SCREENING STUDY

SPP-DPT-2016-001

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By SPP Engineering, SPP Transmission Service Studies

REVISION HISTORY

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3/18/2016	SPP	Original	

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EXECUTIVE SUMMARY

Oklahoma Municipal Power Authority has requested a screening study to determine the impacts on SPP and first-tier third party facilities due to a Delivery Point Transfer of 8 MW. Third party includes both first-tier neighboring facilities outside SPP and Transmission Owner facilities within SPP that are not under the SPP OATT. The service type requested for this screening study is Delivery Point Transfer (DPT). The period of the service requested is from 6/1/2016 to 6/1/2026.

The principal objective of this study is to identify system problems and potential system modifications necessary to facilitate the DPT request while maintaining system reliability. The DPT request was studied using two system scenarios. The service was modeled by a transfer from OMPA to WFEC. The two scenarios were studied to capture system limitations caused or impacted by the requested service. An analysis was conducted on the planning horizon.

The requested service does not significantly impact facilities on the SPP system. Tables 1 and 2 summarize the results of the screening study analysis for the new source location for the scenarios listed in the table. Table 1 lists SPP and first-tier third party thermal transfer limitations identified. Table 2 lists SPP and first-tier third party voltage transfer limitations identified. Table 3 lists the network upgrades required to mitigate the limitations impacted by this request. Table 4 lists the potential redispatch relief pairs to prevent deferral of service, if applicable.

INTRODUCTION

Oklahoma Municipal Power Authority has requested a screening study to determine the impacts on SPP and first-tier third party facilities for a Delivery Point Transfer of 8 MW. The principal objective of this study is to identify the constraints on the SPP and first-tier third party transmission systems that may limit the requested service and to determine the potential least cost solutions required to alleviate the limiting facilities.

This study includes steady-state contingency analysis (PSS/E function ACCC). The steady-state analysis considers 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 and first-tier third party systems.

The DPT request was studied using two system scenarios. The service was modeled by a transfer from OMPA to WFEC. Two scenarios were studied to capture the system limitations caused or impacted by the requested service. Scenario 0 includes projected usage of transmission service included in the SPP 2015 Series Cases. Scenario 5 includes transmission service not already included in the SPP 2015 Series Cases.

STUDY METHODOLOGY

DESCRIPTION

The facility study 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 performed consistent with current SPP Criteria and NERC Reliability Standards requirements. SPP conforms to NERC Reliability Standards, which provide strict requirements related to voltage violations and thermal overloads during normal conditions and during a contingency. NERC Standards require all facilities to 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 Model Development Working Group (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 105% and 90%. Transmission Owner voltage monitoring criteria is used if more restrictive. The SPS Tuco 230 kV bus voltage is monitored at 92.5% due to pre-determined system stability limitations. The WERE Wolf Creek 345 kV bus voltage is monitored at 103.5% and 98.5% due to transmission operating procedure.

The contingency set includes all SPP control area branches and ties 69 kV 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 control areas with SPP reserve share program redispatch. The monitored 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 115 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 (Ameren), and ENTR (Entergy) control areas. For voltage monitoring, a 0.02 per unit change in voltage must occur due to the transfer or modeling upgrades to be considered a valid limit to the transfer.

MODEL DEVELOPMENT

SPP used five seasonal models to study the 8 MW DPT request for the requested service period. The following SPP Transmission Expansion Plan 2015 Series (2016 ITP Near Term) Cases were used to study the impact of the requested service on the transmission system:

- 2016 Summer Peak (16SP)
- 2016/17 Winter Peak (16WP)
- 2017 Summer Peak (17SP)
- 2017/18 Winter Peak (17WP)
- 2020 Summer Peak (20SP)
- 2020/21 Winter Peak (20WP)
- 2025 Summer Peak (25SP)
- 2025/26 Winter Peak (25WP)

The Summer Peak models apply to June through September and the Winter Peak models apply to December through March.

The chosen base case models were modified to reflect the current modeling information. One group of requests was developed from the aggregate to model the requested service. From the seasonal models, two system scenarios were developed. Scenario 0 includes projected usage of transmission included in the SPP 2015 Series Cases. Scenario 5 includes transmission service not already included in the SPP 2015 Series Cases.

TRANSMISSION REQUEST MODELING

NITS requests are modeled as Generation to Load transfers in addition to Generation to Generation transfers. NITS requests are modeled as Generation to Load transfers in addition to Generation to Generation because the requested NITS is a request to serve network load with the new designated network resource, and the impacts on Transmission System are determined accordingly. PTP Transmission Service requests are modeled as Generation to Generation transfers. Generation to Generation transfers are accomplished by developing a post-transfer case for comparison by dispatching the request source and redispatching the request sink.

TRANSFER ANALYSIS

Using the selected cases both with and without the requested transfers modeled, the PSS/E Activity ACCC was run on the cases and compared to determine the facility overloads caused or impacted by the transfer. TDF cutoffs (SPP and 1st-Tier) and voltage threshold (0.02 change) were applied to determine the impacted facilities. The PSS/E options chosen to conduct the analysis can be found in Appendix A.

STUDY RESULTS

STUDY ANALYSIS RESULTS

Tables 1 and 2 contain the initial steady-state analysis results of the DPT. The tables are attached to the end of this report, if applicable. The tables identify the scenario and season in which the event occurred, the transfer amount studied, the facility control area location, applicable ratings of the thermal transfer limitations and voltage transfer limitations, and the loading percentage and voltage per unit (pu).

TABLE 1

Table 1 lists the SPP and first-tier third party thermal transfer limitations caused or impacted by the 8 MW transfer for applicable scenarios. Solutions are identified for the limitations in this table.

TABLE 2

Table 2 lists the SPP and first-tier third party voltage transfer limitations caused or impacted by the 8 MW transfer for applicable scenarios. Solutions are identified for the violations in this table.

TABLE 3

Table 3 lists the network upgrades required to mitigate the limitations caused or impacted by this request. Engineering and construction costs are provided for assigned upgrades in this table.

TABLE 4

Table 4 lists the potential redispatch relief pairs to prevent deferral of service.

CONCLUSION

The results of the screening study show that limiting constraints do not exist on the SPP system for the 8 MW DPT. No new Network Upgrades are required to support the requested transfer. Redispatch is required to mitigate impacts for which Network Upgrades have been previously approved. Potential redispatch pairs are identified in Table 4. Since no additional limitations were identified, the request will be accepted. Once the request has been confirmed, SPP will issue a service agreement.

APPENDIX A

PSS/E CHOICES IN RUNNING LOAD FLOW PROGRAM AND ACCC

BASE CASE SETTINGS:

- Solutions: Fixed slope decoupled Newton-Raphson solution (FDNS)
- Tap adjustment: Stepping
- Area Interchange Control: Tie lines and loads
- Var limits: Apply immediately
- Solution Options:

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

ACCC CASE SETTINGS:

- Solutions: AC contingency checking (ACCC)
- MW mismatch tolerance: 0.5
- System intact rating: Rate A
- Contingency case rating: Rate B
- Percent of rating: 100
- Output code: Summary
- Min flow change in overload report: 3mw
- Excld cases w/ no overloads from report: YES
- Exclude interfaces from report: NO
- Perform voltage limit check: YES
- Elements in available capacity table: 60000
- Cutoff threshold for available capacity table: 99999.0
- Min. contng. Case Vltg chng for report: 0.02
- Sorted output: None
- Newton Solution:
- Tap adjustment: Stepping
- Area interchange control: Tie lines and loads (Disabled for generator outages)
- Var limits: Apply immediately
- Solution options: X Phase shift adjustment
  _ Flat start
  _ Lock DC taps
  _ Lock switched shunts

