

System Impact Study SPP-2004-006-1 For Network Service Requested By Southwestern Public Service Company

From SPS To SPS

# For a Reserved Amount Of 320 MW From 7/1/2004 To 7/1/2019

SPP Engineering, Tariff Studies

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# **<u>1. Executive Summary</u>**

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 7/1/2004 to 7/1/2019. The OASIS reservation number is 636882.

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. Due to higher priority requests and the complexity of the study, analysis was conducted to evaluate only the first year of service. The study includes transfer analyses from generation to load and 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. The service was modeled first by transfers from SPS and LP&L generation to the Network Load. No system violations were identified for the generation to load transfers, primarily due to LP&L generation being dispatched, based on priority, at 80 MW or greater with reactive output. To determine what limitations occur with all LP&L generation off, the service was then modeled from SPS generation to the Network load and to LP&L generation, until LP&L generation was dispatched at zero MW.

<u>Tables 1.1</u> and <u>1.2</u> list the SPS facility overloads caused or impacted by the SPS generation to LP&L generation transfers modeled for Scenario 1 and 2, respectively. <u>Tables 2.1</u> and <u>2.2</u> lists the SPS voltage violations caused or impacted by the SPS generation to LP&L generation transfers modeled for Scenario 1 and 2, respectively. No facilities outside of SPS were identified as being impacted with application of established transfer distribution factor cutoffs.

Limits were identified in the 2004 and 2005 Summer Peak models with all LP&L generation off. Due to the inability to mitigate the limiting constraints identified through transmission upgrades by the 7/1/2004 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 lagging power factors ranging from 0.98 to 0.90 using Scenario 2. At unity power factor for the 2004 Summer Peak the overload of the new LP&L South 230/69 kV transformer tie for the outage of the LP&L-Wadsworth to Lubbock East Interchange 230 kV line is the most limiting using Scenario 1. At unity power factor for the 2005 Summer Peak the overload of the new LP&L South 230/69 kV transformer tie for the outage of the LP&L-Holley to Jones 230 kV line is the most limiting using Scenario 1. Figures 1, 2, 3 and 4 illustrate the tie line flow limit results of six worst contingencies based on the tie line power factor for the 2004 and 2005 Summer Peak models using both scenarios. Table 3 summarizes the SPS to LP&L tie line limits by season and power factor.

Based on historical tie line flow data, which reveals an average power factor of 95% with tie line flow greater than 200 MW, the tie line flow from SPS to LP&L will be limited to 238 MW for 2004 and 220 MW for 2005 based on a 95% power factor. If the customer agrees to the SPS to LP&L tie line flow limits, the request will be accepted for the first year. The reservation queue priority of the remaining years of requested service will remain the same. SPP also requests that a facility study agreement be executed. Upon execution of a facility study agreement, SPP will evaluate the remaining years of service and determine necessary transmission upgrades.

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# 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 and LP&L System that may limit the requested service and determine the least cost solutions required to alleviate the limiting facilities. Due to higher priority requests and the complexity of the study, analysis was conducted to evaluate only the first year of service.

The 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 and transformers, and selected multiple transmission lines and transformers on the SPP system and first tier Non - SPP systems. Generation unit outages were performed for the SPS control area.

The requested service was studied using two System Scenarios with SPS exporting and importing, respectively. The two scenarios were studied to capture worst case system limitations dependent on the bias of the transmission system. The service was modeled by transfers from SPS and LP&L generation to the Network Load and 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. Six of the most limiting contingency events were evaluated in the Summer Peak models based on the aggregate tie line power factor. The maximum allowable aggregate tie line flow is based upon the most limiting critical contingency events and tie line lagging power factor.

# 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 lower bound of the normal voltage range monitored is 95%. The lower bound of the emergency voltage range monitored is 90%. The 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, and any defined contingencies for these control areas. Generation unit outages for the SPS control area with SPP reserve share program redispatch were included in the contingency set. 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 requested service for the first year of service. The SPP 2004 Series Cases Update 2 2004 Summer Peak (04SP), 2004 Summer Shoulder (04SH), 2004 Fall Peak (04FA), 2004/2005 Winter Peak (04WP), 2005 April Minimum (05AP), 2005 Spring Peak (05G), 2005 Summer Peak (05SP), and 2005 Summer Shoulder (05SH) were used to study the impact of the requested service on the transmission system during the first year of service from 7/1/2004 to 7/1/2005. 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 Lamar HVDC Tie is modeled starting in the 2004 Fall Peak.

SPP IMPACT STUDY (SPP-2004-006-1) July 12, 2004 Page 5 of 14 LP&L is currently connected to the SPS transmission system by three 230 kV tie lines. LP&L is adding a fourth 230 kV tie line to be in-service by 7/1/2004. The fourth 230 kV tie line was included in the study analysis. The minimum allowable lagging power factor measured at the ties is 0.95. LP&L generating capacity is approximately 232 MW. The maximum reactive capacity of these generating facilities is approximately 121 MVAR. LP&L has three 69 kV capacitor banks rated at 12 MVAR.

The Network load for the 2004 Summer Peak was forecasted to be a maximum of 320 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. The Network load amount for 2005 April minimum is 47% of the summer peaks. Future Summer Peak and Non-Summer Peak loads were determined by scaling the 2004 summer peak values while maintaining constant real power and reactive power ratios. <u>Table 3</u> documents the total Network load modeled in each seasonal case.

SPS currently has 55 MW of long-term firm point-to-point service to LP&L. The existing reserved service was modeled in the cases before any transfer analyses where performed. For models with LP&L generation dispatch at 0 MW, the aggregate SPS to LP&L tie line power factor was set to the minimum allowable 0.95 lagging power factor by adjusting the power factor of the Network Load. 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

Two different transfer analyses were performed. The service was modeled first by transfers from SPS and LP&L generation to the Network Load. No system violations were identified for the generation to load transfers, primarily due to LP&L generation being dispatched, based on priority, at 80 MW or greater with reactive output. To determine what limitations occur with all LP&L generation off, the service was then 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. Subsequently, the loading of the limitations identified was determined with LP&L units dispatched up to 20 and 60 MW with 10 to 30 MVAR of reactive output, respectively. The reactive output of the generation results in tie line power factors close to unity.

# 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 the tie line lagging power factor. Contingency cases were developed for the 2004 and 2005 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 and at the minimum allowable 0.95 lagging power factor

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**<u>E. Upgrade Analysis</u>** This system impact study does not include analysis of upgrades.

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# 4. Study Results

#### A. Study Analysis Results

Tables 1.1, 2.1, 1.2, and 2.2 contain the initial steady-state analysis results of the System Impact Study. The Tables are in the attached workbook *SPP-2004-006-1 Tables*. The tables identify the seasonal case in which the event occurred, the transfer amount studied which does not include the existing 55 MW of firm service, the facility control area location, applicable ratings of the overloaded facility, the loading percentage or voltage with different LP&L dispatch levels where applicable, and the estimated level at which the limit is relieved by LP&L dispatch amounts. 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.

<u>Table 1.1 and 1.2</u> lists the SPP Facility Overloads caused or impacted by the transfers modeled from SPS generation to LP&L generation, using Scenario 1 and 2, respectively. <u>Table 2.1 and 2.2</u> lists the SPP facility voltage violations caused or impacted by the transfers modeled from SPS generation to LP&L generation, using Scenario 1 and 2, respectively. No facilities outside of SPS were identified as being impacted with application of established transfer distribution factor cutoffs. Limitations were identified for the 2004 and 2005 Summer Peaks. No limitations were identified in the Non-Summer Peak cases at the forecasted Network load amounts and with a pre-contingency 0.95 tie line lagging power factor.

From the results in the Tables, the six most limiting events were determined to be the following: Jones Unit 1 Outage, Jones Unit 2 Outage, LP&L South Interchange 230 kV Tie Outage, LP&L Wadsworth 230 kV Tie Outage, LP&L Holley 230 kV Tie Outage, and Tolk to Tuco 230 kV Line Outage. The violations that occur for these contingencies can be found in the Tables.

<u>Figures 1, 2, 3, and 4</u> illustrate the results of the SPS to LP&L tie line limits based on lagging tie line power factor for 2004 and 2005 Summer Peaks using Scenario 1 and 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 lagging tie line power factor. From the Figures, the most limiting contingency is the outage of the Jones Unit 1. From <u>Figures 2</u> and <u>4</u>, scenario 2 or SPS importing is the worst-case scenario for power factors ranging from 0.98 to 0.90.

Two additional plots were added to <u>Figures 2</u> and <u>4</u> 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 both the 2004 and 2005 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. <u>Table 3</u> summarizes the SPS to LP&L tie line limits by season.

<u>Tables 1.1a</u> and <u>1.2a</u> documents the modeling representation of the events identified in <u>Tables</u> <u>1.1</u> and <u>1.2</u> to include bus numbers and bus names.

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# 5. Conclusion

Limits were identified in the 2004 and 2005 Summer Peak models with all LP&L generation off. Due to the inability to mitigate the limiting constraints identified through transmission upgrades by the 7/1/2004 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 lagging power factors ranging from 0.98 to 0.90 using Scenario 2. At unity power factor for the 2004 Summer Peak the overload of the new LP&L South 230/69 kV transformer tie for the outage of the LP&L-Wadsworth to Lubbock East Interchange 230 kV line is the most limiting using Scenario 1. At unity power factor for the 2005 Summer Peak the overload of the new LP&L South 230/69 kV transformer tie for the outage of the LP&L-Holley to Jones 230 kV line is the most limiting using Scenario 1. Figures 1, 2, 3 and 4 illustrate the tie line flow limit results of six worst contingencies based on the tie line power factor for the 2004 and 2005 Summer Peak models using both scenarios. Table 3 summarizes the SPS to LP&L tie line limits by season and power factor.

Based on historical tie line flow data, which reveals an average power factor of 95% with tie line flow greater than 200 MW, the tie line flow from SPS to LP&L will be limited to 238 MW for 2004 and 220 MW for 2005 based on a 95% power factor. If the customer agrees to the SPS to LP&L tie line flow limits, the request will be accepted for the first year. The reservation queue priority of the remaining years of requested service will remain the same. SPP also requests that a facility study agreement be executed. Upon execution of a facility study agreement, SPP will evaluate the remaining years of service and determine necessary transmission upgrades.



#### Figure 1: SPS to LP&L Tie Line MW Limits for Scenario 1 2004 Summer Peak

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#### Figure 2: SPS to LP&L Tie Line MW Limits for Scenario 2 2004 Summer Peak

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# Figure 3: SPS to LP&L Tie Line MW Limits for Scenario 1 2005 Summer Peak

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#### Figure 4: SPS to LP&L Tie Line MW Limits for Scenario 2 2005 Summer Peak

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# 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  $\underline{X}$  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  $\underline{X}$  Phase shift adjustment
  - \_ Flat start
    - \_Lock DC taps
    - \_Lock switched shunts

	Transfer					BC % Loading	TC % Loading	TC % Loading	TC % Loading		Transfer Amount minus		
Study	Amount	From	То		Rate	(LP&L PGEN =	(LP&L PGEN =	(LP&L PGEN =	(LP&L PGEN =		LP&L Generation Required to		
Case	(MW)	Area	Area	Monitored Branch Overload	<mva></mva>	232 MW)	60 MW)	20 MW)	0 MW)	Outaged Branch Causing Overload	Mitigate Violation (MW)	Solution	Estimated Cost
												Short-term Solution is to Dispatch LP&L	
04SP	265	SPS	SPS	LP-COOP2 - LP-SLAT2 69KV	54	33.9	N/A	91.4	104.0	LP-COOP2 - LP-HCLI2 69KV	245	Generation	
04SP	265	SPS	SPS	LP-HOLL6 230/69KV TRANSFORMER	140	14.6	N/A	96.0	107.0	LP-SOUTH INT - LUBBOCK SOUTH INTERCHANGE 230KV	245	"	
04SP	265	SPS	SPS	LP-HOLL6 230/69KV TRANSFORMER	140	14.6	N/A	95.9	106.9	LP-SOUTH INT 230/69KV TRANSFORMER	245	W	
04SP	265	SPS	SPS	LP-HOLL6 230/69KV TRANSFORMER	140	13.1	N/A	91.2	101.9	LP-WADSWORTH STATION - LUBBOCK EAST INTERCHANGE 230KV	245	н	
04SP	265	SPS	SPS	LP-HOLL6 230/69KV TRANSFORMER	140	13.1	N/A	91.2	101.8	LP-HCLI2 230/69KV TRANSFORMER	245	"	
04SP	265	SPS	SPS	LP-SOUTH INT 230/69KV TRANSFORMER	140	17.6	N/A	94.6	104.3	JONES PLANT - LP-HOLL6 230KV	245	н	
04SP	265	SPS	SPS	LP-SOUTH INT 230/69KV TRANSFORMER	140	17.6	N/A	94.6	104.2	LP-HOLL2 230/69KV TRANSFORMER	245		
04SP	265	SPS	SPS	LP-SOUTH INT 230/69KV TRANSFORMER	140	17.6	N/A	91.0	101.0	LP-WADSWORTH STATION - LUBBOCK EAST INTERCHANGE 230KV	245	"	
04SP	265	SPS	SPS	LP-SOUTH INT 230/69KV TRANSFORMER	140	17.6	N/A	91.0	100.8	LP-HCLI2 230/69KV TRANSFORMER	245	н	
04SH	217			NONE IDENTIFIED							217		
04FA	153			NONE IDENTIFIED							153		
04WP	153			NONE IDENTIFIED							153		
05AP	100			NONE IDENTIFIED							100		
05G	159			NONE IDENTIFIED							159		
												Short-term Solution is to Dispatch LP&L	
05SP	274	SPS	SPS	LP-HOLL6 230/69KV TRANSFORMER	140	15.0	83.1	101.0	143.3	LP-SOUTH INT - LUBBOCK SOUTH INTERCHANGE 230KV	214	Generation	
05SP	274	SPS	SPS	LP-HOLL6 230/69KV TRANSFORMER	140	15.0	83.2	100.9	143.4	LP-SOUTH INT 230/69KV TRANSFORMER	214	"	
05SP	274	SPS	SPS	LP-COOP2 - LP-HCLI2 69KV	143	36.7	N/A	73.5	124.6	LP-SOUTH INT - LUBBOCK SOUTH INTERCHANGE 230KV	254		
05SP	274	SPS	SPS	LP-COOP2 - LP-HCLI2 69KV	143	36.7	N/A	73.3	124.5	LP-SOUTH INT 230/69KV TRANSFORMER	254	W	
05SP	274	SPS	SPS	LP-COOP2 - LP-SLAT2 69KV	54	34.4	N/A	95.4	110.3	LP-COOP2 - LP-HCLI2 69KV	254		
05SP	274	SPS	SPS	LP-HCLI2 230/69KV TRANSFORMER	140	16.7	N/A	92.0	106.1	JONES PLANT - LP-HOLL6 230KV	254		
05SP	274	SPS	SPS	LP-HCLI2 230/69KV TRANSFORMER	140	16.7	N/A	91.9	106.2	LP-HOLL2 230/69KV TRANSFORMER	254	н	
05SP	274	SPS	SPS	LP-HCLI2 230/69KV TRANSFORMER	140	18.3	N/A	90.9	131.2	LP-SOUTH INT - LUBBOCK SOUTH INTERCHANGE 230KV	254		
05SP	274	SPS	SPS	LP-HCLI2 230/69KV TRANSFORMER	140	18.3	N/A	90.8	131.2	LP-SOUTH INT 230/69KV TRANSFORMER	254		
05SP	274	SPS	SPS	LP-HOLL6 230/69KV TRANSFORMER	140	13.3	N/A	96.1	114.1	LP-WADSWORTH STATION - LUBBOCK EAST INTERCHANGE 230KV	254	н	
05SP	274	SPS	SPS	LP-HOLL6 230/69KV TRANSFORMER	140	13.2	N/A	96.0	114.1	LP-HCLI2 230/69KV TRANSFORMER	254		
05SP	274	SPS	SPS	LP-HOLL6 230/69KV TRANSFORMER	100	12.4	N/A	65.7	100.1	Base Case	254		
05SP	274	SPS	SPS	LP-SOUTH INT 230/69KV TRANSFORMER	140	18.1	N/A	99.3	115.6	LP-HOLL2 230/69KV TRANSFORMER	254	"	
05SP	274	SPS	SPS	LP-SOUTH INT 230/69KV TRANSFORMER	140	18.1	N/A	99.3	115.6	JONES PLANT - LP-HOLL6 230KV	254		
05SP	274	SPS	SPS	LP-SOUTH INT 230/69KV TRANSFORMER	140	18.0	N/A	95.7	113.7	LP-HCLI2 230/69KV TRANSFORMER	254		
05SP	274	SPS	SPS	LP-SOUTH INT 230/69KV TRANSFORMER	140	18.0	N/A	95.7	113.7	LP-WADSWORTH STATION - LUBBOCK EAST INTERCHANGE 230KV	254		
05SP	274	SPS	SPS	LP-SOUTH INT 230/69KV TRANSFORMER	100	20.3	N/A	68.1	102.1	Base Case	254		
05SH	224			NONE IDENTIFIED		1	1	1			224		1
Note: F	esultina Ti	e Line F	ower F	actor not Specified								Total Estimated Cost	\$0

