKB269.0	1.0121	0.8559	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	230	"	
10SP*	321	SPS	51786 SP-WDRW3 115	1.0175	0.8543	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	231	"	
10SP*	321	SPS	51851 BG-GARZ269.0	1.0082	0.8585	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	232	"	
10SP*	321	SPS	51853 BG-JUST269.0	1.0065	0.8621	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	237	"	
10SP*	321	SPS	51786 SP-WDRW3 115	1.0175	0.8588	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	238	"	
10SP*	321	SPS	51672 WHEELOC3 115	1.0104	0.8632	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	241	"	
10SP*	321	SPS	51819 YANCY2 69.0	1.0117	0.863	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	241	"	
10SP*	321	SPS	51851 BG-GARZ269.0	1.0083	0.8643	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	241	"	
10SP*	321	SPS	51664 ALLEN3 115	1.0116	0.8645	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	244	"	
10SP*	321	SPS	51799 LG-NWM2 69.0	1.0116	0.8647	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	244	"	
10SP*	321	SPS	51855 BG-FLUV269.0	1.0229	0.8616	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	245	"	
10SP*	321	SPS	51672 WHEELOC3 115	1.0104	0.8672	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	247	"	
10SP*	321	SPS	51664 ALLEN3 115	1.0116	0.8685	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	250	"	
10SP*	321	SPS	51819 YANCY2 69.0	1.0117	0.8688	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	251	"	
10SP*	321	SPS	51674 SP-QUAK3 115	1.0105	0.8697	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	252	"	
10SP*	321	SPS	51799 LG-NWM2 69.0	1.0116	0.8704	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	254	"	
10SP*	321	SPS	51759 LG-TWD2 69.0	1.0265	0.8669	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	254	"	
10SP*	321	SPS	51855 BG-FLUV269.0	1.0229	0.868	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	255	"	
10SP*	321	SPS	51783 DIEKEMP269.0	1.0266	0.8671	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	255	"	
10SP*	321	SPS	51629 VICKER2 69.0	0.9688	0.8823	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	255	"	
10SP*	321	SPS	51674 SP-QUAK3 115	1.0105	0.8735	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	259	"	
10SP*	321	SPS	51627 SP-IDAL269.0	0.97	0.8836	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	260	"	
10SP*	321	SPS	51793 GARZA2 69.0	1.0298	0.8705	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	262	"	
10SP*	321	SPS	51759 LG-TWD2 69.0	1.0265	0.8732	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	265	"	
10SP*	321	SPS	51783 DIEKEMP269.0	1.0266	0.8733	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	265	"	
10SP*	321	SPS	51807 LG-CNTR269.0	1.0209	0.8747	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	265	"	
10SP*	321	SPS	51629 VICKER2 69.0	0.9688	0.8873	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	271	"	
10SP*	321	SPS	51793 GARZA2 69.0	1.0298	0.8767	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	272	"	
10SP*	321	SPS	51807 LG-CNTR269.0	1.0209	0.8804	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	276	"	
10SP*	321	SPS	51627 SP-IDAL269.0	0.97	0.8887	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	276	"	
10SP*	321	SPS	51827 LG-DRAW269.0	1.0257	0.8807	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	278	"	
10SP*	321	SPS	51801 LG-NH&W269.0	1.0268	0.8827	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	282	"	
10SP*	321	SPS	51533 TUCO6 230	0.9993	0.9166	REMOVE UNIT 1 FROM BUS 51441 [TOLK1 124.000] DISPATCH	288	"	
10SP*	321	SPS	51533 TUCO6 230	0.9993	0.9166	REMOVE UNIT 1 FROM BUS 51442 [TOLK2 124.000] DISPATCH	288	"	
10SP*	321	SPS	51827 LG-DRAW269.0	1.0257	0.8863	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	289	"	
10SP*	321	SPS	51801 LG-NH&W269.0	1.0268	0.8883	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	294	"	
10SP*	321	SPS	51525 LH-FLYD269.0	0.9916	0.8931	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	299	"	
10SP*	321	SPS	51658 MURPHY3 115	1.0148	0.8917	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	299	"	
10SP*	321	SPS	51523 SFLOYD2 69.0	0.992	0.8934	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	300	"	
10SP*	321	SPS	51741 AMOCSL6 230	0.9882	0.8955	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	305	"	
10SP*	321	SPS	51533 TUCO6 230	1.028765	0.920364	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	307	"	
10SP*	321	SPS	51658 MURPHY3 115	1.0148	0.8952	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	308	"	
10SP*	321	SPS	51741 AMOCSL6 230	0.9882	0.897	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	310	"	
10SP*	321	SPS	51525 LH-FLYD269.0	0.9916	0.8969	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	310	"	
10SP*	321	SPS	51523 SFLOYD2 69.0	0.992	0.8973	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	312	"	
10SP*	321	SPS	51803 LYNNCO2 69.0	1.0387	0.8966	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	313	"	
10SP*	321	SPS	51623 SP-HETL269.0	0.9833	0.8983	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	315	"	
10SP*	321	SPS	51321 SWISHER6 230	1.0151	0.8937	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	321	Not a Load Serving Bus	
10SP*	321	SPS	51321 SWISHER6 230	1.0151	0.8959	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51518 FLOYD3 115	0.9837	0.89	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	321	"	
10SP*	321	SPS	51518 FLOYD3 115	0.9837	0.8932	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51534 TUCO7 345	1.0279	0.8677	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	321	"	
10SP*	321	SPS	51534 TUCO7 345	1.0279	0.8699	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51564 CROSBY3 115	0.99	0.8594	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	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	51564 CROSBY3 115	0.99	0.8633	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51647 CARLISL6 230	0.9983	0.7902	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	321	"	