Table 1 - SPP Facility Thermal Transfer Limitations

Scenario	Season	From Area	To Area	Monitored Branch Over 100% Rate B	Base Case Loading (%)	Transfer Case Loading (%)	TDF (%)	Outaged Branch Causing Overload	Upgrade Name	Solution
5	17SP	OKGE	OKGE	FPL SWITCH - WOODWARD 138KV CKT 1	101.5	103.5	35.7%	MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1	Multi - Woodward District EHV - Tatonga - Matthewson - Cimarron 345 kV	Build new 126 mile Woodward - Tatonga 345 kV circuit 2 and Tatonga - Matthewson - Cimarron 345 kV line.
5	20SP	OKGE	WFEC	FRANKLIN SW - MIDWEST TAP 138KV CKT 1	100.9	101.4	4.2%	ANADARKO - POCASSETT 138KV CKT 1	FRANKLIN SW - MIDWEST TAP 138KV CKT 1	Reconductor 1.27 mile Franklin SW - Midwest Tap to 1590AS52 conductor
5	20SP	OKGE	WFEC	FRANKLIN SW - MIDWEST TAP 138KV CKT 1	99.9	100.8	12.8%	CANADIAN - CEDAR LANE 138KV CKT 1	FRANKLIN SW - MIDWEST TAP 138KV CKT 1	Reconductor 1.27 mile Franklin SW - Midwest Tap to 1590AS52 conductor
5	25SP	OKGE	WFEC	FRANKLIN SW - MIDWEST TAP 138KV CKT 1	99.6	100.7	4.2%	ANADARKO - POCASSETT 138KV CKT 1	FRANKLIN SW - MIDWEST TAP 138KV CKT 1	Reconductor 1.27 mile Franklin SW - Midwest Tap to 1590AS52 conductor

Table 2 - SPP Facility Voltage Transfer Limitations

Scenario	Season	Area	Monitored Bus with Violation	Post-transfer Voltage (PU)	Outaged Branch Causing Overload	Upgrade Name	Solution
			None				

Table 3 - Upgrade Requirements and Solutions Needed

Transmission Owner	Upgrade	Solution	Earliest Date Upgrade Required (DUN)	Estimated Date of Upgrade Completion (EOC)	Estimated Engineering & Construction Cost	NTC
	None					

Construction Pending Projects - The requested service is contingent upon completion of the following upgrades. Cost is not assignable to the transmission customer.

Transmission Owner	Upgrade	Solution	Earliest Date Upgrade Required (DUN)	Estimated Date of Upgrade Completion (EOC)	Estimated Engineering & Construction Cost	NTC
	None					

Expansion Plan Projects - The requested service is contingent upon completion of the following upgrades. Cost is not assignable to the transmission customer.

Transmission Owner	Upgrade	Solution	Earliest Date Upgrade Required (DUN)	Estimated Date of Upgrade Completion (EOC)
	None			

Reliability Projects - The requested service is contingent upon completion of the following upgrades. Cost is not assignable to the transmission customer.

Transmission Owner	Upgrade	Solution	Earliest Date Upgrade Required (DUN)	Estimated Date of Upgrade Completion (EOC)
OKGE	Multi - Woodward District EHV - Tatonga - Matthewson - Cimarron 345 kV	Build new 126 mile Woodward - Tatonga 345 kV circuit 2 and Tatonga - Matthewson - Cimarron 345 kV line.	6/1/2017	3/1/2021
OKGE	FRANKLIN SW - MIDWEST TAP 138KV CKT 1	Reconductor 1.27 mile Franklin SW - Midwest Tap to 1590AS52 conductor	6/1/2018	6/1/2021

Table 4 - Potential Redispatch Relief Pairs to Prevent Deferral of Service

Upgrade: Multi - Woodward District EHV - Tatonga - Matthewson - Cimarron 345 kV
Limiting Facility: FPL SWITCH - WOODWARD 138KV CKT 1
Direction: TO->FROM
Line Outage: MATHWSN7 345.00 - TATONGA7 345.00 345KV CKT 1
Flowgate: 2015AG2AFS11T1795517SP
Date Redispatch Needed: Starting 2017 6/1 - 10/1 Until EOC of Upgrade
Season Flowgate Identified: 2017 Summer Peak

Reservation	Relief Amount	Aggregate Relief Amount
82153580	2.6	2.6

Source Control Area	Source	Maximum Increment (MW)	GSF	Sink Control Area	Sink	Maximum Decrement (MW)	GSF	Factor	Aggregate Redispatch Amount (MW)
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.58533	5
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.48106	5
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	OKGE	OU SPIRIT 138KV	102	0.17544	-0.54103	5
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.48106	5
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.48106	5
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.54103	5
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	WERE	AEC W1 34.500 115KV	3.65	0.01994	-0.38553	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	OKGE	AES 161KV	320	-0.00803	-0.35756	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	AEPW	ARSENAL HILL 138KV	509	-0.00752	-0.35807	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	WERE	BROWN COUNTY 115KV	4.5	0.01564	-0.38123	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	WERE	CANEYWF1 0.6900 34KV	199.8	0.00616	-0.37175	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	SWPA	CARTHAGE 69KV	20	-0.002	-0.36359	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	WERE	CITY OF AUGUSTA 69KV	9.25	0.0102	-0.37579	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	WERE	CITY OF MULVANE 69KV	8.2	0.01279	-0.37838	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	WERE	CITY OF OSAGE CITY 115KV	10.271	0.01566	-0.38125	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	WERE	COFFEY CO SUB 34KV	401	0.01014	-0.37573	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	AEPW	COGENTRIX 345KV	512.277	-0.01255	-0.35304	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	AEPW	EASTMAN 138KV	347.6164	-0.00818	-0.35741	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	WERE	ELK RIVER 345KV	150	0.0068	-0.37239	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	WERE	EMPORIA ENERGY CENTER 345KV	180	0.01611	-0.3817	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	WERE	EVANS ENERGY CENTER 138KV	514.7959	0.01813	-0.38372	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	AEPW	FITZHUGH 161KV	70.16	-0.00719	-0.3584	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	AEPW	FLINT CREEK 161KV	528	-0.00695	-0.35864	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	WERE	FR2E1WF1 0.6900 34KV	112.6579	0.00024	-0.36583	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	WERE	FR2E2WF1 0.6900 34KV	112.6579	0.00024	-0.36583	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	WERE	FR2W1WF1 0.6900 34KV	117.3421	0.00024	-0.36583	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	WERE	FR2W2WF1 0.6900 34KV	117.3421	0.00024	-0.36583	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	WERE	GILL ENERGY CENTER 138KV	26	0.01649	-0.38208	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	GRDA	GRDA1 345KV	497.4822	-0.00783	-0.35776	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	GRDA	GRECCTG_1 20.000 345KV	325	-0.00787	-0.35772	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	GRDA	GRECSTG_1 17.500 345KV	192	-0.00787	-0.35772	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	WFEC	HUGO 138KV	440	-0.01282	-0.35277	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	WERE	JEFFREY ENERGY