				BC Voltage	TC Voltage	TC Voltage	TC Voltage				
	Transfer			(PU) (LP&L	(PU) (LP&L	(PU) (LP&L	(PU) (LP&L		Transfer Amount minus		
Study	Amount			PGEN = 232	PGEN = 60	PGEN = 20	PGEN = 0		LP&L Generation Required to		Estimated
Case	(MW)	AREA	Monitored Bus with Violation	MW)	MW)	MW)	MW)	Outaged Branch Causing Voltage Violation	Mitigate Violation (MW)	Solution	Cost
										Specific Monitored Bus Voltage 0.925 for	
										Stability Limit, Short-term Solution is to	
04SP	265	SPS	51533 TUCO6 230	0.9796	N/A	0.9263	0.9080	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	245	Dispatch LP&L Generation	
										Specific Monitored Bus Voltage 0.925 for	
										Stability Limit, Short-term Solution is to	
04SP	265	SPS	51533 TUCO6 230	0.9796	N/A	0.9285	0.9100	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	245	Dispatch LP&L Generation	
04SP	265	SPS	50507 LP-MLWK6 230	0.8697	N/A	N/A	0.8183	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 51647 CARLISL6 230 CKT 1	265	Not Load Serving Bus	
04SP	265	SPS	50507 LP-MLWK6 230	0.9599	N/A	N/A	0.8651	OPEN LINE FROM BUS 51533 TUCO6 230 TO BUS 51647 CARLISL6 230 CKT	265	Not Load Serving Bus	
04SP	265	SPS	50507 LP-MLWK6 230	0.9707	N/A	N/A	0.8779	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	265	Not Load Serving Bus	
04SP	265	SPS	50507 LP-MLWK6 230	0.9707	N/A	N/A	0.8802	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	265	Not Load Serving Bus	
04SP	265	SPS	50518 LP-SINT6 230	0.9726	N/A	N/A	0.8679	OPEN LINE FROM BUS 50518 LP-SINT6 230 TO BUS 51681 LUBS6 230 CKT	265	Not Load Serving Bus	
04SP	265	SPS	50518 LP-SINT6 230	0.9869	N/A	N/A	0.8839	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	265	Not Load Serving Bus	
04SP	265	SPS	50518 LP-SINT6 230	0.9869	N/A	N/A	0.8872	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCF	265	Not Load Serving Bus	
04SP	265	SPS	50521 LP-HOLL6 230	0.9909	N/A	N/A	0.8702	OPEN LINE FROM BUS 50521 LP-HOLL6 230 TO BUS 51699 JONES6 230 CKT	265	Not Load Serving Bus	
04SP	265	SPS	50521 LP-HOLL6 230	0.9910	N/A	N/A	0.8852	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	265	Not Load Serving Bus	
04SP	265	SPS	50521 LP-HOLL6 230	0.9910	N/A	N/A	0.8887	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCE	265	Not Load Serving Bus	
045P	205	SPS	50527 LP-WADS6 230	1.0769	N/A	N/A	0.8298	OPEN LINE FROM BUS 50527 LP-WADS6 230 TO BUS 51689 LUBE6 230 CKT	265	Not Load Serving Bus	
045P	200	3P3 6D6	50527 LP-WADS6 230	0.9939	N/A	N/A	0.8702	OPEN LINE FROM BUS 51009 LUBED 230 TO BUS 51099 JUNESD 230 CKT	203	Not Load Serving Bus	
045P	200	3P3 6D6	50527 LP-WADS6 230	0.9906	N/A	N/A	0.0792	REMOVE UNIT 1 FROM BUS 51701 JUNEST 122.000 DISPATCH	203	Not Load Serving Bus	
04SP	205	SPS	51564 CROSBV3 115	0.9906	N/A	N/A	0.0027	REMOVE UNIT FROM BUS 51702 JUNES2 121.000 JUSPATOR Base Case	265	Not Load Serving Bus	
04SP	205	SPS	51647 CAPLISL6 230	0.9500	N/A	N/A	0.8653	OPEN LINE FROM BUS 51533 TUCO6 230 TO BUS 51647 CARLISL6 230 CKT	203	Not Load Serving Bus	
04SP	265	SPS	51647 CARLISL6 230	0.9709	N/A	N/A	0.8785	REMOVE LINET 1 FROM BUS 51701 [ IONES1 122 000] DISPATCH	203	Not Load Serving Bus	
04SP	265	SPS	51647 CARLISL6 230	0.9709	N/A	N/A	0.8809	REMOVE UNIT 1 FROM BUS 51701 [JONES2 121 000] DISPATCH	265	Not Load Serving Bus	
04SP	265	SPS	51681 LUBS6 230	0.9872	Ν/Δ	N/A	0.8861	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122 000] DISPATCH	265	Not Load Serving Bus	
04SP	265	SPS	51681 LUBS6 230	0.9872	N/A	N/A	0.8894	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121 000] DISPATCH	265	Not Load Serving Bus	
04SP	265	SPS	51689 LUBE6 230	0.9937	N/A	N/A	0.8714	OPEN LINE FROM BUS 51689 LUBE6 230 TO BUS 51699 JONES6 230 CKT	265	Not Load Serving Bus	
04SP	265	SPS	51689 LUBE6 230	0.9904	N/A	N/A	0.8801	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	265	Not Load Serving Bus	
04SP	265	SPS	51689 LUBE6 230	0.9904	N/A	N/A	0.8835	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	265	Not Load Serving Bus	
04SP	265	SPS	51699 JONES6 230	0.9910	N/A	N/A	0.8879	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	265	Not Load Serving Bus	
04SP	265	SPS	51699 JONES6 230	0.9910	N/A	N/A	0.8913	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	265	Not Load Serving Bus	
04SP	265	SPS	51811 GRASSLN6 230	0.9917	N/A	N/A	0.8891	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	265	Not Load Serving Bus	
04SP	265	SPS	51811 GRASSLN6 230	0.9917	N/A	N/A	0.8924	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	265	Not Load Serving Bus	
04SP	265	SPS	51861 BORDEN6 230	0.9953	N/A	N/A	0.8973	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	265	Not Load Serving Bus	
04SH	217		NONE IDENTIFIED						217		
04FA	153	SPS	50507 LP-MLWK6 230	1.0118	N/A	N/A	0.8695	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 51647 CARLISL6 230 CKT 1	153	Not Load Serving Bus	
04WP	153	SPS	50507 LP-MLWK6 230	0.9984	N/A	N/A	0.8653	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 51647 CARLISL6 230 CKT 1	153	Not Load Serving Bus	
05AP	100		NONE IDENTIFIED						100		
05G	159	SPS	50507 LP-MLWK6 230	0.9921	N/A	N/A	0.8672	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 51647 CARLISL6 230 CKT 1	159	Not Load Serving Bus	
										Specific Monitored Bus Voltage 0.925 for	
										Stability Limit, Short-term Solution is to	
05SP	274	SPS	51533 TUCO6 230	0.9746	0.9590	0.9146	0.8910	OPEN LINE FROM BUS 51435 TOLKE6 230 TO BUS 51533 TUCO6 230 CKT 1	214	Dispatch LP&L Generation	
					1	1				Specific Monitored Bus Voltage 0.925 for	
0505	074	000	54500 TUOO0 000	0.0700	0.0000	0.0110	0.0004			Stability Limit, Short-term Solution is to	
05SP	2/4	545	51533 TUCO6 230	0.9782	0.9390	0.9116	0.8921	REMOVE UNIT 1 FROM BUS 51701 [JONEST 122.000] DISPATCH	214	Dispatch LP&L Generation	
										Specific Monitored Bus Voltage 0.925 for	
0500	074	CDC	51533 TUCO6 230	0.0700	0.0440	0.0125	0.0046		214	Stability Limit, Short-term Solution is to	
055P	274	323	5153310006 230	0.9766	0.9416	0.9135	0.6946	REMOVE UNIT I FROM BUS 51702 JUNES2 121.000 DISPATCH	214	Dispatch LP&L Generation	
										Voltage Colleges, Short term Solution is	
0500	074	CDC	EDEDO L D E DEKOGO O	1 0220	NI/A	0.0740	0.4000		254	to Dispatch   DRI Constration	
0550	274	SPS	50503 LF-EKSK209.0 50503 LP.EPSK260 0	1.0320	N/A	0.9740	0.4000	OF LIVE FINDING DUG 300 TO LEPOINTO 230 TO DUG 3100 FLUDSO 230 UKT 1	204	"	
033F	2/4	3F3	50503 EF-EK3K209.0	1.0320	IN/A	0.9750	0.4097	OFEN LINE FROM BUS 50517 LF-SIN1209.0 TO BUS 50518 LF-SIN10 250 CR1	204	Short-term Solution is to Dispatch   P&I	
0590	274	SPS	50503 L P. EPSK260 0	1 0321	NI/A	0.0716	0.8088	OPEN LINE FROM BUS 50527 LP-WADS6 230 TO BUS 51680 LUBEE 220 OVT 1	254	Generation	
05SP	274	SPS	50503 L P-ERSK269 0	1.0320	N/A	0.9721	0.8091	OPEN LINE FROM BUS 50524   P-WADS269 0 TO BUS 50527   P-WADS6 230 CKT 1	254	"	
05SP	274	SPS	50503 LP-FRSK269 0	1.0322	N/A	0.9877	0.8397	OPEN LINE FROM BUS 50520 LP-HOLL 269 0 TO BUS 50521 LP-HOLL 6 230 CKT	254	н	
0001	217	0.0		1.0022	19/7	0.0011	0.0007		204		
1					1					Voltage Collapse, Short-term Solution is	
05SP	274	SPS	50504 LP-MACK269.0	1,0350	N/A	0,9763	0,4986	OPEN LINE FROM BUS 50518 LP-SINT6 230 TO BUS 51681 LUBS6 230 CKT 1	254	to Dispatch LP&L Generation	
05SP	274	SPS	50504 LP-MACK269.0	1.0350	N/A	0.9779	0.4996	OPEN LINE FROM BUS 50517 LP-SINT269.0 TO BUS 50518 LP-SINT6 230 CKT	254	"	1
										Short-term Solution is to Dispatch LP&L	
05SP	274	SPS	50504 LP-MACK269.0	1.0350	N/A	0.9731	0.8148	OPEN LINE FROM BUS 50527 LP-WADS6 230 TO BUS 51689 LUBE6 230 CKT 1	254	Generation	
05SP	274	SPS	50504 LP-MACK269.0	1.0350	N/A	0.9737	0.8151	OPEN LINE FROM BUS 50524 LP-WADS269.0 TO BUS 50527 LP-WADS6 230 CKT 1	254	"	