10SP*	321	SPS	51647 CARLISL6 230	0.9983	0.793	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51647 CARLISL6 230	0.876041	0.845023	OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	321	"	
10SP*	321	SPS	51647 CARLISL6 230	1.008774	0.848429	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	321	"	
10SP*	321	SPS	51647 CARLISL6 230	1.00878	0.84879	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	321	"	
10SP*	321	SPS	51680 LUBS3 115	1.0241	0.8648	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	321	"	
10SP*	321	SPS	51680 LUBS3 115	1.0241	0.8691	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51681 LUBS6 230	0.9867	0.7682	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	321	"	
10SP*	321	SPS	51681 LUBS6 230	0.9867	0.7723	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51681 LUBS6 230	0.986798	0.832924	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	321	"	
10SP*	321	SPS	51681 LUBS6 230	0.986796	0.83317	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	321	"	
10SP*	321	SPS	51681 LUBS6 230	0.986721	0.844669	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	321	"	
10SP*	321	SPS	51688 LUBE3 115	1.0206	0.8683	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	321	"	
10SP*	321	SPS	51688 LUBE3 115	1.0206	0.8725	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51689 LUBE6 230	0.9875	0.7544	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	321	"	
10SP*	321	SPS	51689 LUBE6 230	0.9875	0.7587	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51689 LUBE6 230	0.988678	0.818501	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	321	"	
10SP*	321	SPS	51689 LUBE6 230	0.988675	0.818756	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	321	"	
10SP*	321	SPS	51689 LUBE6 230	0.988516	0.826412	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	321	"	
10SP*	321	SPS	51699 JONES6 230	0.991	0.7688	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	321	"	
10SP*	321	SPS	51699 JONES6 230	0.991	0.773	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51699 JONES6 230	0.991	0.836883	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	321	"	
10SP*	321	SPS	51699 JONES6 230	0.991	0.837142	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	321	"	
10SP*	321	SPS	51699 JONES6 230	0.991	0.849006	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	321	"	
10SP*	321	SPS	51733 SUNDOWN6 230	0.9869	0.8868	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	321	"	
10SP*	321	SPS	51733 SUNDOWN6 230	0.9869	0.8883	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51763 WOLFRTH6 230	0.9836	0.811	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	321	"	
10SP*	321	SPS	51763 WOLFRTH6 230	0.9836	0.814	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51763 WOLFRTH6 230	0.984617	0.866508	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	321	"	
10SP*	321	SPS	51763 WOLFRTH6 230	0.984609	0.866684	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	321	"	
10SP*	321	SPS	51763 WOLFRTH6 230	0.984072	0.872115	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	321	"	
10SP*	321	SPS	51791 YANCYT2 69.0	1.0131	0.8647	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	321	"	
10SP*	321	SPS	51791 YANCYT2 69.0	1.0131	0.8705	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51804 LYNNCO3 115	1.0176	0.8471	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	321	"	
10SP*	321	SPS	51804 LYNNCO3 115	1.0176	0.8519	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51810 GRASSLN3 115	1.0245	0.8547	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	321	"	
10SP*	321	SPS	51810 GRASSLN3 115	1.0245	0.8596	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51811 GRASSLN6 230	0.9885	0.7725	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	321	"	
10SP*	321	SPS	51811 GRASSLN6 230	0.9885	0.7765	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51811 GRASSLN6 230	0.988954	0.838864	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	321	"	
10SP*	321	SPS	51811 GRASSLN6 230	0.988952	0.83936	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	321	"	
10SP*	321	SPS	51811 GRASSLN6 230	0.988837	0.850095	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	321	"	
10SP*	321	SPS	51815 GRAHAM2 69.0	1.0306	0.872	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	321	"	
10SP*	321	SPS	51815 GRAHAM2 69.0	1.0306	0.8782	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51816 GRAHAM3 115	1.0127	0.8345	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	321	"	
10SP*	321	SPS	51816 GRAHAM3 115	1.0127	0.8397	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51825 BG-YNT2 69.0	1.0122	0.8636	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	321	"	
10SP*	321	SPS	51825 BG-YNT2 69.0	1.0122	0.8693	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51857 BG-JST2 69.0	1.0262	0.8657	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	321	"	
10SP*	321	SPS	51857 BG-JST2 69.0	1.0262	0.8719	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51861 BORDEN6 230	0.9901	0.7933	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	321	"	
10SP*	321	SPS	51861 BORDEN6 230	0.9901	0.7966	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	321	"	
10SP*	321	SPS	51861 BORDEN6 230	0.990078	0.851389	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	321	"	
10SP*	321	SPS	51861 BORDEN6 230	0.990076	0.852302	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	321	"	
10SP*	321	SPS	51861 BORDEN6 230	0.989926	0.86176	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	321	"	
10WP*	189		NONE IDENTIFIED				189		

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
* Study Cases include higher priority service (SUNC to SPS 450 MW and SPS to EDDY 200 MW) with required network upgrades.								Total Estimated Engineering and Construction Cost	$0