CENTER 230KV	730	0.0162	-0.38179	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	WERE	JEFFREY ENERGY CENTER 345KV	1460	0.01611	-0.3817	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	OKGE	KAYWND12 34.500 345KV	180	-0.00484	-0.36075	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	SWPA	KENNETT 69KV	29	-0.00021	-0.36538	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	AEPW	KNOXLEE 138KV	35	-0.0081	-0.35749	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	WERE	LAWRENCE ENERGY CENTER 115KV	105	0.01353	-0.37912	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	WERE	LAWRENCE ENERGY CENTER 230KV	369.9012	0.0138	-0.37939	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	AEPW	LEBROCK 345KV	283.2982	-0.00819	-0.3574	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	WERE	LYONS 115KV	9	0.02562	-0.39121	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	SWPA	MALDEN 69KV	7	0.00008	-0.36567	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	WERE	MARSHGEN1 0.6900 34KV	30	0.01721	-0.3828	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	OKGE	MUSKOGEE 345KV	1542.5	-0.01213	-0.35346	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	AEPW	NORTHEASTERN STATION 138KV	841	-0.01002	-0.35557	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	AEPW	NORTHEASTERN STATION 345KV	460	-0.00919	-0.3564	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	AEPW	OEC 345KV	1029.082	-0.01136	-0.35423	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	OMPA	OMCDLEC1 13.800 345KV	46.73469	-0.00815	-0.35744	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	AEPW	PIRKEY GENERATION 138KV	675	-0.00817	-0.35742	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	SWPA	POPLAR BLUFF 161KV	20	0.00046	-0.36605	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	AEPW	RIVERSIDE STATION 138KV	906.3462	-0.0125	-0.35309	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	WERE	S ALMA 3 115.00 115KV	11.6	0.01647	-0.38206	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	WERE	SCRANTON 115KV	4.08	0.0154	-0.38099	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	SWPA	SIKESTON 161KV	235	0.00066	-0.36625	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	WERE	SLATEGEN1 0.6900 34KV	150	-0.0084	-0.35719	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	WERE	SOUTH SENECA 115KV	8.3	0.01621	-0.3818	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	WERE	TECUMSEH ENERGY CENTER 115KV	70	0.01459	-0.38018	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	AEPW	TURK 138KV	643	-0.0099	-0.35569	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	AEPW	WELSH 345KV	1056	-0.0091	-0.35649	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	AEPW	WILKES 138KV	300.3759	-0.00855	-0.35704	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	AEPW	WILKES 345KV	348	-0.0084	-0.35719	7
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	WFEC	ANADARKO 138KV	362.6741	-0.02497	-0.34062	8
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	OKGE	ARBWND11 34.500 138KV	100	-0.01648	-0.34911	8
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	OKGE	BLKWLWD1 34.500 69KV	59.8	-0.03109	-0.3345	8
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	AEPW	BUFFCK1 34.500 230KV	99	-0.0339	-0.33169	8
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	OKGE	CANDN12 34.500 345KV	298.2	-0.02215	-0.34344	8
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	OKGE	CHSHMVW1 34.500 345KV	202	-0.02082	-0.34477	8
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	AEPW	COMANCHE 138KV	170	-0.01757	-0.34802	8
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	AEPW	COMANCHE 69KV	71	-0.01905	-0.34654	8
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	OKGE	GRADY CO SUB 345KV	199	-0.02078	-0.34481	8
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	OKGE	HORSESHOE LAKE 138KV	581	-0.02221	-0.34338	8
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	OKGE	HORSESHOE LAKE 69KV	16	-0.02181	-0.34378	8
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	OKGE	MCCLAIN 138KV	481.5977	-0.02295	-0.34264	8
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	WFEC	MEERS CO SUB 138KV	74.25	-0.02511	-0.34048	8
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	OKGE	MNCWND31 0.6900 34KV	100	-0.02078	-0.34481	8
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	OKGE	MUSTANG 138KV	221	-0.0239	-0.34169	8
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	OMPA	OMPA-PONCA CITY 69KV	11.89233	-0.02591	-0.33968	8
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	OKGE	REDBUD 345KV	1034	-0.02124	-0.34435	8
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	AEPW	RKYRDGW1-1 34.500 138KV	150	-0.04362	-0.32197	8
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	OKGE	SEMINOLE 138KV	202.4258	-0.0187	-0.34689	8
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	OKGE	SEMINOLE 345KV	470	-0.01884	-0.34675	8
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	WFEC	SLICKHILLS4 138.00 138KV	99	-0.02511	-0.34048	8
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	OKGE	SMITH COGEN 138KV	107	-0.02369	-0.3419	8
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	OKGE	SOONER 138KV	535	-0.02249	-0.3431	8
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	OKGE	SOONER 345KV	537	-0.01668	-0.34891	8
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	AEPW	SOUTHWESTERN STATION 138KV	311	-0.0248	-0.34079	8
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	OKGE	SPRING CREEK UNIT 3 AND 4 345KV	300	-0.02142	-0.34417	8
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	AEPW	WTH WIND 34.500 34KV	147	-0.0509	-0.31469	8
OMPA	OMPA-LAVERNE 69KV	4	-0.12951	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.34925	8
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	OKGE	BRKWND11 34.500 138KV	70	-0.05941	-0.30618	9
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	OKGE	DEWEY CO SUB 4 138KV	130	-0.07565	-0.28994	9
OMPA	OMPA-KINGFISHER BOWMAN 69KV	8.592	-0.06148	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.28122	9
OMPA	OMPA-LAVERNE 69KV	4	-0.12951	OKGE	OU SPIRIT 138KV	102	0.17544	-0.30495	9
OMPA	OMPA-LAVERNE 69KV	4	-0.12951	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.30495	9
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	WFEC	HAMMON CO SUB 138KV	114	-0.10117	-0.26442	10
OMPA	OMPA-MANGUM 69KV	5.198	-0.04514	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.26488	10
WFEC	ANADARKO 69KV	70	-0.02783	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.24757	11
GRDA	BOOMER 69KV	24	-0.0226	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.24234	11