r				DC Valtage	TC Vallege	TC Vallage	TC Vallage				1
				BC voltage	TC voltage	IC voltage	IC voltage			1	
	Transfer			(PU) (LP&L	(PU) (LP&L	(PU) (LP&L	(PU) (LP&L		Transfer Amount minus	1	
Study	Amount			PGEN = 232	PGEN = 60	PGEN = 20	PGEN = 0		LP&L Generation Required to	1	Estimated
Case	(MIM)	ADEA	Monitored Bus with Violation	MIM	M(A/)	MM/M/)	MIM	Outgood Branch Causing Violage Violation	Mitigate Violation (MW)	Solution	Cost
Case	(10100)		Monitored Dus with Violation	10100)	10100)	10100)	10100)		Willigate Violation (WWV)	301011011	COSt
05SP	274	SPS	50504 LP-MACK269.0	1.0350	N/A	0.9894	0.8457	OPEN LINE FROM BUS 50520 LP-HOLL269.0 TO BUS 50521 LP-HOLL6 230 CKT	254		
										1	
										Voltage Collapse, Short-term Solution is	
05SD	274	202	50506 L P-NES2 60.0	1.0340	NI/A	0 9777	0.5049	OPEN LINE EPOM BUS 50518 LP-SINT6 230 TO BUS 51681 LUBS6 230 CKT 1	254	to Dispatch   P&I_Generation	
0000	274	010	30300 EI -INES2 03.0	1.0340		0.3777	0.3043		234	io Dispatch Li de Generation	
05SP	274	SPS	50506 LP-NES2 69.0	1.0340	N/A	0.9792	0.5059	OPEN LINE FROM BUS 50517 LP-SINT269.0 TO BUS 50518 LP-SINT6 230 CKT	254		
										Short-term Solution is to Dispatch LP&L	
05SP	274	SPS	50506 LP-NES2 69.0	1.0346	N/A	0.9753	0.8197	OPEN LINE FROM BUS 50527 LP-WADS6 230 TO BUS 51689 LUBE6 230 CKT 1	254	Generation	
05SD	274	202	50506 L P-NES2 60.0	1.0346	NI/A	0.0758	0.8200	OPEN LINE EDOM BUS 50524 LP-WADS269 0 TO BUS 50527 LP-WADS6 230 CKT 1	254	"	
0000	274	010	30300 EI -INES2 03.0	1.0340		0.3730	0.0200		254		
05SP	274	SPS	50506 LP-NES2 69.0	1.0341	N/A	0.9901	0.8483	OPEN LINE FROM BUS 50520 LP-HOLL269.0 TO BUS 50521 LP-HOLL6 230 CKT	254		
05SP	274	SPS	50509 LP-MLWK269.0	1.0237	N/A	0.9308	0.8620	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	254	"	
05SP	274	SPS	50509 LP-MLWK269.0	1.0239	N/A	0.9354	0.8688	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	254	"	
										Valence Colleges, Chart term Colution is	
										voltage Collapse, Short-term Solution is	
05SP	274	SPS	50510 LP-VCKS269.0	1.0232	N/A	0.9690	0.4858	OPEN LINE FROM BUS 50518 LP-SINT6 230 TO BUS 51681 LUBS6 230 CKT 1	254	to Dispatch LP&L Generation	
05SP	274	SPS	50510 LP-VCKS269.0	1.0232	N/A	0.9707	0.4868	OPEN LINE FROM BUS 50517 LP-SINT269.0 TO BUS 50518 LP-SINT6 230 CKT	254	"	
										Short-term Solution is to Dispatch I P&I	
0500	274	SDC	50510 L P. VCKS260 0	1 0 2 2 2	NI/A	0.0604	0.8105		254	Generation	
0535	274	353	50510 LF=VCK3209.0	1.0233	IN/A	0.9094	0.8105	0FEN LINE FROM B03 30324 EF-WAD3209.0 TO B03 30327 EF-WAD30 230 CKT 1	204	Generation	
05SP	274	SPS	50510 LP-VCKS269.0	1.0237	N/A	0.9689	0.8102	OPEN LINE FROM BUS 50527 LP-WADS6 230 TO BUS 51689 LUBE6 230 CKT 1	254		
05SP	274	SPS	50510 LP-VCKS269.0	1.0170	N/A	0.9751	0.8364	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 51647 CARLISL6 230 CKT 1	254	"	
										1	
										Valence Colleges, Chart term Colution is	
										voltage Collapse, Short-term Solution is	
05SP	274	SPS	50511 LP-THOM 69.0	1.0212	N/A	0.9663	0.4813	OPEN LINE FROM BUS 50518 LP-SINT6 230 TO BUS 51681 LUBS6 230 CKT 1	254	to Dispatch LP&L Generation	
05SP	274	SPS	50511 LP-THOM 69.0	1.0212	N/A	0.9680	0.4823	OPEN LINE FROM BUS 50517 LP-SINT269.0 TO BUS 50518 LP-SINT6 230 CKT	254	"	
										Short-term Solution is to Dispatch I P&I	
OFCD	274	CDC	E0E11 LD THOM 60.0	1 0222	NI/A	0.0679	0.8000	ODENT UNE EDOM DUS 50527 LD WADS6 220 TO DUS 51690 LUDES 220 CKT 1	254	Constration	
055P	274	323	50511 LP-THOM 69.0	1.0223	IN/A	0.9676	0.6099	OPEN LINE FROM BUS 50527 LP-WADS6 230 TO BUS 51669 LUBE6 230 CK 1	254	Generation	
05SP	274	SPS	50511 LP-THOM 69.0	1.0219	N/A	0.9684	0.8103	OPEN LINE FROM BUS 50524 LP-WADS269.0 TO BUS 50527 LP-WADS6 230 CKT 1	254		
05SP	274	SPS	50511 LP-THOM 69.0	1.0167	N/A	0.9763	0.8396	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 51647 CARLISL6 230 CKT 1	254	"	
										1	
										Voltage Colleges, Short form Solution is	
										Voltage Collapse, Short-term Solution is	
05SP	274	SPS	50512 LP-MCCU269.0	1.0224	N/A	0.9688	0.4874	OPEN LINE FROM BUS 50518 LP-SINT6 230 TO BUS 51681 LUBS6 230 CKT 1	254	to Dispatch LP&L Generation	
05SP	274	SPS	50512 LP-MCCU269.0	1.0224	N/A	0.9704	0.4884	OPEN LINE FROM BUS 50517 LP-SINT269.0 TO BUS 50518 LP-SINT6 230 CKT	254	"	
										Short-term Solution is to Dispatch LP&L	
05SD	274	202	50512 L P-MCC1 (269.0	1 0234	NI/A	0.9667	0.8085	OPEN LINE EPOM BUS 50527 LP-WADS6 230 TO BUS 51680 LUBE6 230 CKT 1	254	Generation	
0535	274	353	50512 LF-WCC0209.0	1.0234	IN/A	0.9007	0.8085	OFEN LINE FROM BUG 30327 LF-WAD30 230 TO BUG 5069 LDBE0 230 CAT	234	Generation	
05SP	274	SPS	50512 LP-MCCU269.0	1.0231	N/A	0.9672	0.8088	OPEN LINE FROM BUS 50524 LP-WADS269.0 TO BUS 50527 LP-WADS6 230 CKT 1	254		
05SP	274	SPS	50512 LP-MCCU269.0	1.0183	N/A	0.9778	0.8418	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 51647 CARLISL6 230 CKT 1	254	"	
										1	
										Voltage Collapse, Short-term Solution is	
0500	074	000	50540 L D 000 D000 0	4 0007	N1/A	0.0770	0.5040		054	to Diseately DRL Conception	
055P	274	5P5	50513 LP-COOP269.0	1.0287	N/A	0.9772	0.5046	OPEN LINE FROM BUS 50518 LP-SIN16 230 TO BUS 51681 LUBS6 230 CK1 1	254	to Dispatch LP&L Generation	
05SP	274	SPS	50513 LP-COOP269.0	1.0287	N/A	0.9787	0.5056	OPEN LINE FROM BUS 50517 LP-SINT269.0 TO BUS 50518 LP-SINT6 230 CKT	254	I	
										Short-term Solution is to Dispatch LP&L	
05SP	274	SPS	50513 L P-COOP269 0	1.0303	Ν/Δ	0 9725	0.8168	OPEN LINE FROM BUS 50527   P-WADS6 230 TO BUS 51689   LIBE6 230 CKT 1	254	Generation	
0ECD	274	CDC	50512 L P COOP260 0	1.0201	NI/A	0.0721	0.0170		261	"	
0000	2/4	050	50513 LF-000F209.0	1.0301	IN/A	0.9731	0.0172	OF LIVE FROM DUG 50524 LF-WAD5209.0 TO DUG 50527 LF-WAD50 230 UKT	204		
U5SP	274	SPS	50513 LP-COOP269.0	1.0293	N/A	0.9905	0.8499	OPEN LINE FROM BUS 50520 LP-HOLL269.0 TO BUS 50521 LP-HOLL6 230 CKT	254	· · · · · · · · · · · · · · · · · · ·	I
										1	
1										Voltage Collapse, Short-term Solution is	
05SP	274	SPS	50515 LP-CHAI 269 0	1 0222	N/A	0.9672	0 4825	OPEN LINE FROM BUS 50518   P-SINT6 230 TO BUS 51681   UBS6 230 CKT 1	254	to Dispatch I P&I. Generation	
0500	274	600	E0E1E LD CUM 200.0	1 0000	N//A	0.0002	0.4025	OPEN LINE EDOM DUS E0517 LD CINT260 0 TO DUS 50540 LD CINTE 000 OVT	207	"	1
0000	214	373	20212 LP-CHAL209.0	1.0222	IN/A	0.9009	0.4030	OFEN LINE FROM BUS 2021/ LP-3101209.0 TO BUS 20216 LP-31016 230 CK1	204		
1				1	1	1			1	Snort-term Solution is to Dispatch LP&L	1
05SP	274	SPS	50515 LP-CHAL269.0	1.0242	N/A	0.9709	0.8151	OPEN LINE FROM BUS 50527 LP-WADS6 230 TO BUS 51689 LUBE6 230 CKT 1	254	Generation	
05SP	274	SPS	50515 LP-CHAL269 0	1 0239	N/A	0 9715	0.8154	OPEN LINE FROM BUS 50524 LP-WADS269 0 TO BUS 50527 LP-WADS6 230 CKT 1	254	"	
0ECD	274	CDC	E0E1E L D CHAL260.0	1.0241	NI/A	0.0949	0.9420		254	"	
0335	2/4	313	50515 LF=CHAL209.0	1.0241	IN/A	0.9040	0.0429	OFEN LINE FROM B03 50520 LF-HOLL209.0 TO B03 50521 LF-HOLL0 230 CKT	204	ł	
1				1	1	1			1	1	1
1				1	1	1			1	Voltage Collapse, Short-term Solution is	1
05SP	274	SPS	50516 LP-SLAT269.0	1.0257	N/A	0,9726	0.4953	OPEN LINE FROM BUS 50518 LP-SINT6 230 TO BUS 51681 LUBS6 230 CKT 1	254	to Dispatch LP&L Generation	1
05SP	274	SDS	50516 L P-SLAT260 C	1.0257	NI/A	0.0742	0.4963	OPEN LINE EPOM BUS 50517 L D.SINT260 0 TO BUS 50518 L D SINTE 220 CKT	254	"	1
0000	2/4	010	30310 LI -OLAT203.0	1.0207	IN/A	0.3742	0.4903	OF ERELINE FROM DOUGDUTT EFORM 208.0 TO DUG DUDTO EFORNTO 230 CKT	204	Chart term Colution in to Disport 1 201	+
l I				1		1			1	Shon-term Solution is to Dispatch LP&L	1
05SP	274	SPS	50516 LP-SLAT269.0	1.0286	N/A	0.9781	0.8260	OPEN LINE FROM BUS 50527 LP-WADS6 230 TO BUS 51689 LUBE6 230 CKT 1	254	Generation	
05SP	274	SPS	50516 LP-SLAT269.0	1.0284	N/A	0.9786	0.8263	OPEN LINE FROM BUS 50524 LP-WADS269.0 TO BUS 50527 LP-WADS6 230 CKT 1	254	"	
05SP	274	SPS	50516 L P-SL AT269 (	1 0280	N/A	0.9912	0.8524	OPEN LINE FROM BUS 50520 LP-HOLL269 0 TO BUS 50521 LP-HOLL6 230 CKT	254	"	1
3001	217	0.0	0001011 0111200.0	1.0200	19/75	0.0012	0.0024		207	t	
1										l	
1				1	1	1			1	Voltage Collapse, Short-term Solution is	1
05SP	274	SPS	50517 LP-SINT269.0	1.0273	N/A	0.9753	0.5045	OPEN LINE FROM BUS 50518 LP-SINT6 230 TO BUS 51681 LUBS6 230 CKT 1	254	to Dispatch LP&L Generation	1
05SP	274	SPS	50517 LP-SINT269 0	1 0273	N/A	0.9768	0.5055	OPEN LINE FROM BUS 50517   P-SINT269 0 TO BUS 50518   P-SINT6 230 CKT	254	"	1
							0.0000				