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	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	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	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	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	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	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	
05SP	274	SPS	SPS	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	100	19.5	100.6	29.6	BASE CASE	
05SH	224			NONE IDENTIFIED						
05FA	159			NONE IDENTIFIED						
05WP	159			NONE IDENTIFIED						
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	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	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	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	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	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	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	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	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	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	13.6	114.3	48.3	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	37.4	108.6	34.9	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	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	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			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	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	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	51.1	157.3	47.3	50513 LP-COOP2 69 to 50524 LP-WADS2 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	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	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	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 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	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	100	20.4	124.1	32.3	BASE CASE	
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	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	
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	50513 LP-COOP2 69 to 50524 LP-WADS2 69 CKT 1	108	43.7	111.7	22.9	BASE CASE	
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	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	

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	17.1	114.5	42.5	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	100	16.8	114.5	30.4	BASE CASE	
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	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	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	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	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	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	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	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	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	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	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	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	140	16.4	164.6	64.6	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	16.4	164.6	64.6	50521 LP-HOLL6 230 to 51699 JONES6 230 CKT 1	
10SP*	321	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	140	13.3	163.3	65.4	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	
10SP*	321	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	140	13.3	163.1	65.4	50518 LP-SINT6 230 to 51681 LUBS6 230 CKT 1	
10SP*	321	SPS	SPS	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	140	14.9	158.9	62.8	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	14.9	158.9	62.8	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	11.7	159.1	64.3	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	11.7	159.1	64.3	50527 LP-WADS6 230 to 51689 LUBE6 230 CKT 1	
10SP*	321	SPS	SPS	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	140	15.1	151.8	59.6	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	15.1	151.8	59.6	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	15.2	150.2	58.9	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	
10SP*	321	SPS	SPS	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	140	15.2	150.1	58.8	50518 LP-SINT6 230 to 51681 LUBS6 230 CKT 1	
10SP*	321	SPS	SPS	50513 LP-COOP2 69 to 50524 LP-WADS2 69 CKT 1	143	34.6	138.3	46.2	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	34.6	138.1	46.1	50518 LP-SINT6 230 to 51681 LUBS6 230 CKT 1	
10SP*	321	SPS	SPS	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	140	18.5	139.9	52.9	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	140	12.7	135.9	53.7	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	140	15.4	129.0	49.6	50507 LP-MLWK6 230 to 51647 CARLISL6 230 CKT 1	
10SP*	321	SPS	SPS	50513 LP-COOP2 69 to 50516 LP-SLAT2 69 CKT 1	54	29.5	121.0	15.4	50513 LP-COOP2 69 to 50524 LP-WADS2 69 CKT 1	
10SP*	321	SPS	SPS	50513 LP-COOP2 69 to 50524 LP-WADS2 69 CKT 1	143	32.6	116.5	37.4	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	32.6	116.4	37.3	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	30.7	115.9	38.0	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
10SP*	321	SPS	SPS	50516 LP-SLAT2 69 to 50517 LP-SINT2 69 CKT 1	143	35.0	113.9	35.1	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	35.0	113.9	35.1	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	
10WP*	189			NONE IDENTIFIED						

* Study Cases include higher priority service (SUNC to SPS 450 MW and SPS to EDDY 200 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	0.866651	0.793595	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
05SP	274	SPS	50518 LP-SINT6 230	0.929752	0.833545	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	0.849	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	0.962461	0.861925	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	0.989159	0.849507	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