Table 4 - Potential Redispatch Relief Pairs to Prevent Deferral of Service

AEPW	COGENTRIX 345KV	381.723	-0.01255	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.23229	11
OKGE	HORSESHOE LAKE 138KV	294	-0.02221	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.24195	11
OKGE	MCCLAIN 138KV	38.4023	-0.02295	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.24269	11
OKGE	MUSKOGEE 345KV	37.5	-0.01213	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.23187	11
OKGE	MUSTANG 138KV	149.5	-0.0239	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.24364	11
OKGE	MUSTANG 69KV	53	-0.02522	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.24496	11
AEPW	OEC 345KV	180.9185	-0.01136	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.2311	11
OMPA	OMPA-KINGFISHER BOWMAN 69KV	8.592	-0.06148	OKGE	OU SPIRIT 138KV	102	0.17544	-0.23692	11
OMPA	OMPA-KINGFISHER BOWMAN 69KV	8.592	-0.06148	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.23692	11
OMPA	OMPA-LAVERNE 69KV	4	-0.12951	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.24498	11
OMPA	OMPA-LAVERNE 69KV	4	-0.12951	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.24498	11
OMPA	OMPA-LAVERNE 69KV	4	-0.12951	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.24498	11
OMPA	OMPA-PAWHUSKA NORTHEAST 138KV	6.7	-0.0144	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.23414	11
OMPA	OMPA-PONCA CITY 69KV	128.8107	-0.02591	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.24565	11
OKGE	REDBUD 345KV	166	-0.02124	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.24098	11
AEPW	RIVERSIDE STATION 138KV	141.6538	-0.0125	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.23224	11
OKGE	SEMINOLE 138KV	302.5742	-0.0187	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.23844	11
OKGE	SEMINOLE 345KV	559.6	-0.01884	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.23858	11
OKGE	SMITH COGEN 138KV	16	-0.02369	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.24343	11
OKGE	SOONER 138KV	5	-0.02249	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.24223	11
AEPW	SOUTHWESTERN STATION 138KV	302	-0.0248	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.24454	11
OKGE	SPRING CREEK UNIT 3 AND 4 345KV	36	-0.02142	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.24116	11
OKGE	TINKER 5G 138KV	62	-0.02157	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.24131	11
AEPW	TULSA POWER STATION 138KV	318	-0.01232	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.23206	11
AEPW	WELEETKA 138KV	157	-0.01484	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.23458	11
AEPW	ARSENAL HILL 69KV	110	-0.00752	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.22726	12
WERE	CHANUTE 69KV	37.8	0.0018	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.21794	12
WERE	CITY OF BURLINGTON 69KV	12.5	0.00772	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.21202	12
WERE	CITY OF ERIE 69KV	26	0.0018	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.21794	12
WERE	CITY OF IOLA 69KV	29.073	0.00294	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.2168	12
WERE	CITY OF WELLINGTON 69KV	32.695	0.00318	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.21656	12
WERE	CITY OF WINFIELD 69KV	36.8	-0.0033	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.22304	12
GRDA	COFFGEN6_1 12.470 69KV	53	-0.0053	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.22504	12
AEPW	EASTMAN 138KV	137.3936	-0.00818	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.22792	12
AEPW	ELKINS GENERATOR 69KV	60	-0.00759	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.22733	12
AEPW	FITZHUGH 161KV	94.84	-0.00719	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.22693	12
AEPW	FULTON 115KV	153	-0.00884	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.22858	12
GRDA	GRDA1 345KV	22.51779	-0.00783	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.22757	12
SWPA	KENNETT 69KV	5.299999	-0.00021	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.21995	12
AEPW	KNOXLEE 138KV	434	-0.0081	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.22784	12
AEPW	LEBROCK 345KV	226.7018	-0.00819	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.22793	12
AEPW	LIEBERMAN 138KV	242	-0.00766	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.2274	12
AEPW	LONESTAR POWER PLANT 69KV	50	-0.00864	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.22838	12
SWPA	MALDEN 69KV	7.200001	0.00008	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.21966	12
AEPW	NORTH MARSHALL 69KV	5	-0.00807	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.22781	12
AEPW	NORTHEASTERN STATION 138KV	15.00003	-0.01002	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.22976	12
AEPW	NORTHEASTERN STATION 345KV	9	-0.00919	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.22893	12
OMPA	OMCDLEC1 13.800 345KV	38.56531	-0.00815	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.22789	12
OMPA	OMPA-MANGUM 69KV	5.198	-0.04514	OKGE	OU SPIRIT 138KV	102	0.17544	-0.22058	12
OMPA	OMPA-MANGUM 69KV	5.198	-0.04514	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.22058	12
WERE	OXFORD 138KV	4.5	-0.00023	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.21997	12
SWPA	PARAGOULD 161KV	31	-0.00068	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.22042	12
SWPA	PIGGOTT 69KV	7.5	-0.0001	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.21984	12
SWPA	POPLAR BLUFF 161KV	13.8	0.00046	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.21928	12
GRDA	SALINA 161KV	129	-0.00815	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.22789	12
AEPW	TONTITOWN 161KV	301	-0.00757	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.22731	12
AEPW	TURK 138KV	7	-0.0099	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.22964	12
AEPW	WILKES 138KV	222.6241	-0.00855	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.22829	12
AEPW	WILKES 345KV	4	-0.0084	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.22814	12
WFEC	ANADARKO 69KV	70	-0.02783	OKGE	OU SPIRIT 138KV	102	0.17544	-0.20327	13
WFEC	ANADARKO 69KV	70	-0.02783	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.20327	13
GRDA	BOOMER 69KV	24	-0.0226	OKGE	OU SPIRIT 138KV	102	0.17544	-0.19804	13
GRDA	BOOMER 69KV	24	-0.0226	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.19804	13
WERE	CC5SHAR1 12.470 69KV	10	0.00837	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.21137	13
WERE	CC6SHAR1 12.470 69KV	10	0.00837	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.21137	13
WERE	CITY OF AUGUSTA 69KV	18.09	0.0102	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.20954	13
WERE	CITY OF MULVANE 69KV	7.59	0.01279	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.20695	13
WERE	CLAYGEN1 13.200 115KV	29.67	0.01873	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.20101	13
WERE	EMPORIA ENERGY CENTER 345KV	465	0.01611	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.20363	13
WERE	EVANS ENERGY CENTER 138KV	181.2041	0.01813	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.20161	13
WERE	EVANS ENERGY CENTER 4KV	148	0.01813	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.20161	13
WERE	GILL ENERGY CENTER 138KV	166	0.01649	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.20325	13
OKGE	HORSESHOE LAKE 138KV	294	-0.02221	OKGE	OU SPIRIT 138KV	102	0.17544	-0.19765	13
OKGE	HORSESHOE LAKE 138KV	294	-0.02221	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.19765	13
WERE	LAWRENCE ENERGY CENTER 115KV	78.00002	0.01353	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.20621	13
WERE	LAWRENCE ENERGY CENTER 230KV	36.09879	0.0138	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.20594	13
OKGE	MCCLAIN 138KV	38.4023	-0.02295	OKGE	OU SPIRIT 138KV	102	0.17544	-0.19839	13
OKGE	MCCLAIN 138KV	38.4023	-0.02295	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.19839	13
WERE	MUSCOTA2 69.000 69KV	5.55	0.01354	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.2062	13
OKGE	MUSTANG 138KV	149.5	-0.0239	OKGE	OU SPIRIT 138KV	102	0.17544	-0.19934	13
OKGE	MUSTANG 138KV	149.5	-0.0239	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.19934	13
OKGE	MUSTANG 69KV	53	-0.02522	OKGE	OU SPIRIT 138KV	102	0.17544	-0.20066	13
OKGE	MUSTANG 69KV	53	-0.02522	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.20066	13
OMPA	OMPA-PONCA CITY 69KV	128.8107	-0.02591	OKGE	OU SPIRIT 138KV	102	0.17544	-0.20135	13
OMPA	OMPA-PONCA CITY 69KV	128.8107	-0.02591	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.20135	13
OKGE	REDBUD 345KV	166	-0.02124	OKGE	OU SPIRIT 138KV	102	0.17544	-0.19668	13
OKGE	REDBUD 345KV	166	-0.02124	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.19668	13
WERE	SALINA MAIN 115KV	10.18	0.02179	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.19795	13
OKGE	SMITH COGEN 138KV	16	-0.02369	OKGE	OU SPIRIT 138KV	102	0.17544	-0.19913	13
OKGE	SMITH COGEN 138KV	16	-0.02369	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.19913	13
OKGE	SOONER 138KV	5	-0.02249	OKGE	OU SPIRIT 138KV	102	0.17544	-0.19793	13
OKGE	SOONER 138KV	5	-0.02249	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.19793	13
WERE	SOUTH SENECA 115KV	8.4	0.01621	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.20353	13
AEPW	SOUTHWESTERN STATION 138KV	302	-0.0248	OKGE	OU SPIRIT 138KV	102	0.17544	-0.20024	13
AEPW	SOUTHWESTERN STATION 138KV	302	-0.0248	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.20024	13
OKGE	SPRING CREEK UNIT 3 AND 4 345KV	36	-0.02142	OKGE	OU SPIRIT 138KV	102	0.17544	-0.19686	13
OKGE	SPRING CREEK UNIT 3 AND 4 345KV	36	-0.02142	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.19686	13
WERE	TECUMSEH ENERGY CENTER 115KV	155	0.01459	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.20515	13
OKGE	TINKER 5G 138KV	62	-0.02157	OKGE	OU SPIRIT 138KV	102	0.17544	-0.19701	13
OKGE	TINKER 5G 138KV	62	-0.02157	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.19701	13
AEPW	ARSENAL HILL 69KV	110	-0.00752	OKGE	OU SPIRIT 138KV	102	0.17544	-0.18296	14
AEPW	ARSENAL HILL 69KV	110	-0.00752	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.18296	14
WERE	BPU - CITY OF MCPHERSON 115KV	238	0.02401	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.19573	14
AEPW	COGENTRIX 345KV	381.723	-0.01255	OKGE	OU SPIRIT 138KV	102	0.17544	-0.18799	14
AEPW	COGENTRIX 345KV	381.723	-0.01255	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.18799	14
AEPW	EASTMAN 138KV	137.3936	-0.00818	OKGE	OU SPIRIT 138KV	102	0.17544	-0.18362	14
AEPW	EASTMAN 138KV	137.3936	-0.00818	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.18362	14
AEPW	ELKINS GENERATOR 69KV	60	-0.00759	OKGE	OU SPIRIT 138KV	102	0.17544	-0.18303	14
AEPW	ELKINS GENERATOR 69KV	60	-0.00759	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.18303	14
AEPW	FITZHUGH 161KV	94.84	-0.00719	OKGE	OU SPIRIT 138KV	102	0.17544	-0.18263	14
AEPW	FITZHUGH 161KV	94.84	-0.00719	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.18263	14
AEPW	FULTON 115KV	153	-0.00884	OKGE	OU SPIRIT 138KV	102	0.17544	-0.18428	14
AEPW	FULTON 115KV	153	-0.00884	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.18428	14