				BC Voltage	TC Voltage	TC Voltage	TC Voltage				
	Transfer			(PU) (LP&L	(PU) (LP&L	(PU) (LP&L	(PU) (LP&L		Transfer Amount minus		
Study	Amount			PGEN = 232	PGEN = 60	PGEN = 20	PGEN = 0		LP&L Generation Required to		Estimated
Case	(MW)	AREA	Monitored Bus with Violation	MW)	MW)	MW)	MW)	Outaged Branch Causing Voltage Violation	Mitigate Violation (MW)	Solution	Cost
0430	(10100)	/	Monitored Eds with Violation	(1111)	((((()))))	14144/	(((())))	Cutaget Drahon Causing Votage Violation	willigate violation (wvv)	Short term Solution is to Dispetch   D81	0031
0500	074	0.00	FOR47 L D OINTOOD O	4 0005	N1/A	0.0005	0.0047		054	Short-term Solution is to Dispatch LF&L	
055P	274	SPS	50517 LP-SIN1269.0	1.0305	N/A	0.9825	0.8347	OPEN LINE FROM BUS 50527 LP-WADS6 230 TO BUS 51689 LUBE6 230 CKT 1	254	Generation	
05SP	274	SPS	50517 LP-SINT269.0	1.0303	N/A	0.9831	0.8350	OPEN LINE FROM BUS 50524 LP-WADS269.0 TO BUS 50527 LP-WADS6 230 CKT 1	254		
05SP	274	SPS	50517 LP-SINT269.0	1.0302	N/A	0.9945	0.8589	OPEN LINE FROM BUS 50520 LP-HOLL269.0 TO BUS 50521 LP-HOLL6 230 CKT	254	"	
										Voltage Collapse, Short-term Solution is	
05SP	274	SPS	50520 LP-HOLL269.0	1.0350	N/A	0.9856	0.5307	OPEN LINE FROM BUS 50518 LP-SINT6 230 TO BUS 51681 LUBS6 230 CKT 1	254	to Dispatch LP&L Generation	
05SP	274	202	50520 L P-HOLL 269.0	1.0350	N/A	0.9871	0.5317	OPEN LINE EPOM BUS 50517 LD-SINT260 0 TO BUS 50518 LD-SINT6 230 CKT	254	"	
0001	214	515	50520 EI -HOLL203.0	1.0330	11/7	0.3071	0.0017		234	Short term Solution is to Dispetch   D81	
	074	0.00		4 0070		0.0050	0.0075		054	Short-term Solution is to Dispatch LP&L	
05SP	274	SPS	50520 LP-HOLL269.0	1.0370	N/A	0.9850	0.8375	OPEN LINE FROM BUS 50527 LP-WADS6 230 TO BUS 51689 LUBE6 230 CKT 1	254	Generation	
05SP	274	SPS	50520 LP-HOLL269.0	1.0369	N/A	0.9855	0.8378	OPEN LINE FROM BUS 50524 LP-WADS269.0 TO BUS 50527 LP-WADS6 230 CKT 1	254		
05SP	274	SPS	50520 LP-HOLL269.0	1.0354	N/A	0.9960	0.8595	OPEN LINE FROM BUS 50520 LP-HOLL269.0 TO BUS 50521 LP-HOLL6 230 CKT	254	"	
										Voltage Collapse, Short-term Solution is	
05SP	274	SPS	50523 L P-BRND269 0	1 0312	N/A	0 9741	0.4841	OPEN LINE FROM BUS 50518   P-SINT6 230 TO BUS 51681   UBS6 230 CKT 1	254	to Dispatch I P&I Generation	
0500	274	CDC	50520 EI DRND260.0	1.0012	N/A	0.0757	0.4951	OPENT LINE FROM DUG SOSTE EL DINTO 200 TO DUG SOSTE ED SONT 200 CKT	264	"	
0000	214	353	30323 LF-DRND203.0	1.0312	IN/A	0.9757	0.4001	OF ENVELOPED TO SUST / LE SUNTZUSU TO DUS SUSTO LE SUNTO ZOU OKT	204	Short term Solution is to Dispetch   DPI	
0505	071	050	FOFOOLD BRIDGES	4 6 6 4 4	N// 1	0.0700	0.0000		071	Short-term Solution is to Dispatch LP&L	
05SP	274	SPS	50523 LP-BRND269.0	1.0314	N/A	0.9723	0.8063	OPEN LINE FROM BUS 50527 LP-WADS6 230 TO BUS 51689 LUBE6 230 CKT 1	254	Generation	
05SP	274	SPS	50523 LP-BRND269.0	1.0312	N/A	0.9729	0.8067	OPEN LINE FROM BUS 50524 LP-WADS269.0 TO BUS 50527 LP-WADS6 230 CKT 1	254	"	
05SP	274	SPS	50523 LP-BRND269.0	1.0283	N/A	0.9838	0.8404	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 51647 CARLISL6 230 CKT 1	254	"	
										Voltage Collapse, Short-term Solution is	
OFCD	274	CDC	50524 LD WADS260 0	1 0202	NI/A	0.0004	0.5256		254	to Dispatch   B&L Constation	
050F	274	000	50524 LF-WAD3209.0	1.0302	IN/A	0.9004	0.5350	OF EN LINE FROM BUS 30318 LF SINTO 230 TO BUS 31051 LDB30 230 CKT	234	to Dispatch LP&L Generation	
055P	274	5P5	50524 LP-WADS269.0	1.0302	N/A	0.9899	0.5366	OPEN LINE FROM BUS 50517 LP-SIN1269.0 TO BUS 50518 LP-SIN16 230 CK1	254		
										Short-term Solution is to Dispatch LP&L	
05SP	274	SPS	50524 LP-WADS269.0	1.0339	N/A	0.9790	0.8273	OPEN LINE FROM BUS 50527 LP-WADS6 230 TO BUS 51689 LUBE6 230 CKT 1	254	Generation	
05SP	274	SPS	50524 LP-WADS269.0	1.0338	N/A	0.9795	0.8276	OPEN LINE FROM BUS 50524 LP-WADS269.0 TO BUS 50527 LP-WADS6 230 CKT 1	254	"	
05SP	274	SPS	50524 LP-WADS269.0	1.0307	N/A	1.0003	0.8648	OPEN LINE FROM BUS 50520 LP-HOLL269.0 TO BUS 50521 LP-HOLL6 230 CKT	254	"	
										Voltage Collapse, Short-term Solution is	
OFCD	274	CDC	EDEDE L D OLIVIDED O	1 0107	NI/A	0.0652	0 4922		254	to Dispotch   B&L Concretion	
0505	274	000	50520 LF-OLIV209.0	1.0197	IN/A	0.9032	0.4032	OF EN LINE FROM DUS 30316 L - SINTO 230 TO DUS 31061 LDS0 230 CKT	234	to Dispatch LF&L Generation	
055P	274	5P5	50526 LP-OLIV269.0	1.0197	N/A	0.9668	0.4842	OPEN LINE FROM BUS 50517 LP-SIN1269.0 TO BUS 50518 LP-SIN16 230 CK1	254		
										Short-term Solution is to Dispatch LP&L	
05SP	274	SPS	50526 LP-OLIV269.0	1.0223	N/A	0.9704	0.8171	OPEN LINE FROM BUS 50527 LP-WADS6 230 TO BUS 51689 LUBE6 230 CKT 1	254	Generation	
05SP	274	SPS	50526 LP-OLIV269.0	1.0220	N/A	0.9710	0.8174	OPEN LINE FROM BUS 50524 LP-WADS269.0 TO BUS 50527 LP-WADS6 230 CKT 1	254	"	
05SP	274	SPS	50526 LP-OLIV269.0	1.0221	N/A	0.9836	0.8436	OPEN LINE FROM BUS 50520 LP-HOLL269.0 TO BUS 50521 LP-HOLL6 230 CKT	254	"	
										Specific Monitored Bus Voltage 0.925 for	
										Stability Limit Short-term Solution is to	
OFCD	274	CDC	E1E22 TUCOE 220	0.0799	NI/A	0.0501	0.9651		254	Dispetch   B&L Conservation	
0555	2/4	353	5155510000 230	0.9766	IN/A	0.9501	0.0001	OFEN LINE FROM B03 30316 EF-31010 230 TO B03 31061 E0B30 230 CK1 1	234	Dispatch LF&L Generation	
										Specific Monitored Bus Voltage 0.925 for	
				1		1				Stability Limit, Short-term Solution is to	
05SP	274	SPS	51533 TUCO6 230	0.9788	N/A	0.9507	0.8654	OPEN LINE FROM BUS 50517 LP-SINT269.0 TO BUS 50518 LP-SINT6 230 CKT 1	254	Dispatch LP&L Generation	
05SP	274	SPS	50507 LP-MLWK6 230	0.8697	N/A	N/A	0.7111	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 51647 CARLISL6 230 CKT 1	274	Not Load Serving Bus	
05SP	274	SPS	50507 LP-MLWK6 230	0.9727	N/A	N/A	0.8087	OPEN LINE FROM BUS 50518 LP-SINT6 230 TO BUS 51681 LUBS6 230 CKT	274	Not Load Serving Bus	
05SP	274	SPS	50507 LP-MLWK6 230	0.9727	N/A	N/A	0.8090	OPEN LINE FROM BUS 50517 LP-SINT269.0 TO BUS 50518 LP-SINT6 230 CKT	274	Not Load Serving Bus	
05SP	274	SPS	50507 LP-MLWK6 230	0.9617	N/A	N/A	0.8491	OPEN LINE FROM BUS 51533 TUCO6 230 TO BUS 51647 CARLISL 6 230 CKT	274	Not Load Serving Bus	
05SP	274	SPS	50507 L P-MLW/K6 230	0.9705	N/A	N/A	0.8592	REMOVE LINIT 1 FROM BUS 51701 [ JONES1 122 000] DISPATCH	274	Not Load Serving Bus	
0505	274	010	50507 LI -WEWRO 230	0.0941	N/A	N/A	0.0552		274	Not Load Serving Bus	
0505	274	373	50540 LP -5INTO 230	0.9041	IN/A	IN/A	0.0092		2/4	Not Load Serving bus	
055P	2/4	542	50518 LP-SIN16 230	0.9851	N/A	N/A	0.8633	KEIMOVE UNIT 1 FROM BUS 51702 [JUNES2 121.000] DISPATCF	2/4	Not Load Serving Bus	
05SP	274	SPS	50521 LP-HOLL6 230	0.9909	N/A	N/A	0.7604	OPEN LINE FROM BUS 50521 LP-HOLL6 230 TO BUS 51699 JONES6 230 CKT	274	Not Load Serving Bus	
05SP	274	SPS	50521 LP-HOLL6 230	0.9909	N/A	N/A	0.8134	OPEN LINE FROM BUS 50518 LP-SINT6 230 TO BUS 51681 LUBS6 230 CKT	274	Not Load Serving Bus	
05SP	274	SPS	50521 LP-HOLL6 230	0.9909	N/A	N/A	0.8139	OPEN LINE FROM BUS 50517 LP-SINT269.0 TO BUS 50518 LP-SINT6 230 CKT	274	Not Load Serving Bus	
05SP	274	SPS	50521 LP-HOLL6 230	0.9885	N/A	N/A	0.8607	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	50521 LP-HOLL6 230	0.9896	N/A	N/A	0.8650	REMOVE UNIT 1 FROM BUS 51702 JONES2 121,0001 DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	50527 LP-WADS6 230	1 0770	N/A	N/A	0 7131	OPEN LINE FROM BUS 50527 LP-WADS6 230 TO BUS 51689 LUBE6 230 CKT 1	274	Not Load Serving Bus	
0590	274	SPS	50527 LP WADS6 230	0.0808	NI/A	N/A	0.8003	OPEN LINE FROM BUS 50518   P-SINTE 230 TO BUS 51681   UBS6 230 OVT	274	Not Load Serving Bus	
0505	214	010	50527 LD WADOO 200	0.0000	N/A	N/A	0.0003		2/4	Not Load Can ing Duc	
055P	2/4	525	50527 LP-WADS6 230	0.9898	N/A	N/A	0.8007	OPEN LINE FROM BUS 50517 LP-SIN1269.0 TO BUS 50518 LP-SIN16 230 CK1	2/4	Not Load Serving Bus	ļ
05SP	274	SPS	50527 LP-WADS6 230	0.9886	N/A	N/A	0.8525	OPEN LINE FROM BUS 51689 LUBE6 230 TO BUS 51699 JONES6 230 CKT	274	Not Load Serving Bus	
05SP	274	SPS	50527 LP-WADS6 230	0.9877	N/A	N/A	0.8540	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	51041 AMARLS6 230	0.9418	N/A	N/A	0.8979	OPEN LINE FROM BUS 50915 NICHOL6 230 TO BUS 51041 AMARLS6 230 CKT	274	Not Load Serving Bus	
05SP	274	SPS	51321 SWISHER6 230	0.9664	N/A	N/A	0.8928	OPEN LINE FROM BUS 50518 LP-SINT6 230 TO BUS 51681 LUBS6 230 CKT	274	Not Load Serving Bus	
05SP	274	SPS	51321 SWISHER6 230	0.9664	N/A	N/A	0.8930	OPEN LINE FROM BUS 50517 LP-SINT269.0 TO BUS 50518 LP-SINT6 230 CKT	274	Not Load Serving Bus	
05SP	274	SPS	51321 SWISHER6 230	0.9437	N/A	N/A	0.8979	OPEN LINE FROM BUS 51041 AMARLS6 230 TO BUS 51321 SWISHER6 230 CKT	274	Not Load Serving Bus	
			0.02.000.2.00 200				0.001.0				