05SP	274	SPS	50521 LP-HOLL6 230	0.982	0.856	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	0.839	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	
05SP	274	SPS	50523 LP-BRND269.0	1.023	0.8367	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	
05SP	274	SPS	50527 LP-WADS6 230	1.075148	0.811025	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	1.024	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	0.979745	0.862379	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	0.849	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
05SP	274	SPS	50523 LP-BRND269.0	1.023	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	0.956	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	0.866	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	
05SP	274	SPS	50520 LP-HOLL269.0	1.0301	0.866	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	0.990833	0.888535	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	0.866619	0.393203	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
07SP	292	SPS	50518 LP-SINT6 230	0.929808	0.398829	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
07SP	292	SPS	50521 LP-HOLL6 230	0.989253	0.436296	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
07SP	292	SPS	50509 LP-MLWK269.0	1.005278	0.456115	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
07SP	292	SPS	50509 LP-MLWK269.0	1.005266	0.456252	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	
07SP	292	SPS	50526 LP-OLIV269.0	1.015113	0.415695	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	1.015154	0.416215	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	
07SP	292	SPS	50511 LP-THOM 69.0	1.01655	0.412931	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
07SP	292	SPS	50511 LP-THOM 69.0	1.016578	0.413448	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	
07SP	292	SPS	50515 LP-CHAL269.0	1.017497	0.414458	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
07SP	292	SPS	50515 LP-CHAL269.0	1.017532	0.414978	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	
07SP	292	SPS	50512 LP-MCCU269.0	1.017643	0.419624	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
07SP	292	SPS	50512 LP-MCCU269.0	1.017667	0.420142	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	
07SP	292	SPS	50510 LP-VCKS269.0	1.018683	0.417442	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
07SP	292	SPS	50510 LP-VCKS269.0	1.018705	0.417957	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	
07SP	292	SPS	50523 LP-BRND269.0	1.023	0.416183	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
07SP	292	SPS	50523 LP-BRND269.0	1.023	0.4167	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	
07SP	292	SPS	50516 LP-SLAT269.0	1.020967	0.428465	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
07SP	292	SPS	50516 LP-SLAT269.0	1.021008	0.42899	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	
07SP	292	SPS	50503 LP-ERSK269.0	1.024186	0.42108	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
07SP	292	SPS	50503 LP-ERSK269.0	1.024195	0.421599	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	
07SP	292	SPS	50509 LP-MLWK269.0	1.021488	0.432624	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
07SP	292	SPS	50509 LP-MLWK269.0	1.021509	0.433129	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	
07SP	292	SPS	50517 LP-SINT269.0	1.022789	0.438712	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
07SP	292	SPS	50517 LP-SINT269.0	1.022837	0.439238	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	
07SP	292	SPS	50513 LP-COOP269.0	1.023684	0.438358	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
07SP	292	SPS	50513 LP-COOP269.0	1.023712	0.438882	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	
07SP	292	SPS	50511 LP-THOM 69.0	1.019922	0.455147	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
07SP	292	SPS	50511 LP-THOM 69.0	1.019926	0.455613	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
07SP	292	SPS	50512 LP-MCCU269.0	1.020437	0.457481	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
07SP	292	SPS	50512 LP-MCCU269.0	1.020441	0.457948	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
07SP	292	SPS	50504 LP-MACK269.0	1.027705	0.431767	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
07SP	292	SPS	50504 LP-MACK269.0	1.027724	0.43229	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	
07SP	292	SPS	50510 LP-VCKS269.0	1.021348	0.456692	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
07SP	292	SPS	50510 LP-VCKS269.0	1.021353	0.457156	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
07SP	292	SPS	50511 LP-THOM 69.0	1.021211	0.461334	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
07SP	292	SPS	50526 LP-OLIV269.0	1.020138	0.465362	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
07SP	292	SPS	50526 LP-OLIV269.0	1.020142	0.465831	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
07SP	292	SPS	50506 LP-NES2 69.0	1.027632	0.438779	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
07SP	292	SPS	50506 LP-NES2 69.0	1.027657	0.439304	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	
07SP	292	SPS	50523 LP-BRND269.0	1.023865	0.453146	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
07SP	292	SPS	50515 LP-CHAL269.0	1.02178	0.460753	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
07SP	292	SPS	50512 LP-MCCU269.0	1.021974	0.460114	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
07SP	292	SPS	50523 LP-BRND269.0	1.023869	0.453613	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
07SP	292	SPS	50515 LP-CHAL269.0	1.021785	0.461222	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
07SP	292	SPS	50510 LP-VCKS269.0	1.022433	0.461433	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] 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	1.025423	0.457144	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