Table 4 - Potential Redispatch Relief Pairs to Prevent Deferral of Service

GRDA	GRDA1 345KV	22.51779	-0.00783	OKGE	OU SPIRIT 138KV	102	0.17544	-0.18327	14
GRDA	GRDA1 345KV	22.51779	-0.00783	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.18327	14
WERE	HUTCHINSON ENERGY CENTER 115KV	235	0.02417	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.19557	14
WERE	HUTCHINSON ENERGY CENTER 4KV	56	0.02417	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.19557	14
WERE	HUTCHINSON ENERGY CENTER 69KV	56	0.02416	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.19558	14
AEPW	KNOXLEE 138KV	434	-0.0081	OKGE	OU SPIRIT 138KV	102	0.17544	-0.18354	14
AEPW	KNOXLEE 138KV	434	-0.0081	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.18354	14
AEPW	LEBROCK 345KV	226.7018	-0.00819	OKGE	OU SPIRIT 138KV	102	0.17544	-0.18363	14
AEPW	LEBROCK 345KV	226.7018	-0.00819	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.18363	14
AEPW	LIEBERMAN 138KV	242	-0.00766	OKGE	OU SPIRIT 138KV	102	0.17544	-0.1831	14
AEPW	LIEBERMAN 138KV	242	-0.00766	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.1831	14
AEPW	LONESTAR POWER PLANT 69KV	50	-0.00864	OKGE	OU SPIRIT 138KV	102	0.17544	-0.18408	14
AEPW	LONESTAR POWER PLANT 69KV	50	-0.00864	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.18408	14
OKGE	MUSKOGEE 345KV	37.5	-0.01213	OKGE	OU SPIRIT 138KV	102	0.17544	-0.18757	14
OKGE	MUSKOGEE 345KV	37.5	-0.01213	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.18757	14
AEPW	NORTH MARSHALL 69KV	5	-0.00807	OKGE	OU SPIRIT 138KV	102	0.17544	-0.18351	14
AEPW	NORTH MARSHALL 69KV	5	-0.00807	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.18351	14
AEPW	NORTHEASTERN STATION 138KV	15.00003	-0.01002	OKGE	OU SPIRIT 138KV	102	0.17544	-0.18546	14
AEPW	NORTHEASTERN STATION 138KV	15.00003	-0.01002	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.18546	14
AEPW	NORTHEASTERN STATION 345KV	9	-0.00919	OKGE	OU SPIRIT 138KV	102	0.17544	-0.18463	14
AEPW	NORTHEASTERN STATION 345KV	9	-0.00919	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.18463	14
AEPW	OEC 345KV	180.9185	-0.01136	OKGE	OU SPIRIT 138KV	102	0.17544	-0.1868	14
AEPW	OEC 345KV	180.9185	-0.01136	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.1868	14
OMPA	OMCDLEC1 13.800 345KV	38.56531	-0.00815	OKGE	OU SPIRIT 138KV	102	0.17544	-0.18359	14
OMPA	OMCDLEC1 13.800 345KV	38.56531	-0.00815	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.18359	14
OMPA	OMPA-PAWHUSKA NORTHEAST 138KV	6.7	-0.0144	OKGE	OU SPIRIT 138KV	102	0.17544	-0.18984	14
OMPA	OMPA-PAWHUSKA NORTHEAST 138KV	6.7	-0.0144	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.18984	14
AEPW	RIVERSIDE STATION 138KV	141.6538	-0.0125	OKGE	OU SPIRIT 138KV	102	0.17544	-0.18794	14
AEPW	RIVERSIDE STATION 138KV	141.6538	-0.0125	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.18794	14
GRDA	SALINA 161KV	129	-0.00815	OKGE	OU SPIRIT 138KV	102	0.17544	-0.18359	14
GRDA	SALINA 161KV	129	-0.00815	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.18359	14
OKGE	SEMINOLE 138KV	302.5742	-0.0187	OKGE	OU SPIRIT 138KV	102	0.17544	-0.19414	14
OKGE	SEMINOLE 138KV	302.5742	-0.0187	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.19414	14
OKGE	SEMINOLE 345KV	559.6	-0.01884	OKGE	OU SPIRIT 138KV	102	0.17544	-0.19428	14
OKGE	SEMINOLE 345KV	559.6	-0.01884	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.19428	14
AEPW	TONTITOWN 161KV	301	-0.00757	OKGE	OU SPIRIT 138KV	102	0.17544	-0.18301	14
AEPW	TONTITOWN 161KV	301	-0.00757	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.18301	14
AEPW	TULSA POWER STATION 138KV	318	-0.01232	OKGE	OU SPIRIT 138KV	102	0.17544	-0.18776	14
AEPW	TULSA POWER STATION 138KV	318	-0.01232	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.18776	14
AEPW	TURK 138KV	7	-0.0099	OKGE	OU SPIRIT 138KV	102	0.17544	-0.18534	14
AEPW	TURK 138KV	7	-0.0099	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.18534	14
AEPW	WELEETKA 138KV	157	-0.01484	OKGE	OU SPIRIT 138KV	102	0.17544	-0.19028	14
AEPW	WELEETKA 138KV	157	-0.01484	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.19028	14
AEPW	WILKES 138KV	222.6241	-0.00855	OKGE	OU SPIRIT 138KV	102	0.17544	-0.18399	14
AEPW	WILKES 138KV	222.6241	-0.00855	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.18399	14
WERE	CHANUTE 69KV	37.8	0.0018	OKGE	OU SPIRIT 138KV	102	0.17544	-0.17364	15
WERE	CHANUTE 69KV	37.8	0.0018	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.17364	15
WERE	CITY OF ERIE 69KV	26	0.0018	OKGE	OU SPIRIT 138KV	102	0.17544	-0.17364	15
WERE	CITY OF ERIE 69KV	26	0.0018	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.17364	15
WERE	CITY OF IOLA 69KV	29.073	0.00294	OKGE	OU SPIRIT 138KV	102	0.17544	-0.1725	15
WERE	CITY OF IOLA 69KV	29.073	0.00294	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.1725	15
WERE	CITY OF WELLINGTON 69KV	32.695	0.00318	OKGE	OU SPIRIT 138KV	102	0.17544	-0.17226	15
WERE	CITY OF WELLINGTON 69KV	32.695	0.00318	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.17226	15
WERE	CITY OF WINFIELD 69KV	36.8	-0.0033	OKGE	OU SPIRIT 138KV	102	0.17544	-0.17874	15
WERE	CITY OF WINFIELD 69KV	36.8	-0.0033	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.17874	15
GRDA	COFFGEN6_1 12.470 69KV	53	-0.0053	OKGE	OU SPIRIT 138KV	102	0.17544	-0.18074	15
GRDA	COFFGEN6_1 12.470 69KV	53	-0.0053	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.18074	15