				BC Voltage	TC Voltage	TC Voltage	TC Voltage				
	Transfer			(PU) (LP&L	(PU) (LP&L	(PU) (LP&L	(PU) (LP&L		Transfer Amount minus		
Study	Amount			PGEN = 232	PGEN = 60	PGEN = 20	PGEN = 0		P&L Generation Required to		Estimated
Case	(MW)	AREA	Monitored Bus with Violation	MW)	MW)	MW)	MW)	Outaged Branch Causing Voltage Violation	Mitigate Violation (MW)	Solution	Cost
05SP	274	SPS	51534 TUCO7 345	0.9932	N/A	N/A	0.8948	OPEN LINE FROM BUS 50518 LP-SINT6 230 TO BUS 51681 LUBS6 230 CKT	274	Not Load Serving Bus	
05SP	274	SPS	51534 TUCO7 345	0.9932	N/A	N/A	0.8950	OPEN LINE FROM BUS 50517 LP-SINT269.0 TO BUS 50518 LP-SINT6 230 CKT	274	Not Load Serving Bus	
05SP	274	SPS	51647 CARLISL6 230	0.9729	N/A	N/A	0.8105	OPEN LINE FROM BUS 50518 LP-SINT6 230 TO BUS 51681 LUBS6 230 CKT	274	Not Load Serving Bus	
05SP	274	SPS	51647 CARLISL6 230	0.9729	N/A	N/A	0.8108	OPEN LINE FROM BUS 50517 LP-SINT269.0 TO BUS 50518 LP-SINT6 230 CKT	274	Not Load Serving Bus	
05SP	274	SPS	51647 CARLISL6 230	0.9618	N/A	N/A	0.8494	OPEN LINE FROM BUS 51533 TUCO6 230 TO BUS 51647 CARLISL6 230 CKT	274	Not Load Serving Bus	
05SP	274	SPS	51647 CARLISL6 230	0.9707	N/A	N/A	0.8600	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	51647 CARLISL6 230	0.9704	N/A	N/A	0.8715	Base Case	274	Not Load Serving Bus	
05SP	274	SPS	51681 LUBS6 230	0.9872	N/A	N/A	0.8264	OPEN LINE FROM BUS 50518 LP-SINT6 230 TO BUS 51681 LUBS6 230 CKT	274	Not Load Serving Bus	
05SP	274	SPS	51681 LUBS6 230	0.9872	N/A	N/A	0.8268	OPEN LINE FROM BUS 50517 LP-SINT269.0 TO BUS 50518 LP-SINT6 230 CKT	274	Not Load Serving Bus	
05SP	274	SPS	51681 LUBS6 230	0.9844	N/A	N/A	0.8619	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	51681 LUBS6 230	0.9854	N/A	N/A	0.8660	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	51681 LUBS6 230	0.9863	N/A	N/A	0.8838	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTH6 230 CKT 1	274	Not Load Serving Bus	
05SP	274	SPS	51689 LUBE6 230	0.9897	N/A	N/A	0.8034	OPEN LINE FROM BUS 50518 LP-SINT6 230 TO BUS 51681 LUBS6 230 CKT	274	Not Load Serving Bus	
05SP	274	SPS	51689 LUBE6 230	0.9897	N/A	N/A	0.8039	OPEN LINE FROM BUS 50517 LP-SINT269.0 TO BUS 50518 LP-SINT6 230 CKT	274	Not Load Serving Bus	
05SP	274	SPS	51689 LUBE6 230	0.9884	N/A	N/A	0.8529	OPEN LINE FROM BUS 51689 LUBE6 230 TO BUS 51699 JONES6 230 CKT	274	Not Load Serving Bus	
05SP	274	SPS	51689 LUBE6 230	0.9875	N/A	N/A	0.8550	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	51689 LUBE6 230	0.9886	N/A	N/A	0.8593	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	51699 JONES6 230	0.9910	N/A	N/A	0.8243	OPEN LINE FROM BUS 50518 LP-SINT6 230 TO BUS 51681 LUBS6 230 CKT	274	Not Load Serving Bus	
05SP	274	SPS	51699 JONES6 230	0.9910	N/A	N/A	0.8247	OPEN LINE FROM BUS 50517 LP-SINT269.0 TO BUS 50518 LP-SINT6 230 CKT	274	Not Load Serving Bus	
05SP	274	SPS	51699 JONES6 230	0.9885	N/A	N/A	0.8639	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	51699 JONES6 230	0.9896	N/A	N/A	0.8681	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	51699 JONES6 230	0.9910	N/A	N/A	0.8888	OPEN LINE FROM BUS 51435 TOLKE6 230 TO BUS 51533 TUCO6 230 CKT	274	Not Load Serving Bus	
05SP	274	SPS	51763 WOLFRTH6 230	0.9833	N/A	N/A	0.8533	OPEN LINE FROM BUS 50518 LP-SINT6 230 TO BUS 51681 LUBS6 230 CKT	274	Not Load Serving Bus	
05SP	274	SPS	51763 WOLFRTH6 230	0.9833	N/A	N/A	0.8536	OPEN LINE FROM BUS 50517 LP-SINT269.0 TO BUS 50518 LP-SINT6 230 CKT	274	Not Load Serving Bus	
05SP	274	SPS	51763 WOLFRTH6 230	0.9794	N/A	N/A	0.8789	OPEN LINE FROM BUS 51733 SUNDOWN6 230 TO BUS 51763 WOLFRTH6 230 CKT 1	274	Not Load Serving Bus	
05SP	274	SPS	51763 WOLFRTH6 230	0.9803	N/A	N/A	0.8791	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	51763 WOLFRTH6 230	0.9811	N/A	N/A	0.8823	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	51811 GRASSLN6 230	0.9913	N/A	N/A	0.8280	OPEN LINE FROM BUS 50518 LP-SINT6 230 TO BUS 51681 LUBS6 230 CKT	274	Not Load Serving Bus	
05SP	274	SPS	51811 GRASSLN6 230	0.9913	N/A	N/A	0.8284	OPEN LINE FROM BUS 50517 LP-SINT269.0 TO BUS 50518 LP-SINT6 230 CKT	274	Not Load Serving Bus	
05SP	274	SPS	51811 GRASSLN6 230	0.9888	N/A	N/A	0.8659	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	51811 GRASSLN6 230	0.9899	N/A	N/A	0.8699	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	51811 GRASSLN6 230	0.9910	N/A	N/A	0.8886	OPEN LINE FROM BUS 51435 TOLKE6 230 TO BUS 51533 TUCO6 230 CKT	274	Not Load Serving Bus	
05SP	274	SPS	51861 BORDEN6 230	0.9950	N/A	N/A	0.8432	OPEN LINE FROM BUS 50518 LP-SINT6 230 TO BUS 51681 LUBS6 230 CKT	274	Not Load Serving Bus	
05SP	274	SPS	51861 BORDEN6 230	0.9950	N/A	N/A	0.8436	OPEN LINE FROM BUS 50517 LP-SINT269.0 TO BUS 50518 LP-SINT6 230 CKT	274	Not Load Serving Bus	
05SP	274	SPS	51861 BORDEN6 230	0.9925	N/A	N/A	0.8763	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	51861 BORDEN6 230	0.9934	N/A	N/A	0.8801	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	51861 BORDEN6 230	0.9943	N/A	N/A	0.8962	OPEN LINE FROM BUS 51435 TOLKE6 230 TO BUS 51533 TUCO6 230 CKT	274	Not Load Serving Bus	
05SH	224	SPS	50527 LP-WADS6 230	0.9970	N/A	N/A	0.8919	OPEN LINE FROM BUS 51689 LUBE6 230 TO BUS 51699 JONES6 230 CKT	224	Not Load Serving Bus	
05SH	224	SPS	51689 LUBE6 230	0.9969	N/A	N/A	0.8919	OPEN LINE FROM BUS 51689 LUBE6 230 TO BUS 51699 JONES6 230 CKT	224	Not Load Serving Bus	
Note: R	esulting Tie	Line Po	ver Factor not Specified							Total Estimated Cost	\$0

esulting Tie Line Power Factor not Specifie

Terr						DO N/ Londing	TO N Log diag	TO % Londing		Transfer Amount minus I Del		
Study Ame	nsier	From	то		Boto	BC % Loading	IC % Loading	IC % Loading		Constantion Required to		Estimated
Case (M)			Δrep	Monitored Branch Overload		(LF&L FGEN =	(LF&L FGEN =	(LFAL FGEN = 0	Outgood Branch Causing Overload	Mitigate Violation (MW)	Solution	Cost
Case (IVI)	vv) /	Alea	Alea	Monitored Branch Ovenbad	SIVIVA2	232 10100)	20 10100)	10100)	Outaged Branch Causing Ovendad	witigate violation (www)	Short-term Solution is to Dispatch I P&I	CUSI
04SP 26	65	SPS	SPS		54	32.0	9.00	102.9		245	Generation	
04SP 26	65 9	SPS	SPS	I P-HOLL 2 230/69KV TRANSFORMER	140	12.7	90.9	102.5	LP-WADSWORTH STATION - LUBBOCK EAST INTERCHANGE 230KV	245	"	
04SP 26	65 5	SPS	SPS	LP-HOLL2 230/69KV TRANSFORMER	140	12.7	90.9	101.3	LP-HCL/2 230/69KV TRANSFORMER	245	н	
04SP 26	65 5	SPS	SPS	LP-HOLL6 230/69KV TRANSFORMER	140	14.0	95.3	106.2	LP-SOUTH INT - LUBBOCK SOUTH INTERCHANGE 230KV	245	"	
04SP 26	65	SPS	SPS	LP-HOLL6 230/69KV TRANSFORMER	140	14.0	95.3	106.1	LP-SOUTH INT 230/69KV TRANSFORMER	245	н	
04SP 26	65 \$	SPS	SPS	LP-SOUTH INT 230/69KV TRANSFORMER	140	16.8	93.9	103.3	JONES PLANT - LP-HOLL6 230KV	245	н	
04SP 26	65 \$	SPS	SPS	LP-SOUTH INT 230/69KV TRANSFORMER	140	16.7	93.9	103.3	LP-HOLL2 230/69KV TRANSFORMER	245	н	
04SP 26	65 \$	SPS	SPS	LP-SOUTH INT 230/69KV TRANSFORMER	140	16.7	90.4	100.2	LP-WADSWORTH STATION - LUBBOCK EAST INTERCHANGE 230KV	245	"	
04SP 26	65 \$	SPS	SPS	LP-SOUTH INT 230/69KV TRANSFORMER	140	16.7	90.4	100.1	LP-HCLI2 230/69KV TRANSFORMER	245	н	
04SH 21	17			NONE IDENTIFIED						217		
04FA 15	53			NONE IDENTIFIED						153		
04WP 15	53			NONE IDENTIFIED						153		
05AP 10	00			NONE IDENTIFIED						100		
05G 15	59			NONE IDENTIFIED						159		
											Short-term Solution is to Dispatch LP&L	
05SP 27	74 \$	SPS	SPS	LP-COOP2 - LP-SLAT2 69KV	54	32.4	93.3	106.8	LP-COOP2 - LP-HCLI2 69KV	254	Generation	
05SP 27	74 3	SPS	SPS	LP-HCLI2 230/69KV TRANSFORMER	140	17.2	89.6	104.7	LP-SOUTH INT 230/69KV TRANSFORMER	254	"	
05SP 27	74 \$	SPS	SPS	LP-HCLI2 230/69KV TRANSFORMER	140	17.2	89.5	105.7	LP-SOUTH INT - LUBBOCK SOUTH INTERCHANGE 230KV	254	и	
05SP 27	74 3	SPS	SPS	LP-HCLI2 230/69KV TRANSFORMER	140	16.0	88.9	100.5	LP-HOLL2 230/69KV TRANSFORMER	254	"	
05SP 27	74 \$	SPS	SPS	LP-HCLI2 230/69KV TRANSFORMER	140	16.0	89.0	100.6	JONES PLANT - LP-HOLL6 230KV	254	"	
05SP 27	74 \$	SPS	SPS	LP-HOLL2 230/69KV TRANSFORMER	140	13.7	98.3	115.7	LP-SOUTH INT - LUBBOCK SOUTH INTERCHANGE 230KV	254		
05SP 27	74 \$	SPS	SPS	LP-HOLL2 230/69KV TRANSFORMER	140	13.7	98.4	114.6	LP-SOUTH INT 230/69KV TRANSFORMER	254		
05SP 27	74	SPS	SPS	LP-HOLL2 230/69KV TRANSFORMER	140	12.4	94.3	106.7	LP-HCLI2 230/69KV TRANSFORMER	254		
05SP 27	74 3	SPS	SPS	LP-HOLL2 230/69KV TRANSFORMER	140	12.4	94.4	106.5	LP-WADSWORTH STATION - LUBBOCK EAST INTERCHANGE 230KV	254		
05SP 27	74 3	SPS	SPS	LP-SOUTH INT 230/69KV TRANSFORMER	140	16.4	96.8	108.4	LP-HOLL2 230/69KV TRANSFORMER	254		
05SP 27	74 \$	SPS	SPS	LP-SOUTH INT 230/69KV TRANSFORMER	140	16.4	96.9	108.5	JONES PLANT - LP-HOLL6 230KV	254		
05SP 27	/4	SPS	SPS	LP-SOUTHINT 230/69KV TRANSFORMER	140	16.3	93.2	105.4	LP-HCLIZ 230/69KV TRANSFORMER	254	44 14	
05SP 27	/4	SPS	SPS	LP-SOUTHINT 230/69KV TRANSFORMER	140	16.3	93.3	105.1	LP-WADSWORTH STATION - LUBBOCK EAST INTERCHANGE 230KV	254	"	
05SP 27	/4 3	SPS	SPS	LP-SOUTHINT 230/69KV TRANSFORMER	100	18.3	67.0	100.1	Base Case	254		
USSH 22	24	Line De				1				224	Total Fatimated Cost	<b>Č</b> O