07SP	292	SPS	50503 LP-ERSK269.0	1.025659	0.45729	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
07SP	292	SPS	50503 LP-ERSK269.0	1.025662	0.457758	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
07SP	292	SPS	50515 LP-CHAL269.0	1.023334	0.468958	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
07SP	292	SPS	50526 LP-OLIV269.0	1.021755	0.47546	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
07SP	292	SPS	50509 LP-MLWK269.0	1.023855	0.469412	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] 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	1.027385	0.461019	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
07SP	292	SPS	50524 LP-WADS269.0	1.026894	0.47282	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
07SP	292	SPS	50513 LP-COOP269.0	1.026609	0.47426	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
07SP	292	SPS	50524 LP-WADS269.0	1.026924	0.473347	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	
07SP	292	SPS	50516 LP-SLAT269.0	1.025883	0.477842	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
07SP	292	SPS	50516 LP-SLAT269.0	1.025887	0.478312	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] 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	50504 LP-MACK269.0	1.02992	0.466924	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
07SP	292	SPS	50504 LP-MACK269.0	1.029923	0.467394	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
07SP	292	SPS	50513 LP-COOP269.0	1.028676	0.473928	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
07SP	292	SPS	50520 LP-HOLL269.0	1.030694	0.467485	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
07SP	292	SPS	50513 LP-COOP269.0	1.028777	0.474092	OPEN LINE FROM BUS 50524 [LP-WADS269.000] TO BUS 50527 [LP-WADS6230.00] CKT 1	
07SP	292	SPS	50520 LP-HOLL269.0	1.03073	0.468012	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	
07SP	292	SPS	50506 LP-NES2 69.0	1.030129	0.471767	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
07SP	292	SPS	50506 LP-NES2 69.0	1.030132	0.472237	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
07SP	292	SPS	50504 LP-MACK269.0	1.031848	0.470321	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
07SP	292	SPS	50516 LP-SLAT269.0	1.027845	0.487497	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
07SP	292	SPS	50506 LP-NES2 69.0	1.032211	0.478622	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
07SP	292	SPS	50517 LP-SINT269.0	1.028593	0.493114	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
07SP	292	SPS	50517 LP-SINT269.0	1.028597	0.493582	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
07SP	292	SPS	50524 LP-WADS269.0	1.032713	0.491729	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
07SP	292	SPS	50524 LP-WADS269.0	1.032823	0.491891	OPEN LINE FROM BUS 50524 [LP-WADS269.000] TO BUS 50527 [LP-WADS6230.00] CKT 1	
07SP	292	SPS	50524 LP-WADS269.0	1.029635	0.501923	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
07SP	292	SPS	50520 LP-HOLL269.0	1.033769	0.49295	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
07SP	292	SPS	50520 LP-HOLL269.0	1.033772	0.493418	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
07SP	292	SPS	50517 LP-SINT269.0	1.03029	0.506052	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	1.036234	0.510984	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
07SP	292	SPS	50527 LP-WADS6 230	0.971	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	1.075732	0.423905	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	0.968185	0.794975	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
07SP	292	SPS	50507 LP-MLWK6 230	0.968194	0.795237	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	
07SP	292	SPS	50527 LP-WADS6 230	0.988718	0.784029	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	
07SP	292	SPS	50527 LP-WADS6 230	0.988932	0.783945	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
07SP	292	SPS	50518 LP-SINT6 230	0.985768	0.792499	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
07SP	292	SPS	50518 LP-SINT6 230	0.986164	0.792581	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	
07SP	292	SPS	50521 LP-HOLL6 230	0.990743	0.795401	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	
07SP	292	SPS	50521 LP-HOLL6 230	0.990862	0.795319	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	0.936438	0.640436	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	1.016	0.3662	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
10SP	321	SPS	50523 LP-BRND269.0	1.023	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-NES2 69.0	1.0267	0.3772	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
10SP	321	SPS	50511 LP-THOM 69.0	1.019593	0.406825	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50512 LP-MCCU269.0	1.020017	0.40971	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50510 LP-VCKS269.0	1.020705	0.408411	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	1.02356	0.406087	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50515 LP-CHAL269.0	1.021869	0.413051	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50526 LP-OLIV269.0	1.020542	0.418486	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50511 LP-THOM 69.0	1.020029	0.428764	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50509 LP-MLWK269.0	1.022241	0.420993	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50511 LP-THOM 69.0	1.020075	0.430351	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50503 LP-ERSK269.0	1.025488	0.411034	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50527 LP-WADS6 230	0.974922	0.608067	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP	321	SPS	50512 LP-MCCU269.0	1.020459	0.431806	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50510 LP-VCKS269.0	1.021236	0.429664	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50512 LP-MCCU269.0	1.020504	