SWPA	KENNETT 69KV	5.299999	-0.00021	OKGE	OU SPIRIT 138KV	102	0.17544	-0.17565	15
SWPA	KENNETT 69KV	5.299999	-0.00021	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.17565	15
SWPA	MALDEN 69KV	7.200001	0.00008	OKGE	OU SPIRIT 138KV	102	0.17544	-0.17536	15
SWPA	MALDEN 69KV	7.200001	0.00008	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.17536	15
OMPA	OMPA-KINGFISHER BOWMAN 69KV	8.592	-0.06148	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.17695	15
OMPA	OMPA-KINGFISHER BOWMAN 69KV	8.592	-0.06148	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.17695	15
OMPA	OMPA-KINGFISHER BOWMAN 69KV	8.592	-0.06148	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.17695	15
SWPA	PARAGOULD 161KV	31	-0.00068	OKGE	OU SPIRIT 138KV	102	0.17544	-0.17612	15
SWPA	PARAGOULD 161KV	31	-0.00068	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.17612	15
SWPA	PIGGOTT 69KV	7.5	-0.0001	OKGE	OU SPIRIT 138KV	102	0.17544	-0.17554	15
SWPA	PIGGOTT 69KV	7.5	-0.0001	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.17554	15
SWPA	POPLAR BLUFF 161KV	13.8	0.00046	OKGE	OU SPIRIT 138KV	102	0.17544	-0.17498	15
SWPA	POPLAR BLUFF 161KV	13.8	0.00046	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.17498	15
WERE	CC5SHAR1 12.470 69KV	10	0.00837	OKGE	OU SPIRIT 138KV	102	0.17544	-0.16707	16
WERE	CC5SHAR1 12.470 69KV	10	0.00837	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.16707	16
WERE	CC6SHAR1 12.470 69KV	10	0.00837	OKGE	OU SPIRIT 138KV	102	0.17544	-0.16707	16
WERE	CC6SHAR1 12.470 69KV	10	0.00837	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.16707	16
WERE	CITY OF AUGUSTA 69KV	18.09	0.0102	OKGE	OU SPIRIT 138KV	102	0.17544	-0.16524	16
WERE	CITY OF AUGUSTA 69KV	18.09	0.0102	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.16524	16
WERE	CITY OF BURLINGTON 69KV	12.5	0.00772	OKGE	OU SPIRIT 138KV	102	0.17544	-0.16772	16
WERE	CITY OF BURLINGTON 69KV	12.5	0.00772	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.16772	16
WERE	CITY OF MULVANE 69KV	7.59	0.01279	OKGE	OU SPIRIT 138KV	102	0.17544	-0.16265	16
WERE	CITY OF MULVANE 69KV	7.59	0.01279	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.16265	16
WERE	LAWRENCE ENERGY CENTER 115KV	78.00002	0.01353	OKGE	OU SPIRIT 138KV	102	0.17544	-0.16191	16
WERE	LAWRENCE ENERGY CENTER 115KV	78.00002	0.01353	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.16191	16
WERE	LAWRENCE ENERGY CENTER 230KV	36.09879	0.0138	OKGE	OU SPIRIT 138KV	102	0.17544	-0.16164	16
WERE	LAWRENCE ENERGY CENTER 230KV	36.09879	0.0138	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.16164	16
WERE	MUSCOTA2 69.000 69KV	5.55	0.01354	OKGE	OU SPIRIT 138KV	102	0.17544	-0.1619	16
WERE	MUSCOTA2 69.000 69KV	5.55	0.01354	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.1619	16
WERE	TECUMSEH ENERGY CENTER 115KV	155	0.01459	OKGE	OU SPIRIT 138KV	102	0.17544	-0.16085	16
WERE	TECUMSEH ENERGY CENTER 115KV	155	0.01459	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.16085	16
WERE	BPU - CITY OF MCPHERSON 115KV	238	0.02401	OKGE	OU SPIRIT 138KV	102	0.17544	-0.15143	17
WERE	BPU - CITY OF MCPHERSON 115KV	238	0.02401	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.15143	17
WERE	CLAYGEN1 13.200 115KV	29.67	0.01873	OKGE	OU SPIRIT 138KV	102	0.17544	-0.15671	17
WERE	CLAYGEN1 13.200 115KV	29.67	0.01873	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.15671	17
WERE	EMPORIA ENERGY CENTER 345KV	465	0.01611	OKGE	OU SPIRIT 138KV	102	0.17544	-0.15933	17
WERE	EMPORIA ENERGY CENTER 345KV	465	0.01611	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.15933	17
WERE	EVANS ENERGY CENTER 138KV	181.2041	0.01813	OKGE	OU SPIRIT 138KV	102	0.17544	-0.15731	17
WERE	EVANS ENERGY CENTER 138KV	181.2041	0.01813	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.15731	17
WERE	EVANS ENERGY CENTER 4KV	148	0.01813	OKGE	OU SPIRIT 138KV	102	0.17544	-0.15731	17
WERE	EVANS ENERGY CENTER 4KV	148	0.01813	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.15731	17
WERE	GILL ENERGY CENTER 138KV	166	0.01649	OKGE	OU SPIRIT 138KV	102	0.17544	-0.15895	17
WERE	GILL ENERGY CENTER 138KV	166	0.01649	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.15895	17
WERE	HUTCHINSON ENERGY CENTER 115KV	235	0.02417	OKGE	OU SPIRIT 138KV	102	0.17544	-0.15127	17
WERE	HUTCHINSON ENERGY CENTER 115KV	235	0.02417	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.15127	17
WERE	HUTCHINSON ENERGY CENTER 4KV	56	0.02417	OKGE	OU SPIRIT 138KV	102	0.17544	-0.15127	17
WERE	HUTCHINSON ENERGY CENTER 4KV	56	0.02417	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.15127	17
WERE	HUTCHINSON ENERGY CENTER 69KV	56	0.02416	OKGE	OU SPIRIT 138KV	102	0.17544	-0.15128	17
WERE	HUTCHINSON ENERGY CENTER 69KV	56	0.02416	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.15128	17
WERE	SALINA MAIN 115KV	10.18	0.02179	OKGE	OU SPIRIT 138KV	102	0.17544	-0.15365	17
WERE	SALINA MAIN 115KV	10.18	0.02179	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.15365	17
WERE	SOUTH SENECA 115KV	8.4	0.01621	OKGE	OU SPIRIT 138KV	102	0.17544	-0.15923	17
WERE	SOUTH SENECA 115KV	8.4	0.01621	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.15923	17
WFEC	ANADARKO 69KV	70	-0.02783	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.1433	18
WFEC	ANADARKO 69KV	70	-0.02783	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.1433	18