ting Tie Line Power Factor not Spec

SPS to SPS Network Service Oasis Reservation 636882

				BC Voltage	TC Voltage	TC Voltage	TC Voltage				
	Transfer			(PU) (I P&I	(PU) (I P&I	(PU) (I P&I	(PU) (I P&I		Transfer Amount minus I P&I		
Study	Amount			DCEN - 222	RCEN - 60	RCEN - 20	PCEN - 0		Concration Required to		Estimated
Case	Amount		Manitored Due with Vieletian	FGEN = 232	FGEN = 00	FGEN = 20	FGEN = 0	Outgred Brench Coucing Valtage Vielation	Mitigate Vieletien (MM)	Colution	Cost
Case	(10100)	AREA	Monitored Bus with Violation	IVIVV)	IVIVV)	IVIVV)	IVIVV)	Outaged Branch Causing Voltage Violation	witigate violation (www)	Solution	Cost
										Specific Monitored Bus Voltage 0.925 for	
										Stability Limit, Short-term Solution is to	
04SP	265	SPS	51533 TUCO6 230	0.9721	0.9376	0.9151	0.8958	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	205	Dispatch LP&L Generation	
										Specific Monitored Bus Voltage 0.925 for	
										Stability Limit Short-term Solution is to	
0450	265	CDC	51522 TUCO6 220	0.0729	0.04	0.0177	0 0002	DEMOVE LINIT 1 EDOM DUS 51703 LIONES2 121 0001 DISDATCH	205	Dispatch   B&L Constation	
040F	205	353	5153310000 230	0.9720	0.94	0.9177	0.0902	Remove onit i provi bus struz jonesz izt.000 bispaten	203	Object to the Object of LP & L Generation	
										Short-term Solution is to Dispatch LP&L	
04SP	265	SPS	50523 LP-BRND269.0	1.0311	N/A	0.959	0.8862	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	245	Generation	
04SP	265	SPS	50511 LP-THOM 69.0	1.0215	N/A	0.9525	0.8874	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	245		
04SP	265	SPS	50510 LP-VCKS269.0	1.0231	N/A	0.9539	0.8878	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122,000] DISPATCH	245	"	
04SP	265	SPS	50512   P-MCCU269 0	1 0224	N/A	0 9534	0 8884	REMOVE UNIT 1 FROM BUS 51701 LIONES1 122 000 DISPATCH	245	"	
04SP	265	SDS	50509 L P-MLWK269 0	1.0217	N/A	0.0530	0.8895	REMOVE LINIT 1 FROM BUS 51701 LIONEST 122 000 DISPATCH	245	"	
0400	205	010	50503 LD ED6K269.0	1.0217		0.3553	0.0035		245	"	
045P	265	323	50503 LP-ER3K209.0	1.032	IN/A	0.9566	0.009		245		
04SP	265	SPS	50515 LP-CHAL269.0	1.023	N/A	0.955	0.8916	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	245	"	
04SP	265	SPS	50526 LP-OLIV269.0	1.021	N/A	0.9541	0.8922	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	245		
04SP	265	SPS	50523 LP-BRND269.0	1.0312	N/A	0.9626	0.8923	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	245	"	
04SP	265	SPS	50511 LP-THOM 69.0	1.0216	N/A	0.9561	0.8934	REMOVE UNIT 1 FROM BUS 51702 JONES2 121,000 DISPATCH	245		
04SP	265	SPS	50510 L P-VCKS269 0	1 0233	N/A	0.9576	0.8939	REMOVE UNIT 1 FROM BUS 51702 LIONES2 121 000 DISPATCH	245	I	
04SP	265	SPS	50512 L P-MCCU269.0	1.0225	N/A	0.9571	0.8944		245	11	
0400	203	000	50512 EI -MCCCC203.0	1.0225	N/A	0.3371	0.0344		245		
045P	265	5P5	50509 LP-IVILV/K269.0	1.0219	N/A	0.9575	0.8954	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	245		
04SP	265	SPS	50503 LP-ERSK269.0	1.032	N/A	0.9624	0.8951	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	245	"	
04SP	265	SPS	50504 LP-MACK269.0	1.035	N/A	0.9608	0.8951	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	245	-	
04SP	265	SPS	50515 LP-CHAL269.0	1.0231	N/A	0.9587	0.8976	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	245	"	
04SP	265	SPS	50526 LP-OLIV269.0	1.0212	N/A	0.9577	0.8982	REMOVE UNIT 1 FROM BUS 51702 JONES2 121,000 DISPATCH	245		
04SP	265	202	50513 L P-COOP269 0	1.0287	NI/A	0.9614	0.8084	REMOVE LINIT 1 FROM BUS 51701 LIONES1 122 0001 DISPATCH	245	"	
0400	205	010	50513 EI -COOI 203.0	1.0207		0.0004	0.0304		245	"	
045P	265	323	50506 LP-INES2 69.0	1.034	IN/A	0.9624	0.0907		245		
04SP	265	SPS	50507 LP-MLWK6 230	0.869741	N/A	N/A	0.822778	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 51647 CARLISL6 230 CKT 1	265	Not Load Serving Bus	
04SP	265	SPS	50507 LP-MLWK6 230	0.9638	N/A	N/A	0.8653	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	265	Not Load Serving Bus	
04SP	265	SPS	50507 LP-MLWK6 230	0.96037	N/A	N/A	0.865538	OPEN LINE FROM BUS 51533 TUCO6 230 TO BUS 51647 CARLISL6 230 CKT 1	265	Not Load Serving Bus	
04SP	265	SPS	50507 LP-MLWK6 230	0.9645	N/A	N/A	0.8681	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	265	Not Load Serving Bus	
04SP	265	SPS	50507 LP-MLWK6 230	0.959309	N/A	N/A	0.899882	OPEN LINE FROM BUS 51533 TUCO6 230 TO BUS 51534 TUCO7 345 CKT 1	265	Not Load Serving Bus	
04SP	265	SPS	50518 L P-SINT6 230	0.9842	N/A	N/A	0.8738	REMOVE LINIT 1 FROM BUS 51701 LIONEST 122 0001 DISPATCH	265	Not Load Serving Bus	
0400	200	CDC	50510 EI CINTO 200	0.0042	N//A	NI/A	0.07007		200	Net Load Cerving Bus	
045P	265	323	50516 LP-SIN16 230	0.972611	IN/A	IN/A	0.874997	OPEN LINE FROM BUS 30518 LF-3IN16 230 TO BUS 31681 LUBS6 230 CK1 1	265	Not Load Serving Bus	
04SP	265	SPS	50518 LP-SIN16 230	0.9853	N/A	N/A	0.8777	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	265	Not Load Serving Bus	
04SP	265	SPS	50521 LP-HOLL6 230	0.9882	N/A	N/A	0.8748	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	265	Not Load Serving Bus	
04SP	265	SPS	50521 LP-HOLL6 230	0.990915	N/A	N/A	0.874961	OPEN LINE FROM BUS 50521 LP-HOLL6 230 TO BUS 51699 JONES6 230 CKT 1	265	Not Load Serving Bus	
04SP	265	SPS	50521 LP-HOLL6 230	0.9894	N/A	N/A	0.8788	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	265	Not Load Serving Bus	
04SP	265	SPS	50527 L P-WADS6 230	1 076932	N/A	N/A	0.83674	OPEN LINE FROM BUS 50527 LP-WADS6 230 TO BUS 51689 LUBE6 230 CKT 1	265	Not Load Serving Bus	
04SP	265	SPS	50527 L P-WADS6 230	0.9882	N/A	N/A	0.8687	REMOVE LINIT 1 FROM BUS 51701 LIONEST 122 0001 DISPATCH	265	Not Load Serving Bus	
0400	200	CDC	E0E27 LD WADEC 200	0.0002	N//A	NI/A	0.0007		200	Net Load Cerving Bus	
045P	265	323	50527 LP-WADS6 230	0.9694	IN/A	IN/A	0.0727		265	Not Load Serving Bus	
04SP	265	SPS	50527 LP-WADS6 230	0.998625	N/A	N/A	0.873218	OPEN LINE FROM BUS 51689 LUBE6 230 TO BUS 51699 JONES6 230 CKT 1	265	Not Load Serving Bus	
04SP	265	SPS	51564 CROSBY3 115	0.9584	N/A	N/A	0.936418	Base Case	265	Not Load Serving Bus	
04SP	265	SPS	51647 CARLISL6 230	0.960487	N/A	N/A	0.865716	OPEN LINE FROM BUS 51533 TUCO6 230 TO BUS 51647 CARLISL6 230 CKT 1	265	Not Load Serving Bus	
04SP	265	SPS	51647 CARLISL6 230	0.964	N/A	N/A	0.866	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	265	Not Load Serving Bus	
04SP	265	SPS	51647 CARLISL6 230	0.9647	N/A	N/A	0.8688	REMOVE UNIT 1 FROM BUS 51702 (JONES2 121.000) DISPATCH	265	Not Load Serving Bus	
04SP	265	SPS	51681 LUBS6 230	0.9844	N/A	N/A	0.8762	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122,000] DISPATCH	265	Not Load Serving Bus	i i
0490	265	CDC	51691 LUPS6 220	0.0956	NI/A	NI/A	0.00		265	Not Load Serving Bus	
0400	200	010	51001 L0D30 230	0.000	N/A	NI/A	0.00		200	Not Load Carries Dus	
045P	265	5P5	51689 LUBE6 230	0.988	N/A	N/A	0.8696	REMOVE UNIT FROM BUS 51701 [JONEST 122.000] DISPATCH	265	Not Load Serving Bus	
04SP	265	SPS	51689 LUBE6 230	0.99847	N/A	N/A	0.873404	OPEN LINE FROM BUS 51689 LUBE6 230 TO BUS 51699 JONES6 230 CKT 1	265	Not Load Serving Bus	
04SP	265	SPS	51689 LUBE6 230	0.9892	N/A	N/A	0.8736	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	265	Not Load Serving Bus	
04SP	265	SPS	51699 JONES6 230	0.9882	N/A	N/A	0.8776	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	265	Not Load Serving Bus	
04SP	265	SPS	51699 JONES6 230	0.9894	N/A	N/A	0.8815	REMOVE UNIT 1 FROM BUS 51702 JONES2 121,000 DISPATCH	265	Not Load Serving Bus	
04SP	265	SPS	51763 WOLERTHE 230	0.9816	N/A	N/A	0.8937	REMOVE LINIT 1 FROM BUS 51701 LIONES1 122 0001 DISPATCH	265	Not Load Serving Rus	
0400	200	CDC	51760 WOLFRTHE 200	0.0010	N//A	NI/A	0.0000		200	Net Load Cerving Bus	
0400	200	010	51703 WOLFKIND 230	0.0024	IN/A	IN/A	0.0900		200	Not Load Capring Dus	
045P	200	525	51611 GRASSLING 230	0.9884	IN/A	IN/A	0.8793	REMOVE UNIT 1 FROM BUS 51701 (JUNEST 122.000) DISPATCH	202	Not Load Serving Bus	
04SP	265	SPS	51811 GRASSLN6 230	0.9896	N/A	N/A	0.8831	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	265	Not Load Serving Bus	
04SP	265	SPS	51861 BORDEN6 230	0.992	N/A	N/A	0.8888	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	265	Not Load Serving Bus	
04SP	265	SPS	51861 BORDEN6 230	0.9931	N/A	N/A	0.8923	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	265	Not Load Serving Bus	
04SH	217		NONE IDENTIFIED						217		
04FA	153	SPS	50507 L P-MLWK6 230	1 018472	N/A	N/A	0 867846	OPEN LINE FROM BUS 50507 LP-MI WK6 230 TO BUS 51647 CARUSI 6 230 CKT 1	153	Not Load Serving Bus	1
04\A/D	153	SPS	50507 LP-MI W/K6 230	1 012102	N/A	N/A	0.860728	OPEN LINE FROM BUS 50507 LP-MI WK6 230 TO BUS 51647 CARLISLE 200 CKT 1	153	Not Load Serving Bus	
	100	010		1.012132	IN/M	IN/A	0.009120	OF ERE FROM DOG 30307 EF-MEMRO 230 TO DOG 31047 CARLIGED 230 CRT 1	100	NOLLOGU DEIVIIIY DUS	
USAP	100		NONE IDENTIFIED	1	1				100		