0.433396	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50510 LP-VCKS269.0	1.021285	0.431246	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50523 LP-BRND269.0	1.023979	0.428255	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50515 LP-CHAL269.0	1.022173	0.435955	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50526 LP-OLIV269.0	1.020774	0.442004	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50523 LP-BRND269.0	1.024024	0.429846	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50515 LP-CHAL269.0	1.022218	0.43755	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50526 LP-OLIV269.0	1.020818	0.443596	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50511 LP-THOM 69.0	1.020077	0.446396	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	1.022985	0.438953	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50512 LP-MCCU269.0	1.020505	0.449472	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	
10SP	321	SPS	50509 LP-MLWK269.0	1.023043	0.440501	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50510 LP-VCKS269.0	1.021286	0.447249	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	
10SP	321	SPS	50513 LP-COOP269.0	1.026497	0.429032	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50503 LP-ERSK269.0	1.025859	0.433586	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50516 LP-SLAT269.0	1.026286	0.432409	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50503 LP-ERSK269.0	1.025902	0.435182	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50504 LP-MACK269.0	1.029921	0.422282	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50523 LP-BRND269.0	1.024025	0.44592	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	
10SP	321	SPS	50515 LP-CHAL269.0	1.02222	0.453683	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	
10SP	321	SPS	50526 LP-OLIV269.0	1.02082	0.459708	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	
10SP	321	SPS	50509 LP-MLWK269.0	1.023046	0.456186	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	
10SP	321	SPS	50506 LP-NES2 69.0	1.030434	0.430113	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50513 LP-COOP269.0	1.020341	0.469284	OPEN LINE FROM BUS 50513 [LP-COOP269.000] TO BUS 50524 [LP-WADS269.000] CKT 1	
10SP	321	SPS	50503 LP-ERSK269.0	1.025904	0.451307	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	
10SP	321	SPS	50513 LP-COOP269.0	1.026802	0.452233	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50513 LP-COOP269.0	1.026843	0.453831	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50516 LP-SLAT269.0	1.026478	0.456164	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50516 LP-SLAT269.0	1.02652	0.457761	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50504 LP-MACK269.0	1.030227	0.445318	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50517 LP-SINT269.0	1.029361	0.449731	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50504 LP-MACK269.0	1.030269	0.446918	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50506 LP-NES2 69.0	1.030694	0.453503	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50506 LP-NES2 69.0	1.030735	0.455103	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50524 LP-WADS269.0	1.029379	0.460343	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50516 LP-SLAT269.0	1.026523	0.473939	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	
10SP	321	SPS	50504 LP-MACK269.0	1.030271	0.463102	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	1.029485	0.473965	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50506 LP-NES2 69.0	1.030737	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	1.029526	0.47555	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50520 LP-HOLL269.0	1.03479	0.462437	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50524 LP-WADS269.0	1.029578	0.483993	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50524 LP-WADS269.0	1.029614	0.48558	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50507 LP-MLWK6 230	0.955388	0.724112	OPEN LINE FROM BUS 51041 [AMARLS6 230.00] TO BUS 51321 [SWISHER6230.00] CKT 1	
10SP	321	SPS	50517 LP-SINT269.0	1.029528	0.491635	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	
10SP	321	SPS	50524 LP-WADS269.0	1.029618	0.501701	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	
10SP	321	SPS	50520 LP-HOLL269.0	1.034933	0.486419	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50520 LP-HOLL269.0	1.03497	0.488002	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50507 LP-MLWK6 230	0.960539	0.718238	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50507 LP-MLWK6 230	0.960659	0.719114	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50520 LP-HOLL269.0	1.034973	0.50408	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	
10SP	321	SPS	50518 LP-SINT6 230	0.986442	0.66029	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50527 LP-WADS6 230	0.988508	0.658523	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50521 LP-HOLL6 230	0.990801	0.668734	OPEN LINE FROM BUS 51681 [LUBS6 230.00] TO BUS 51763 [WOLFRTH6230.00] CKT 1	
10SP	321	SPS	50527 LP-WADS6 230	0.988581	0.676398	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50527 LP-WADS6 230	0.988592	0.677577	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50518 LP-SINT6 230	0.985955	0.687917	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50518 LP-SINT6 230	0.986008	0.689088	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50521 LP-HOLL6 230	0.990811	0.68807	OPEN LINE FROM BUS 52205 [LEACO6 230.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50521 LP-HOLL6 230	0.990812	0.68924	OPEN LINE FROM BUS 50558 [CR-TATE4138.00] TO BUS 52231 [MIDLND-6230.00] CKT 1	
10SP	321	SPS	50518 LP-SINT6 230	0.986009	0.700865	OPEN LINE FROM BUS 50555 [CR-PHIL4138.00] TO BUS 50558 [CR-TATE4138.00] CKT 1	