Table 4 - Potential Redispatch Relief Pairs to Prevent Deferral of Service

WFEC	ANADARKO 69KV	70	-0.02783	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.1433	18
GRDA	BOOMER 69KV	24	-0.0226	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.13807	19
GRDA	BOOMER 69KV	24	-0.0226	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.13807	19
GRDA	BOOMER 69KV	24	-0.0226	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.13807	19
OKGE	HORSESHOE LAKE 138KV	294	-0.02221	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.13768	19
OKGE	HORSESHOE LAKE 138KV	294	-0.02221	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.13768	19
OKGE	HORSESHOE LAKE 138KV	294	-0.02221	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.13768	19
OKGE	MCCLAIN 138KV	38.4023	-0.02295	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.13842	19
OKGE	MCCLAIN 138KV	38.4023	-0.02295	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.13842	19
OKGE	MCCLAIN 138KV	38.4023	-0.02295	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.13842	19
OKGE	MUSTANG 138KV	149.5	-0.0239	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.13937	19
OKGE	MUSTANG 138KV	149.5	-0.0239	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.13937	19
OKGE	MUSTANG 138KV	149.5	-0.0239	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.13937	19
OKGE	MUSTANG 69KV	53	-0.02522	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.14069	19
OKGE	MUSTANG 69KV	53	-0.02522	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.14069	19
OKGE	MUSTANG 69KV	53	-0.02522	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.14069	19
OMPA	OMPA-PONCA CITY 69KV	128.8107	-0.02591	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.14138	19
OMPA	OMPA-PONCA CITY 69KV	128.8107	-0.02591	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.14138	19
OMPA	OMPA-PONCA CITY 69KV	128.8107	-0.02591	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.14138	19
OKGE	PALDRW21 34.500 345KV	300	0.08398	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.13576	19
OKGE	REDBUD 345KV	166	-0.02124	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.13671	19
OKGE	REDBUD 345KV	166	-0.02124	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.13671	19
OKGE	REDBUD 345KV	166	-0.02124	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.13671	19
OKGE	SMITH COGEN 138KV	16	-0.02369	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.13916	19
OKGE	SMITH COGEN 138KV	16	-0.02369	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.13916	19
OKGE	SMITH COGEN 138KV	16	-0.02369	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.13916	19
AEPW	SOUTHWESTERN STATION 138KV	302	-0.0248	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.14027	19
AEPW	SOUTHWESTERN STATION 138KV	302	-0.0248	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.14027	19
AEPW	SOUTHWESTERN STATION 138KV	302	-0.0248	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.14027	19
OKGE	SPRING CREEK UNIT 3 AND 4 345KV	36	-0.02142	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.13689	19
OKGE	SPRING CREEK UNIT 3 AND 4 345KV	36	-0.02142	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.13689	19
OKGE	SPRING CREEK UNIT 3 AND 4 345KV	36	-0.02142	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.13689	19
OKGE	TINKER 5G 138KV	62	-0.02157	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.13704	19
OKGE	TINKER 5G 138KV	62	-0.02157	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.13704	19
OKGE	TINKER 5G 138KV	62	-0.02157	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.13704	19
OMPA	OMPA-PAWHUSKA NORTHEAST 138KV	6.7	-0.0144	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.12987	20
OMPA	OMPA-PAWHUSKA NORTHEAST 138KV	6.7	-0.0144	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.12987	20
OMPA	OMPA-PAWHUSKA NORTHEAST 138KV	6.7	-0.0144	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.12987	20
OKGE	SEMINOLE 138KV	302.5742	-0.0187	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.13417	20
OKGE	SEMINOLE 138KV	302.5742	-0.0187	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.13417	20
OKGE	SEMINOLE 138KV	302.5742	-0.0187	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.13417	20
OKGE	SEMINOLE 345KV	559.6	-0.01884	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.13431	20
OKGE	SEMINOLE 345KV	559.6	-0.01884	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.13431	20
OKGE	SEMINOLE 345KV	559.6	-0.01884	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.13431	20
AEPW	WELEETKA 138KV	157	-0.01484	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.13031	20
AEPW	WELEETKA 138KV	157	-0.01484	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.13031	20
AEPW	WELEETKA 138KV	157	-0.01484	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.13031	20
AEPW	ARSENAL HILL 69KV	110	-0.00752	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.12299	21
AEPW	ARSENAL HILL 69KV	110	-0.00752	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.12299	21
AEPW	ARSENAL HILL 69KV	110	-0.00752	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.12299	21
AEPW	COGENTRIX 345KV	381.723	-0.01255	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.12802	21
AEPW	COGENTRIX 345KV	381.723	-0.01255	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.12802	21
AEPW	COGENTRIX 345KV	381.723	-0.01255	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.12802	21
AEPW	EASTMAN 138KV	137.3936	-0.00818	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.12365	21
AEPW	EASTMAN 138KV	137.3936	-0.00818	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.12365	21
AEPW	EASTMAN 138KV	137.3936	-0.00818	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.12365	21
AEPW	ELKINS GENERATOR 69KV	60	-0.00759	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.12306	21
AEPW	ELKINS GENERATOR 69KV	60	-0.00759	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.12306	21
AEPW	ELKINS GENERATOR 69KV	60	-0.00759	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.12306	21
AEPW	FULTON 115KV	153	-0.00884	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.12431	21
AEPW	FULTON 115KV	153	-0.00884	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.12431	21
AEPW	FULTON 115KV	153	-0.00884	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.12431	21
GRDA	GRDA1 345KV	22.51779	-0.00783	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.1233	21
GRDA	GRDA1 345KV	22.51779	-0.00783	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.1233	21
GRDA	GRDA1 345KV	22.51779	-0.00783	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.1233	21
AEPW	KNOXLEE 138KV	434	-0.0081	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.12357	21
AEPW	KNOXLEE 138KV	434	-0.0081	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.12357	21
AEPW	KNOXLEE 138KV	434	-0.0081	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.12357	21
AEPW	LEBROCK 345KV	226.7018	-0.00819	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.12366	21
AEPW	LEBROCK 345KV	226.7018	-0.00819	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.12366	21
AEPW	LEBROCK 345KV	226.7018	-0.00819	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.12366	21
AEPW	LIEBERMAN 138KV	242	-0.00766	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.12313	21
AEPW	LIEBERMAN 138KV	242	-0.00766	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.12313	21
AEPW	LIEBERMAN 138KV	242	-0.00766	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.12313	21
AEPW	LONESTAR POWER PLANT 69KV	50	-0.00864	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.12411	21
AEPW	LONESTAR POWER PLANT 69KV	50	-0.00864	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.12411	21
AEPW	LONESTAR POWER PLANT 69KV	50	-0.00864	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.12411	21
OKGE	MUSKOGEE 345KV	37.5	-0.01213	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.1276	21
OKGE	MUSKOGEE 345KV	37.5	-0.01213	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.1276	21
OKGE	MUSKOGEE 345KV	37.5	-0.01213	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.1276	21
AEPW	NORTHEASTERN STATION 138KV	15.00003	-0.01002	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.12549	21
AEPW	NORTHEASTERN STATION 138KV	15.00003	-0.01002	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.12549	21
AEPW	NORTHEASTERN STATION 138KV	15.00003	-0.01002	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.12549	21
AEPW	NORTHEASTERN STATION 345KV	9	-0.00919	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.12466	21
AEPW	NORTHEASTERN STATION 345KV	9	-0.00919	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.12466	21
AEPW	NORTHEASTERN STATION 345KV	9	-0.00919	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.12466	21
AEPW	OEC 345KV	180.9185	-0.01136	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.12683	21
AEPW	OEC 345KV	180.9185	-0.01136	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.12683	21
AEPW	OEC 345KV	180.9185	-0.01136	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.12683	21
OMPA	OMCDLEC1 13.800 345KV	38.56531	-0.00815	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.12362	21
OMPA	OMCDLEC1 13.800 345KV	38.56531	-0.00815	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.12362	21
OMPA	OMCDLEC1 13.800 345KV	38.56531	-0.00815	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.12362	21
AEPW	RIVERSIDE STATION 138KV	141.6538	-0.0125	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.12797	21
AEPW	RIVERSIDE STATION 138KV	141.6538	-0.0125	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.12797	21
AEPW	RIVERSIDE STATION 138KV	141.6538	-0.0125	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.12797	21
GRDA	SALINA 161KV	129	-0.00815	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.12362	21
GRDA	SALINA 161KV	129	-0.00815	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.12362	21
GRDA	SALINA 161KV	129	-0.00815	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.12362	21
AEPW	TONTITOWN 161KV	301	-0.00757	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.12304	21
AEPW	TONTITOWN 161KV	301	-0.00757	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.12304	21
AEPW	TONTITOWN 161KV	301	-0.00757	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.12304	21
AEPW	TULSA POWER STATION 138KV	318	-0.01232	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.12779	21
AEPW	TULSA POWER STATION 138KV	318	-0.01232	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.12779	21
AEPW	TULSA POWER STATION 138KV	318	-0.01232	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.12779	21
AEPW	TURK 138KV	7	-0.0099	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.12537	21
AEPW	TURK 138KV	7	-0.0099	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.12537	21
AEPW	TURK 138KV	7	-0.0099	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.12537	21
AEPW	WILKES 138KV	222.6241	-0.00855	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.12402	21
AEPW	WILKES 138KV	222.6241	-0.00855	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.12402	21
AEPW	WILKES 138KV	222.6241	-0.00855	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.12402	21
WERE	CITY OF WINFIELD 69KV	36.8	-0.0033	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.11877	22