<u> </u>				BC Voltage	TC Voltage	TC Voltage	TC Voltage				
	Transfer			(PU) (LP&L	(PU) (LP&L	(PU) (LP&L	(PU) (LP&L		Transfer Amount minus LP&L		
Study	Amount			PGEN = 232	PGEN = 60	<b>PGEN = 20</b>	PGEN = 0		Generation Required to		Estimated
Case	(MW)	AREA	Monitored Bus with Violation	MW)	MW)	MW)	MW)	Outaged Branch Causing Voltage Violation	Mitigate Violation (MW)	Solution	Cost
05G	159	SPS	50507 LP-MLWK6 230	0.992112	N/A	N/A	0.867221	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 51647 CARLISL6 230 CKT 1	159	Not Load Serving Bus	
										Specific Monitored Bus Voltage 0.925 for	
										Stability Limit, Short-term Solution is to	
05SP	274	SPS	51533 TUCO6 230	0.9686	0.9297	0.9009	0.8783	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	214	Dispatch LP&L Generation	
										Specific Monitored Bus Voltage 0.925 for	
										Stability Limit, Short-term Solution is to	
05SP	274	SPS	51533 TUCO6 230	0.969	0.9325	0.9033	0.8819	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	214	Dispatch LP&L Generation	L
										Specific Monitored Bus Voltage 0.925 for	
										Stability Limit, Short-term Solution is to	
05SP	274	SPS	51533 TUCO6 230	0.9619	N/A	0.9256	0.9016	REMOVE UNIT 1 FROM BUS 51441 [TOLK1 124.000] DISPATCH	254	Dispatch LP&L Generation	<u> </u>
										Specific Monitored Bus Voltage 0.925 for	
										Stability Limit, Short-term Solution is to	
05SP	274	SPS	51533 TUCO6 230	0.9619	N/A	0.9256	0.9016	REMOVE UNIT 1 FROM BUS 51442 [TOLK2 124.000] DISPATCH	254	Dispatch LP&L Generation	L
										Short-term Solution is to Dispatch LP&L	
05SP	274	SPS	50511 LP-THOM 69.0	1.021	N/A	0.9206	0.8393	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	254	Generation	ł
05SP	274	SPS	50510 LP-VCKS269.0	1.0227	N/A	0.922	0.8398	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	254		4
05SP	274	SPS	50512 LP-MCCU269.0	1.022	N/A	0.9218	0.8406	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	254		4
05SP	274	SPS	50509 LP-MLWK269.0	1.0211	N/A	0.9217	0.8419	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	254		4
05SP	274	SPS	50523 LP-BRND269.0	1.031	N/A	0.9275	0.8383	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	254		4
05SP	274	SPS	50515 LP-CHAL269.0	1.0225	N/A	0.9235	0.844	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	254		4
05SP	274	SPS	50526 LP-OLIV269.0	1.0205	N/A	0.9229	0.8452	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	254		ł
05SP	274	SPS	50503 LP-ERSR269.0	1.0319	N/A	0.9275	0.8415	REMOVE UNIT 1 FROM BUS 51/01 [JONEST 122.000] DISPATCH	254		ł
055P	274	525	50511 LP-THOM 69.0	1.021239	N/A	1.004222	0.848861	OPEN LINE FROM BUS 50518 LP-SIN16 230 TO BUS 51681 LUBS6 230 CKT 1	254		<u> </u>
055P	274	525	50526 LP-0LIV269.0	1.019784	N/A	1.003182	0.849729	OPEN LINE FROM BUS 50518 LP-SIN16 230 TO BUS 51681 LUBS6 230 CKT 1	254		<u> </u>
055P	274	5P5	50511 LP-THOM 69.0	1.0212	N/A	0.9258	0.8494	REMOVE UNIT 1 FROM BUS 51/02 JONES2 121.000J DISPATCH	254		<u> </u>
0535	274	010	50510 LF-VCR3209.0	1.0229	N/A	0.9272	0.8498	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	254	"	
055P	274	SPS	50515 L P-CHAL 269.0	1.0221	N/A	1.005252	0.85050	OPEN LINE EROM BUS 50518 L P-SINTE 230 TO BUS 51681 LUBSE 230 CKT 1	254	"	<u> </u>
055P	274	SPS	50509 L P-MLWK269.0	1.022212	N/A	0.0268	0.8518	REMOVE LINET 1 EROM BUS 51702 LIONES2 121 0001 DISPATCH	254		1
05SP	274	SPS	50503 LI -MEWIC203.0	1.0213	N/A	0.9200	0.8483	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	254		
05SP	274	SPS	50510 L P-VCKS269.0	1.031	N/A	1.006742	0.851454	OPEN LINE FROM BUS 50518 L P-SINTE 230 TO BUS 51681 LUBSE 230 CKT 1	254		
05SP	274	SPS	50512 LP-MCCU269.0	1.0220000	N/A	1.006392	0.852242	OPEN LINE FROM BUS 50518 LP-SINT6 230 TO BUS 51681 LUBS6 230 CKT 1	254		
05SP	274	SPS	50504 LP-MACK269 0	1.035	N/A	0.93	0.8483	REMOVE LINIT 1 FROM BUS 51701 (JONES1 122 000) DISPATCH	254	"	
05SP	274	SPS	50523 LP-BRND269 0	1 031222	N/A	1 011513	0.849824	OPEN LINE FROM BUS 50518 LP-SINT6 230 TO BUS 51681 LUBS6 230 CKT 1	254		
05SP	274	SPS	50515 LP-CHAL269.0	1.0227	N/A	0.9287	0.854	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	254	H	
05SP	274	SPS	50513 LP-COOP269.0	1.0283	N/A	0.9307	0.852	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	254	H	
05SP	274	SPS	50526 LP-OLIV269.0	1.0207	N/A	0.9281	0.8551	REMOVE UNIT 1 FROM BUS 51702 (JONES2 121,000) DISPATCH	254	"	
05SP	274	SPS	50503 LP-ERSK269.0	1.0319	N/A	0.9326	0.8515	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	254	"	
05SP	274	SPS	50516 LP-SLAT269.0	1.0265	N/A	0.9312	0.8543	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	254	н	
05SP	274	SPS	50503 LP-ERSK269.0	1.032	N/A	1.011373	0.852881	OPEN LINE FROM BUS 50518 LP-SINT6 230 TO BUS 51681 LUBS6 230 CKT 1	254	"	
05SP	274	SPS	50506 LP-NES2 69.0	1.034	N/A	0.9318	0.8524	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	254	"	
05SP	274	SPS	50509 LP-MLWK269.0	1.023138	N/A	1.007567	0.857319	OPEN LINE FROM BUS 50518 LP-SINT6 230 TO BUS 51681 LUBS6 230 CKT 1	254	"	
05SP	274	SPS	50516 LP-SLAT269.0	1.025726	N/A	1.010239	0.858248	OPEN LINE FROM BUS 50518 LP-SINT6 230 TO BUS 51681 LUBS6 230 CKT 1	254		
05SP	274	SPS	50511 LP-THOM 69.0	1.02124	N/A	1.004565	0.862379	OPEN LINE FROM BUS 50517 LP-SINT269.0 TO BUS 50518 LP-SINT6 230 CKT 1	254		
05SP	274	SPS	50504 LP-MACK269.0	1.035	N/A	0.9351	0.8582	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	254	"	
05SP	274	SPS	50526 LP-OLIV269.0	1.019784	N/A	1.00353	0.863221	OPEN LINE FROM BUS 50517 LP-SINT269.0 TO BUS 50518 LP-SINT6 230 CKT 1	254		L
05SP	274	SPS	50517 LP-SINT269.0	1.0286	N/A	0.9355	0.8612	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	254	"	L
05SP	274	SPS	50504 LP-MACK269.0	1.035	N/A	1.013504	0.859486	OPEN LINE FROM BUS 50518 LP-SINT6 230 TO BUS 51681 LUBS6 230 CKT 1	254		L
05SP	274	SPS	50513 LP-COOP269.0	1.0284	N/A	0.9358	0.8618	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	254		L
05SP	274	SPS	50515 LP-CHAL269.0	1.022213	N/A	1.005598	0.864132	OPEN LINE FROM BUS 50517 LP-SINT269.0 TO BUS 50518 LP-SINT6 230 CKT 1	254		L
05SP	274	SPS	50517 LP-SINT269.0	1.027362	N/A	1.01265	0.862798	OPEN LINE FROM BUS 50518 LP-SIN16 230 TO BUS 51681 LUBS6 230 CKT 1	254		<u> </u>
05SP	274	SPS	50513 LP-COOP269.0	1.028699	N/A	1.014307	0.863264	OPEN LINE FROM BUS 50518 LP-SIN 16 230 TO BUS 51681 LUBS6 230 CKT 1	254		<u> </u>
05SP	274	SPS	50510 LP-VCKS269.0	1.023339	N/A	1.007082	0.86489	OPEN LINE FROM BUS 50517 LP-SIN1269.0 TO BUS 50518 LP-SINT6 230 CKT 1	254		<b> </b>
USSP	274	SPS	50516 LP-SLA1269.0	1.0267	N/A	0.9363	0.8641	REMOVE UNIT 1 FROM BUS 51/02 [JONES2 121.000] DISPATCH	254		t
USSP	274	SPS	50506 LP-NES2 69.0	1.034	N/A	0.937	0.8622	REMOVE UNIT 1 FROM BUS 51/02 [JONES2 121.000] DISPATCH	254		t
055P	2/4	525	50512 LP-MCCU269.0	1.022479	N/A	1.006735	0.86565	OPEN LINE FROM BUS 50517 LP-SIN1269.0 TO BUS 50518 LP-SIN16 230 CKT 1	254		ł
055P	2/4	525	50523 LP-BKND269.0	1.031222	N/A	1.011857	0.863265	OPEN LINE FROM BUS 50517 LP-SIN1269.0 TO BUS 50518 LP-SIN16 230 CKT 1	254		ł
055P	274	525	50506 LP-NE52 69.0	1.034003	N/A	1.014807	0.863081	OPEN LINE FROM BUS 50518 LP-SIN 16 230 TO BUS 51681 LUBS6 230 CKT 1	254		ł
0550	274	070	50524 L D WADS200	1.032	IN/A	0.0410	0.000205	OF EN LINE FROM DUG 30017 LF-SIN1209.0 TO BUG 30018 LF-SIN16 230 CKT 1	∠54 254		t
055P	274	SPS	50500 L P-MUM/2200	1.0292	N/A	1.007005	0.0070		204		t
055P	274	SPS	50517 L P-SINT269.0	1.023139	N/A N/A	0.007095	0.8709	DEMOVE LINE 1 FROM BUS 50517 LE-SIN1203.0 TO BUS 50516 LE-SIN16 230 CKT 1	254	"	t
0000	214		00017 LI -0111208.0	1.0200	11/1	0.3400	0.0700	REMOVE ONLY THROW DOG STICE [JOINED2 121.000] DISPATOR	204		1

				BC Voltage	TC Voltage	TC Voltage	TC Voltage				
	Transfer			(PU) (LP&L	(PU) (LP&L	(PU) (LP&L	(PU) (LP&L		Transfer Amount minus LP&L		
Study	Amount			PGEN = 232	<b>PGEN = 60</b>	PGEN = 20	PGEN = 0		Generation Required to		Estimated
Case	(MW)	AREA	Monitored Bus with Violation	MW)	MW)	MW)	MW)	Outaged Branch Causing Voltage Violation	Mitigate Violation (MW)	Solution	Cost
05SP	274	SPS	50516 LP-SLAT269.0	1.025726	N/A	1.010588	0.871608	OPEN LINE FROM BUS 50517 LP-SINT269.0 TO BUS 50518 LP-SINT6 230 CKT 1	254		
05SP	274	SPS	50504 LP-MACK269.0	1.035	N/A	1.013851	0.872749	OPEN LINE FROM BUS 50517 LP-SINT269.0 TO BUS 50518 LP-SINT6 230 CKT 1	254	"	
05SP	274	SPS	50517 LP-SINT269.0	1.027362	N/A	1.013	0.875997	OPEN LINE FROM BUS 50517 LP-SINT269.0 TO BUS 50518 LP-SINT6 230 CKT 1	254	"	
05SP	274	SPS	50513 LP-COOP269.0	1.0287	N/A	1.014654	0.876463	OPEN LINE FROM BUS 50517 LP-SINT269.0 TO BUS 50518 LP-SINT6 230 CKT 1	254	"	
05SP	274	SPS	50506 LP-NES2 69.0	1.034003	N/A	1.015155	0.87625	OPEN LINE FROM BUS 50517 LP-SINT269.0 TO BUS 50518 LP-SINT6 230 CKT 1	254		
05SP	274	SPS	50524 LP-WADS269.0	1.0294	N/A	0.947	0.8771	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	254	"	
05SP	274	SPS	50524 LP-WADS269.0	1.030253	N/A	1.024585	0.880262	OPEN LINE FROM BUS 50518 LP-SINT6 230 TO BUS 51681 LUBS6 230 CKT 1	254		
05SP	274	SPS	50509 LP-MLWK269.0	1.008878	N/A	0.985058	0.896026	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 51647 CARLISL6 230 CKT 1	254		
05SP	274	SPS	50507 LP-MLWK6 230	0.869724	N/A	N/A	0.772436	OPEN LINE FROM BUS 50507 LP-MLWK6 230 TO BUS 51647 CARLISL6 230 CKT 1	274	Not Load Serving Bus	
05SP	274	SPS	50507 LP-MLWK6 230	0.962	N/A	N/A	0.8446	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	50507 LP-MLWK6 230	0.962	N/A	N/A	0.8488	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	50507 LP-MLWK6 230	0.96584	N/A	N/A	0.859281	OPEN LINE FROM BUS 51533 TUCO6 230 TO BUS 51647 CARLISL6 230 CKT 1	274	Not Load Serving Bus	
05SP	274	SPS	50507 LP-MLWK6 230	0.9578	N/A	N/A	0.8778	REMOVE UNIT 1 FROM BUS 51441 [TOLK1 124.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	50518 LP-SINT6 230	0.97265	N/A	N/A	0.784362	OPEN LINE FROM BUS 50518 LP-SINT6 230 TO BUS 51681 LUBS6 230 CKT 1	274	Not Load Serving Bus	
05SP	274	SPS	50518 LP-SINT6 230	0.9791	N/A	N/A	0.8504	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	50518 LP-SINT6 230	0.9808	N/A	N/A	0.8561	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	50520 LP-HOLL269.0	1.035	N/A	N/A	0.8676	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	50520 LP-HOLL269.0	1.035	N/A	N/A	0.8771	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	50520 LP-HOLL269.0	1.035	N/A	N/A	0.87712	OPEN LINE FROM BUS 50518 LP-SINT6 230 TO BUS 51681 LUBS6 230 CKT 1	274	Not Load Serving Bus	
05SP	274	SPS	50521 LP-HOLL6 230	0.990854	N/A	N/A	0.830509	OPEN LINE FROM BUS 50521 LP-HOLL6 230 TO BUS 51699 JONES6 230 CKT 1	274	Not Load Serving Bus	
05SP	274	SPS	50521 LP-HOLL6 230	0.983	N/A	N/A	0.8511	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	50521 LP-HOLL6 230	0.9848	N/A	N/A	0.8569	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	50527 LP-WADS6 230	1.076825	N/A	N/A	0.792693	OPEN LINE FROM BUS 50527 LP-WADS6 230 TO BUS 51689 LUBE6 230 CKT 1	274	Not Load Serving Bus	
05SP	274	SPS	50527 LP-WADS6 230	0.9821	N/A	N/A	0.8442	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	50527 LP-WADS6 230	0.9841	N/A	N/A	0.8501	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	50527 LP-WADS6 230	0.991159	N/A	N/A	0.862563	OPEN LINE FROM BUS 51689 LUBE6 230 TO BUS 51699 JONES6 230 CKT 1	274	Not Load Serving Bus	
05SP	274	SPS	51321 SWISHER6 230	0.9575	N/A	N/A	0.8939	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	51321 SWISHER6 230	0.9577	N/A	N/A	0.8961	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	51534 TUCO7 345	0.9704	N/A	N/A	0.8881	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	51534 TUCO7 345	0.9707	N/A	N/A	0.8914	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	51534 TUCO7 345	0.9524	N/A	N/A	0.8919	REMOVE UNIT 1 FROM BUS 51441 [TOLK1 124.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	51534 TUCO7 345	0.9524	N/A	N/A	0.8919	REMOVE UNIT 1 FROM BUS 51442 [TOLK2 124.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	51647 CARLISL6 230	0.9621	N/A	N/A	0.8454	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	51647 CARLISL6 230	0.9622	N/A	N/A	0.8496	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	51647 CARLISL6 230	0.965972	N/A	N/A	0.859539	OPEN LINE FROM BUS 51533 TUCO6 230 TO BUS 51647 CARLISL6 230 CKT 1	274	Not Load Serving Bus	
05SP	274	SPS	51647 CARLISL6 230	0.958	N/A	N/A	0.8783	REMOVE UNIT 1 FROM BUS 51441 [TOLK1 124.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	51647 CARLISL6 230	0.958	N/A	N/A	0.8783	REMOVE UNIT 1 FROM BUS 51442 [TOLK2 124.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	51647 CARLISL6 230	0.962603	N/A	N/A	0.881461	OPEN LINE FROM BUS 51533 TUCO6 230 TO BUS 51534 TUCO7 345 CKT 1	274	Not Load Serving Bus	
05SP	274	SPS	51647 CARLISL6 230	0.962603	N/A	N/A	0.881571	OPEN LINE FROM BUS 51534 TUCO7 345 TO BUS 54119 O.K.U7 345 CKT 1	274	Not Load Serving Bus	
05SP	274	SPS	51681 LUBS6 230	0.9792	N/A	N/A	0.8533	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	51681 LUBS6 230	0.9811	N/A	N/A	0.8589	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	51689 LUBE6 230	0.9819	N/A	N/A	0.8453	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	51689 LUBE6 230	0.9839	N/A	N/A	0.8511	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	51689 LUBE6 230	0.99096	N/A	N/A	0.862833	OPEN LINE FROM BUS 51689 LUBE6 230 TO BUS 51699 JONES6 230 CKT 1	274	Not Load Serving Bus	
05SP	274	SPS	51699 JONES6 230	0.9829	N/A	N/A	0.8543	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	51699 JONES6 230	0.9847	N/A	N/A	0.8601	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	51763 WOLFRTH6 230	0.9777	N/A	N/A	0.8755	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	51763 WOLFRTH6 230	0.9789	N/A	N/A	0.88	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	51811 GRASSLN6 230	0.9833	N/A	N/A	0.8571	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	51811 GRASSLN6 230	0.9847	N/A	N/A	0.8625	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	51861 BORDEN6 230	0.9871	N/A	N/A	0.8697	REMOVE UNIT 1 FROM BUS 51701 [JONES1 122.000] DISPATCH	274	Not Load Serving Bus	
05SP	274	SPS	51861 BORDEN6 230	0.9884	N/A	N/A	0.8743	REMOVE UNIT 1 FROM BUS 51702 [JONES2 121.000] DISPATCH	274	Not Load Serving Bus	
05SH	224	SPS	50527 LP-WADS6 230	0.998239	N/A	N/A	0.891269	OPEN LINE FROM BUS 51689 LUBE6 230 TO BUS 51699 JONES6 230 CKT 1	224	Not Load Serving Bus	
05SH	224	SPS	51689 LUBE6 230	0.998125	N/A	N/A	0.891239	OPEN LINE FROM BUS 51689 LUBE6 230 TO BUS 51699 JONES6 230 CKT 1	224	Not Load Serving Bus	
Note: Re	esulting Tie	Line Po	wer Factor not Specified							Total Estimated Cost	\$0