10SP	321	SPS	50521 LP-HOLL6 230	0.990812	0.701318	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	0.992756	0.894214	OPEN LINE FROM BUS 51689 [LUBE6 230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP*	321	SPS	50507 LP-MLWK6 230	0.866515	0.375405	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
10SP*	321	SPS	50518 LP-SINT6 230	0.930181	0.390329	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
10SP*	321	SPS	50521 LP-HOLL6 230	0.981537	0.42814	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP*	321	SPS	50509 LP-MLWK269.0	1.005159	0.435052	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	
10SP*	321	SPS	50509 LP-MLWK269.0	1.005156	0.435469	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
10SP*	321	SPS	50526 LP-OLIV269.0	1.015552	0.404165	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
10SP*	321	SPS	50526 LP-OLIV269.0	1.015552	0.404942	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	
10SP*	321	SPS	50511 LP-THOM 69.0	1.017066	0.401073	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
10SP*	321	SPS	50511 LP-THOM 69.0	1.017066	0.401849	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	
10SP*	321	SPS	50515 LP-CHAL269.0	1.017936	0.402664	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
10SP*	321	SPS	50515 LP-CHAL269.0	1.017936	0.403443	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	
10SP*	321	SPS	50512 LP-MCCU269.0	1.01801	0.408368	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
10SP*	321	SPS	50512 LP-MCCU269.0	1.01801	0.409139	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	
10SP*	321	SPS	50510 LP-VCKS269.0	1.019254	0.40598	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
10SP*	321	SPS	50510 LP-VCKS269.0	1.019255	0.406751	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	
10SP*	321	SPS	50523 LP-BRND269.0	1.023	0.404613	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
10SP*	321	SPS	50523 LP-BRND269.0	1.023	0.405389	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	
10SP*	321	SPS	50516 LP-SLAT269.0	1.021291	0.417998	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
10SP*	321	SPS	50516 LP-SLAT269.0	1.021291	0.418767	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	
10SP*	321	SPS	50503 LP-ERSK269.0	1.024228	0.409906	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
10SP*	321	SPS	50503 LP-ERSK269.0	1.024229	0.410679	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	
10SP*	321	SPS	50509 LP-MLWK269.0	1.0227	0.423002	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
10SP*	321	SPS	50509 LP-MLWK269.0	1.022702	0.423748	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	
10SP*	321	SPS	50511 LP-THOM 69.0	1.018651	0.442203	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP*	321	SPS	50511 LP-THOM 69.0	1.018651	0.442481	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP*	321	SPS	50512 LP-MCCU269.0	1.01895	0.444761	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP*	321	SPS	50512 LP-MCCU269.0	1.01895	0.445041	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP*	321	SPS	50517 LP-SINT269.0	1.0232	0.429362	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
10SP*	321	SPS	50517 LP-SINT269.0	1.0232	0.430122	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	
10SP*	321	SPS	50513 LP-COOP269.0	1.023774	0.4288	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
10SP*	321	SPS	50513 LP-COOP269.0	1.023775	0.429559	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	
10SP*	321	SPS	50510 LP-VCKS269.0	1.020177	0.443902	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP*	321	SPS	50510 LP-VCKS269.0	1.020177	0.444183	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP*	321	SPS	50526 LP-OLIV269.0	1.018744	0.453463	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP*	321	SPS	50526 LP-OLIV269.0	1.018744	0.453721	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP*	321	SPS	50515 LP-CHAL269.0	1.020382	0.448223	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP*	321	SPS	50515 LP-CHAL269.0	1.020382	0.448493	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP*	321	SPS	50511 LP-THOM 69.0	1.020696	0.447457	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP*	321	SPS	50504 LP-MACK269.0	1.027795	0.42152	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
10SP*	321	SPS	50523 LP-BRND269.0	1.023	0.440003	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP*	321	SPS	50504 LP-MACK269.0	1.027795	0.422285	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	
10SP*	321	SPS	50523 LP-BRND269.0	1.023	0.440293	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP*	321	SPS	50512 LP-MCCU269.0	1.021583	0.446171	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP*	321	SPS	50510 LP-VCKS269.0	1.021964	0.447579	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP*	321	SPS	50506 LP-NES2 69.0	1.027829	0.429257	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
10SP*	321	SPS	50506 LP-NES2 69.0	1.027829	0.430017	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	
10SP*	321	SPS	50503 LP-ERSK269.0	1.02449	0.444476	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP*	321	SPS	50503 LP-ERSK269.0	1.02449	0.444764	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP*	321	SPS	50523 LP-BRND269.0	1.025051	0.442901	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP*	321	SPS	50515 LP-CHAL269.0	1.022756	0.455684	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP*	321	SPS	50526 LP-OLIV269.0	1.021142	0.46303	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP*	321	SPS	50509 LP-MLWK269.0	1.022933	0.458355	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP*	321	SPS	50503 LP-ERSK269.0	1.02704	0.44709	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP*	321	SPS	50513 LP-COOP269.0	1.024722	0.463062	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP*	321	SPS	50516 LP-SLAT269.0	1.024298	0.466933	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP*	321	SPS	50516 LP-SLAT269.0	1.024298	0.467183	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP*	321	SPS	50504 LP-MACK269.0	1.028375	0.454942	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP*	321	SPS	50504 LP-MACK269.0	1.028375	0.455217	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP*	321	SPS	50506 LP-NES2 69.0	1.028466	0.460266	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP*	321	SPS	50524 LP-WADS269.0	1.026577	0.466975	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
10SP*	321	SPS	50506 LP-NES2 69.0	1.028466	0.460534	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP*	321	SPS	50513 LP-COOP269.0	1.028362	0.461251	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP*	321	SPS	50513 LP-COOP269.0	1.028363	0.461576	OPEN LINE FROM BUS 50524 [LP-WADS269.000] TO BUS 50527 [LP-WADS6230.00] CKT 1	
10SP*	321	SPS	50524 LP-WADS269.0	1.026577	0.467708	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	
10SP*	321	SPS	50504 LP-MACK269.0	1.031534	0.457204	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP*	321	SPS	50520 LP-HOLL269.0	1.03111	0.461154	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
10SP*	321	SPS	50520 LP-HOLL269.0	1.03111	0.461893	OPEN LINE FROM BUS 50517 [LP-SINT269.000] TO BUS 50518 [LP-SINT6230.00] CKT 1	
10SP*	321	SPS	50516 LP-SLAT269.0	1.027256	0.475984	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP*	321	SPS	50506 LP-NES2 69.0	1.031978	0.466316	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP*	321	SPS	50517 LP-SINT269.0	1.027187	0.483979	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP*	321	SPS	50517 LP-SINT269.0	1.027187	0.484207	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP*	321	SPS	50524 LP-WADS269.0	1.026829	0.493645	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP*	321	SPS	50524 LP-WADS269.0	1.032541	0.480848	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP*	321	SPS	50524 LP-WADS269.0	1.032543	0.48117	OPEN LINE FROM BUS 50524 [LP-WADS269.000] TO BUS 50527 [LP-WADS6230.00] CKT 1	
10SP*	321	SPS	50520 LP-HOLL269.0	1.031841	0.483734	OPEN LINE FROM BUS 50521 [LP-HOLL6230.00] TO BUS 51699 [JONES6 230.00] CKT 1	
10SP*	321	SPS	50520 LP-HOLL269.0	1.031841	0.483967	OPEN LINE FROM BUS 50520 [LP-HOLL269.000] TO BUS 50521 [LP-HOLL6230.00] CKT 1	
10SP*	321	SPS	50517 LP-SINT269.0	1.029612	0.496741	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP*	321	SPS	50520 LP-HOLL269.0	1.036164	0.502268	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP*	321	SPS	50527 LP-WADS6 230	1.075564	0.414528	OPEN LINE FROM BUS 50527 [LP-WADS6230.00] TO BUS 51689 [LUBE6 230.00] CKT 1	
10SP*	321	SPS	50527 LP-WADS6 230	0.9877	0.7521	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	
10SP*	321	SPS	50527 LP-WADS6 230	0.9877	0.7564	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
10SP*	321	SPS	50518 LP-SINT6 230	0.9861	0.7609	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	
10SP*	321	SPS	50518 LP-SINT6 230	0.9861	0.765	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
10SP*	321	SPS	50521 LP-HOLL6 230	0.9908	0.7613	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	
10SP*	321	SPS	50521 LP-HOLL6 230	0.9908	0.7656	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
10SP*	321	SPS	50507 LP-MLWK6 230	0.9981	0.7885	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	
10SP*	321	SPS	50507 LP-MLWK6 230	0.9981	0.7913	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	
10SP*	321	SPS	50527 LP-WADS6 230	0.988766	0.815434	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	
10SP*	321	SPS	50518 LP-SINT6 230	0.986027	0.822923	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	
10SP*	321	SPS	50518 LP-SINT6 230	0.986024	0.82317	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
10SP*	321	SPS	50521 LP-HOLL6 230	0.990619	0.826674	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 50509 [LP-MLWK269.000] CKT 1	
10SP*	321	SPS	50521 LP-HOLL6 230	0.990619	0.826933	OPEN LINE FROM BUS 50507 [LP-MLWK6230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
10SP*	321	SPS	50507 LP-MLWK6 230	0.876016	0.844597	OPEN LINE FROM BUS 51533 [TUCO6 230.00] TO BUS 51647 [CARLISL6230.00] CKT 1	
10SP*	321	SPS	50507 LP-MLWK6 230	1.008473	0.846184	OPEN LINE FROM BUS 50518 [LP-SINT6230.00] TO BUS 51681 [LUBS6 230.00] CKT 1	
10WP*	189		NONE IDENTIFIED				

* Study Cases include higher priority service (SUNC to SPS 450 MW and SPS to EDDY 200 MW) with required network upgrades.

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	**457**	**456**	**428**	**410**	**396**	**383**	**372**	**361**	**353**	**333**	**311**
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 450 MW and SPS to EDDY 200 MW) with required network upgrades.
(1) Maximum Amount Evaluated

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	6/1/2006
TUCO 230 kV Bus Voltage 50 MVAR Shunt Capacitors on 230 kV bus at Swisher	SPS	$1,100,000	14	2	7/15/2005	6/1/2006
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	6/1/2006
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	6/1/2006
Total		$19,650,000				

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	
10SP	321			Contingency Not Converged					50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	N/A	"	
10WP	189			NONE IDENTIFIED						189		
10SP*	321			NONE IDENTIFIED						321		
10WP*	189			NONE IDENTIFIED						189		

* Study Cases include higher priority service (SUNC to SPS 450 MW and SPS to EDDY 200 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	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	
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-HCLI2 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			NONE IDENTIFIED						321		
10WP*	189			NONE IDENTIFIED						189		
											Total Estimated Engineering and Construction Cost	$0

* Study Cases include higher priority service (SUNC to SPS 450 MW and SPS to EDDY 200 MW) with required network upgrades