SPP-2004-006-1 Table 3 - Network Load Totals and Tie Line MW Limits by Season Southwest Power Pool System Impact Study

				Existing Service												
		Network	Transfer	Modeled to												
Study	Network	Load	Amount	Network Load	LP&L Tie	LP&L Tie MW	LP&L Tie MW	LP&L Tie MW	LP&L Tie MW	LP&L Tie MW	LP&L Tie MW	LP&L Tie MW	LP&L Tie MW	LP&L Tie MW	LP&L Tie MW	LP&L Tie MW
Case	Load MW	MVAR	(MW)	(MW)	MW Limit	Limit @ 1.0 PF	Limit @ 0.99 PF	Limit @ 0.98 PF	Limit @ 0.97 PF	Limit @ 0.96 PF	Limit @ 0.95 PF	Limit @ 0.94 PF	Limit @ 0.93 PF	Limit @ 0.92 PF	Limit @ 0.91 PF	Limit @ 0.90 PF
04SP	320	49.3	265	55	N/A	326	295	273	258	247	238	231	222	216	210	203
04SH	272	41.9	217	55	272(1)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
04FA	208	32	153	55	208(1)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
04WP	208	47.3	153	55	208(1)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
05AP	154.5	23.8	100	55	155(1)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
05G	213.5	32.9	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
05SP	328.5	50.6	274	55	N/A	318	272	255	241	229	220	212	205	200	194	190
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
(4) 14			1 11 10			10051										

(1) Maximum Amount Evaluated with Pre-contingency Tie Line PF set at 0.95 lagging

	Transfer					BC % Loading	TC % Loading	TC % Loading	TC % Loading		Transfer Amount minus		
Study	Amount	From	То		Rate	(LP&L PGEN =	(LP&L PGEN =	(LP&L PGEN =	(LP&L PGEN =		LP&L Generation Required		
Case	(MW)	Area	Area	Monitored Branch Overload	<mva></mva>	232 MW)	60 MW)	20 MW)	0 MW)	Outaged Branch Causing Overload	to Mitigate Violation (MW)	Solution	Estimated Cos
												Short-term Solution is to Dispatch LP&L	
04SP	265	SPS	SPS	50516 LP-SLAT2 69 to 50513 LP-COOP2 69 CKT 1	54	33.9	N/A	91.4	104.0	50513 LP-COOP2 69 to 50524 LP-WADS2 69 CKT 1	245	Generation	
04SP	265	SPS	SPS	50521 LP-HOLL6 230 to 50520 LP-HOLL2 69 CKT 1	140	14.6	N/A	96.0	107.0	50518 LP-SINT6 230 to 51681 LUBS6 230 CKT 1	245		1
04SP	265	SPS	SPS	50521 LP-HOLL6 230 to 50520 LP-HOLL2 69 CKT 1	140	14.6	N/A	95.9	106.9	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	245		1
04SP	265	SPS	SPS	50521 LP-HOLL6 230 to 50520 LP-HOLL2 69 CKT 1	140	13.1	N/A	91.2	101.9	50527 LP-WADS6 230 to 51689 LUBE6 230 CKT 1	245		1
04SP	265	SPS	SPS	50521 LP-HOLL6 230 to 50520 LP-HOLL2 69 CKT 1	140	13.1	N/A	91.2	101.8	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	245		
04SP	265	SPS	SPS	50518 LP-SINT6 230 to 50517 LP-SINT2 69 CKT 1	140	17.6	N/A	94.6	104.3	50521 LP-HOLL6 230 to 51699 JONES6 230 CKT 1	245		1
04SP	265	SPS	SPS	50518 LP-SINT6 230 to 50517 LP-SINT2 69 CKT 1	140	17.6	N/A	94.6	104.2	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	245		1
04SP	265	SPS	SPS	50518 LP-SINT6 230 to 50517 LP-SINT2 69 CKT 1	140	17.6	N/A	91.0	101.0	50527 LP-WADS6 230 to 51689 LUBE6 230 CKT 1	245		1
04SP	265	SPS	SPS	50518 LP-SINT6 230 to 50517 LP-SINT2 69 CKT 1	140	17.6	N/A	91.0	100.8	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	245		1
04SH	217			NONE IDENTIFIED							217		1
04FA	153			NONE IDENTIFIED							153		1
04WP	153			NONE IDENTIFIED							153		1
05AP	100			NONE IDENTIFIED							100		1
05G	159			NONE IDENTIFIED							159		1
												Short-term Solution is to Dispatch LP&L	1
05SP	274	SPS	SPS	50521 LP-HOLL6 230 to 50520 LP-HOLL2 69 CKT 1	140	15.0	83.1	101.0	143.3	50518 LP-SINT6 230 to 51681 LUBS6 230 CKT 1	214	Generation	
05SP	274	SPS	SPS	50521 LP-HOLL6 230 to 50520 LP-HOLL2 69 CKT 1	140	15.0	83.2	100.9	143.4	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	214		1
05SP	274	SPS	SPS	50524 LP-WADS2 69 to 50513 LP-COOP2 69 CKT 1	143	36.7	N/A	73.5	124.6	50518 LP-SINT6 230 to 51681 LUBS6 230 CKT 1	254		1
05SP	274	SPS	SPS	50524 LP-WADS2 69 to 50513 LP-COOP2 69 CKT 1	143	36.7	N/A	73.3	124.5	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	254		1
05SP	274	SPS	SPS	50516 LP-SLAT2 69 to 50513 LP-COOP2 69 CKT 1	54	34.4	N/A	95.4	110.3	50513 LP-COOP2 69 to 50524 LP-WADS2 69 CKT 1	254		1
05SP	274	SPS	SPS	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	140	16.7	N/A	92.0	106.1	50521 LP-HOLL6 230 to 51699 JONES6 230 CKT 1	254		1
05SP	274	SPS	SPS	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	140	16.7	N/A	91.9	106.2	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	254		1
05SP	274	SPS	SPS	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	140	18.3	N/A	90.9	131.2	50518 LP-SINT6 230 to 51681 LUBS6 230 CKT 1	254		1
05SP	274	SPS	SPS	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	140	18.3	N/A	90.8	131.2	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	254		1
05SP	274	SPS	SPS	50521 LP-HOLL6 230 to 50520 LP-HOLL2 69 CKT 1	140	13.3	N/A	96.1	114.1	50527 LP-WADS6 230 to 51689 LUBE6 230 CKT 1	254		
05SP	274	SPS	SPS	50521 LP-HOLL6 230 to 50520 LP-HOLL2 69 CKT 1	140	13.2	N/A	96.0	114.1	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	254		
05SP	274	SPS	SPS	50520 LP-HOLL269.0 to 50521 LP-HOLL6 230 CKT 1	100	12.4	N/A	65.7	100.1	Base Case	254		
05SP	274	SPS	SPS	50518 LP-SINT6 230 to 50517 LP-SINT2 69 CKT 1	140	18.1	N/A	99.3	115.6	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	254		
05SP	274	SPS	SPS	50518 LP-SINT6 230 to 50517 LP-SINT2 69 CKT 1	140	18.1	N/A	99.3	115.6	50521 LP-HOLL6 230 to 51699 JONES6 230 CKT 1	254		1
05SP	274	SPS	SPS	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	140	18.0	N/A	95.7	113.7	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	254		
05SP	274	SPS	SPS	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	140	18.0	N/A	95.7	113.7	50527 LP-WADS6 230 to 51689 LUBE6 230 CKT 1	254		
05SP	274	SPS	SPS	50517 LP-SINT269.0 to 50518 LP-SINT6 230 CKT 1	100	20.3	N/A	68.1	102.1	Base Case	254		
05SH	224			NONE IDENTIFIED							224		
												Total Estimated Cost	\$0

#### SPP-2004-006-1 Table 1.2a - Modeling Representation for Table 1.2 Includes Bus Numbers and Bus Names

r						I		I				
	Transfer					BC % Loading	TC % Loading	TC % Loading		Transfer Amount minus		
Study	Amount	From	То		Rate	(LP&L PGEN =	(LP&L PGEN =	(LP&L PGEN = 0)		LP&L Generation Required		Estimated
Case	(MW)	Area	Area	Monitored Branch Overload	<mva></mva>	232 MW)	20 MW)	MW)	Outaged Branch Causing Overload	to Mitigate Violation (MW)	Solution	Cost
	. ,					,	. ,	,			Short-term Solution is to Dispatch LP&L	
04SP	265	SPS	SPS	50516 LP-SLAT2 69 to 50513 LP-COOP2 69 CKT 1	54	32.9	90.6	102.9	50513 LP-COOP2 69 to 50524 LP-WADS2 69 CKT 1	245	Generation	
04SP	265	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	140	12.7	90.9	101.5	50527 LP-WADS6 230 to 51689 LUBE6 230 CKT 1	245	н	
04SP	265	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	140	12.7	90.9	101.3	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	245		
04SP	265	SPS	SPS	50521 LP-HOLL6 230 to 50520 LP-HOLL2 69 CKT 1	140	14.0	95.3	106.2	50518 LP-SINT6 230 to 51681 LUBS6 230 CKT 1	245		
04SP	265	SPS	SPS	50521 LP-HOLL6 230 to 50520 LP-HOLL2 69 CKT 1	140	14.0	95.3	106.1	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	245		
04SP	265	SPS	SPS	50518 LP-SINT6 230 to 50517 LP-SINT2 69 CKT 1	140	16.8	93.9	103.3	50521 LP-HOLL6 230 to 51699 JONES6 230 CKT 1	245		
04SP	265	SPS	SPS	50518 LP-SINT6 230 to 50517 LP-SINT2 69 CKT 1	140	16.7	93.9	103.3	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	245	"	
04SP	265	SPS	SPS	50518 LP-SINT6 230 to 50517 LP-SINT2 69 CKT 1	140	16.7	90.4	100.2	50527 LP-WADS6 230 to 51689 LUBE6 230 CKT 1	245	"	
04SP	265	SPS	SPS	50518 LP-SINT6 230 to 50517 LP-SINT2 69 CKT 1	140	16.7	90.4	100.1	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	245	"	
04SH	217			NONE IDENTIFIED						217		
04FA	153			NONE IDENTIFIED						153		
04WP	153			NONE IDENTIFIED						153		
05AP	100			NONE IDENTIFIED						100		
05G	159			NONE IDENTIFIED						159		
											Short-term Solution is to Dispatch LP&L	
05SP	274	SPS	SPS	50516 LP-SLAT2 69 to 50513 LP-COOP2 69 CKT 1	54	32.4	93.3	106.8	50513 LP-COOP2 69 to 50524 LP-WADS2 69 CKT 1	254	Generation	
05SP	274	SPS	SPS	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	140	17.2	89.6	104.7	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	254	н	
05SP	274	SPS	SPS	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	140	17.2	89.5	105.7	50518 LP-SINT6 230 to 51681 LUBS6 230 CKT 1	254	н	
05SP	274	SPS	SPS	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	140	16.0	88.9	100.5	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	254	н	
05SP	274	SPS	SPS	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	140	16.0	89.0	100.6	50521 LP-HOLL6 230 to 51699 JONES6 230 CKT 1	254	н	
05SP	274	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	140	13.7	98.3	115.7	50518 LP-SINT6 230 to 51681 LUBS6 230 CKT 1	254	H	
05SP	274	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	140	13.7	98.4	114.6	50517 LP-SINT2 69 to 50518 LP-SINT6 230 CKT 1	254	"	
05SP	274	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	140	12.4	94.3	106.7	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	254	"	
05SP	274	SPS	SPS	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	140	12.4	94.4	106.5	50527 LP-WADS6 230 to 51689 LUBE6 230 CKT 1	254	"	
05SP	274	SPS	SPS	50518 LP-SINT6 230 to 50517 LP-SINT2 69 CKT 1	140	16.4	96.8	108.4	50520 LP-HOLL2 69 to 50521 LP-HOLL6 230 CKT 1	254	"	
05SP	274	SPS	SPS	50518 LP-SINT6 230 to 50517 LP-SINT2 69 CKT 1	140	16.4	96.9	108.5	50521 LP-HOLL6 230 to 51699 JONES6 230 CKT 1	254	н	
05SP	274	SPS	SPS	50518 LP-SINT6 230 to 50517 LP-SINT2 69 CKT 1	140	16.3	93.2	105.4	50524 LP-WADS2 69 to 50527 LP-WADS6 230 CKT 1	254	н	
05SP	274	SPS	SPS	50518 LP-SINT6 230 to 50517 LP-SINT2 69 CKT 1	140	16.3	93.3	105.1	50527 LP-WADS6 230 to 51689 LUBE6 230 CKT 1	254	"	
05SP	274	SPS	SPS	50517 LP-SINT269.0 to 50518 LP-SINT6 230 CKT 1	100	18.3	67.0	100.1	Base Case	254		
05SH	224			NONE IDENTIFIED						224		
											Total Estimated Cost	\$0