Table 4 - Potential Redispatch Relief Pairs to Prevent Deferral of Service

WERE	CITY OF WINFIELD 69KV	36.8	-0.0033	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.11877	22
WERE	CITY OF WINFIELD 69KV	36.8	-0.0033	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.11877	22
GRDA	COFFGEN6_1 12.470 69KV	53	-0.0053	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.12077	22
GRDA	COFFGEN6_1 12.470 69KV	53	-0.0053	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.12077	22
GRDA	COFFGEN6_1 12.470 69KV	53	-0.0053	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.12077	22
AEPW	FITZHUGH 161KV	94.84	-0.00719	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.12266	22
AEPW	FITZHUGH 161KV	94.84	-0.00719	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.12266	22
AEPW	FITZHUGH 161KV	94.84	-0.00719	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.12266	22
WERE	CHANUTE 69KV	37.8	0.0018	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.11367	23
WERE	CHANUTE 69KV	37.8	0.0018	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.11367	23
WERE	CHANUTE 69KV	37.8	0.0018	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.11367	23
WERE	CITY OF ERIE 69KV	26	0.0018	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.11367	23
WERE	CITY OF ERIE 69KV	26	0.0018	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.11367	23
WERE	CITY OF ERIE 69KV	26	0.0018	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.11367	23
WERE	CITY OF IOLA 69KV	29.073	0.00294	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.11253	23
WERE	CITY OF IOLA 69KV	29.073	0.00294	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.11253	23
WERE	CITY OF IOLA 69KV	29.073	0.00294	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.11253	23
SWPA	PARAGOULD 161KV	31	-0.00068	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.11615	23
SWPA	PARAGOULD 161KV	31	-0.00068	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.11615	23
SWPA	PARAGOULD 161KV	31	-0.00068	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.11615	23
SWPA	POPLAR BLUFF 161KV	13.8	0.00046	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.11501	23
SWPA	POPLAR BLUFF 161KV	13.8	0.00046	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.11501	23
SWPA	POPLAR BLUFF 161KV	13.8	0.00046	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.11501	23
WERE	CITY OF WELLINGTON 69KV	32.695	0.00318	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.11229	24
WERE	CITY OF WELLINGTON 69KV	32.695	0.00318	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.11229	24
WERE	CITY OF WELLINGTON 69KV	32.695	0.00318	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.11229	24
WERE	CC5SHAR1 12.470 69KV	10	0.00837	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.1071	25
WERE	CC5SHAR1 12.470 69KV	10	0.00837	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.1071	25
WERE	CC5SHAR1 12.470 69KV	10	0.00837	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.1071	25
WERE	CC6SHAR1 12.470 69KV	10	0.00837	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.1071	25
WERE	CC6SHAR1 12.470 69KV	10	0.00837	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.1071	25
WERE	CC6SHAR1 12.470 69KV	10	0.00837	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.1071	25
WERE	CITY OF AUGUSTA 69KV	18.09	0.0102	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.10527	25
WERE	CITY OF AUGUSTA 69KV	18.09	0.0102	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.10527	25
WERE	CITY OF AUGUSTA 69KV	18.09	0.0102	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.10527	25
WERE	CITY OF BURLINGTON 69KV	12.5	0.00772	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.10775	25
WERE	CITY OF BURLINGTON 69KV	12.5	0.00772	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.10775	25
WERE	CITY OF BURLINGTON 69KV	12.5	0.00772	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.10775	25
OKGE	MMTHPW11 34.500 345KV	200	0.11547	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.10427	25
OKGE	NBUFFRG1 34.500 345KV	200	0.11547	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.10427	25
OKGE	SLINGW11 34.500 345KV	201	0.11547	OKGE	CENT 21 34.500 138KV	120	0.21974	-0.10427	25
WERE	LAWRENCE ENERGY CENTER 115KV	78.00002	0.01353	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.10194	26
WERE	LAWRENCE ENERGY CENTER 115KV	78.00002	0.01353	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.10194	26
WERE	LAWRENCE ENERGY CENTER 115KV	78.00002	0.01353	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.10194	26
WERE	LAWRENCE ENERGY CENTER 230KV	36.09879	0.0138	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.10167	26
WERE	LAWRENCE ENERGY CENTER 230KV	36.09879	0.0138	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.10167	26
WERE	LAWRENCE ENERGY CENTER 230KV	36.09879	0.0138	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.10167	26
WERE	TECUMSEH ENERGY CENTER 115KV	155	0.01459	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.10088	26
WERE	TECUMSEH ENERGY CENTER 115KV	155	0.01459	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.10088	26
WERE	TECUMSEH ENERGY CENTER 115KV	155	0.01459	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.10088	26
WERE	CLAYGEN1 13.200 115KV	29.67	0.01873	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.09674	27
WERE	CLAYGEN1 13.200 115KV	29.67	0.01873	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.09674	27
WERE	CLAYGEN1 13.200 115KV	29.67	0.01873	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.09674	27
WERE	EMPORIA ENERGY CENTER 345KV	465	0.01611	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.09936	27
WERE	EMPORIA ENERGY CENTER 345KV	465	0.01611	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.09936	27
WERE	EMPORIA ENERGY CENTER 345KV	465	0.01611	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.09936	27
WERE	EVANS ENERGY CENTER 138KV	181.2041	0.01813	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.09734	27
WERE	EVANS ENERGY CENTER 138KV	181.2041	0.01813	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.09734	27
WERE	EVANS ENERGY CENTER 138KV	181.2041	0.01813	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.09734	27
WERE	EVANS ENERGY CENTER 4KV	148	0.01813	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.09734	27
WERE	EVANS ENERGY CENTER 4KV	148	0.01813	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.09734	27
WERE	EVANS ENERGY CENTER 4KV	148	0.01813	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.09734	27
WERE	GILL ENERGY CENTER 138KV	166	0.01649	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.09898	27
WERE	GILL ENERGY CENTER 138KV	166	0.01649	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.09898	27
WERE	GILL ENERGY CENTER 138KV	166	0.01649	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.09898	27
WFEC	MORLND4 18.000 138KV	437.6081	-0.36559	WFEC	SLEEPING BEAR 138KV	80	-0.26829	-9.73E-02	27
WERE	SALINA MAIN 115KV	10.18	0.02179	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.09368	28
WERE	SALINA MAIN 115KV	10.18	0.02179	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.09368	28
WERE	SALINA MAIN 115KV	10.18	0.02179	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.09368	28
WERE	BPU - CITY OF MCPHERSON 115KV	238	0.02401	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.09146	29
WERE	BPU - CITY OF MCPHERSON 115KV	238	0.02401	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.09146	29
WERE	BPU - CITY OF MCPHERSON 115KV	238	0.02401	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.09146	29
WERE	HUTCHINSON ENERGY CENTER 115KV	235	0.02417	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.0913	29
WERE	HUTCHINSON ENERGY CENTER 115KV	235	0.02417	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.0913	29
WERE	HUTCHINSON ENERGY CENTER 115KV	235	0.02417	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.0913	29
WERE	HUTCHINSON ENERGY CENTER 4KV	56	0.02417	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.0913	29
WERE	HUTCHINSON ENERGY CENTER 4KV	56	0.02417	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.0913	29
WERE	HUTCHINSON ENERGY CENTER 4KV	56	0.02417	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.0913	29
WERE	HUTCHINSON ENERGY CENTER 69KV	56	0.02416	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.09131	29
WERE	HUTCHINSON ENERGY CENTER 69KV	56	0.02416	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.09131	29
WERE	HUTCHINSON ENERGY CENTER 69KV	56	0.02416	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.09131	29
OKGE	PALDRW21 34.500 345KV	300	0.08398	OKGE	OU SPIRIT 138KV	102	0.17544	-0.09146	29
OKGE	PALDRW21 34.500 345KV	300	0.08398	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.09146	29
OKGE	MMTHPW11 34.500 345KV	200	0.11547	OKGE	OU SPIRIT 138KV	102	0.17544	-0.05997	44
OKGE	MMTHPW11 34.500 345KV	200	0.11547	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.05997	44
OKGE	NBUFFRG1 34.500 345KV	200	0.11547	OKGE	OU SPIRIT 138KV	102	0.17544	-0.05997	44
OKGE	NBUFFRG1 34.500 345KV	200	0.11547	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.05997	44
OKGE	SLINGW11 34.500 345KV	201	0.11547	OKGE	OU SPIRIT 138KV	102	0.17544	-0.05997	44
OKGE	SLINGW11 34.500 345KV	201	0.11547	OKGE	WOODWARD CO SUB 2 138KV	151.8	0.17544	-0.05997	44
WFEC	ANADARKO 69KV	70	-0.02783	WERE	EVANS ENERGY CENTER 138KV	514.7959	0.01813	-0.04596	58
WFEC	ANADARKO 69KV	70	-0.02783	WERE	MARSHGEN1 0.6900 34KV	30	0.01721	-0.04504	59
WFEC	ANADARKO 69KV	70	-0.02783	WERE	EMPORIA ENERGY CENTER 345KV	180	0.01611	-0.04394	60
WFEC	ANADARKO 69KV	70	-0.02783	WERE	GILL ENERGY CENTER 138KV	26	0.01649	-0.04432	60
WFEC	ANADARKO 69KV	70	-0.02783	WERE	JEFFREY ENERGY CENTER 230KV	730	0.0162	-0.04403	60
WFEC	ANADARKO 69KV	70	-0.02783	WERE	JEFFREY ENERGY CENTER 345KV	1460	0.01611	-0.04394	60
OMPA	OMPA-PONCA CITY 69KV	128.8107	-0.02591	WERE	EVANS ENERGY CENTER 138KV	514.7959	0.01813	-0.04404	60
OKGE	MUSTANG 69KV	53	-0.02522	WERE	EVANS ENERGY CENTER 138KV	514.7959	0.01813	-0.04335	61
OMPA	OMPA-PONCA CITY 69KV	128.8107	-0.02591	WERE	MARSHGEN1 0.6900 34KV	30	0.01721	-0.04312	61
WFEC	ANADARKO 69KV	70	-0.02783	WERE	TECUMSEH ENERGY CENTER 115KV	70	0.01459	-0.04242	62
OKGE	MUSTANG 69KV	53	-0.02522	WERE	MARSHGEN1 0.6900 34KV	30	0.01721	-0.04243	62
OMPA	OMPA-PONCA CITY 69KV	128.8107	-0.02591	WERE	GILL ENERGY CENTER 138KV	26	0.01649	-0.0424	62
AEPW	SOUTHWESTERN STATION 138KV	302	-0.0248	WERE	EVANS ENERGY CENTER 138KV	514.7959	0.01813	-0.04293	62
WFEC	ANADARKO 69KV	70	-0.02783	WERE	LAWRENCE ENERGY CENTER 230KV	369.9012	0.0138	-0.04163	63
OKGE	MUSTANG 138KV	149.5	-0.0239	WERE	EVANS ENERGY CENTER 138KV	514.7959	0.01813	-0.04203	63
OKGE	MUSTANG 69KV	53	-0.02522	WERE	GILL ENERGY CENTER 138KV	26	0.01649	-0.04171	63
OMPA	OMPA-PONCA CITY 69KV	128.8107	-0.02591	WERE	EMPORIA ENERGY CENTER 345KV	180	0.01611	-0.04202	63
OMPA	OMPA-PONCA CITY 69KV	128.8107	-0.02591	WERE	JEFFREY ENERGY CENTER 230KV	730	0.0162	-0.04211	63
OMPA	OMPA-PONCA CITY 69KV	128.8107	-0.02591	WERE	JEFFREY ENERGY CENTER 345KV	1460	0.01611	-0.04202	63
AEPW	SOUTHWESTERN STATION 138KV	302	-0.0248	WERE	MARSHGEN1 0.6900 34KV	30	0.01721	-0.04201	63
WFEC	ANADARKO 69KV	70	-0.02783	WERE	LAWRENCE ENERGY CENTER 115KV	105	0.01353	-0.04136	64
OKGE	MCCLAIN 138KV	38.4023	-0.02295	WERE	EVANS ENERGY CENTER 138KV	514.7959	0.01813	-0.04108	64
OKGE	MUSTANG 138KV	149.5	-0.0239	WERE	MARSHGEN1 0.6900 34KV	30	0.01721	-0.04111	64

Table 4 - Potential Redispatch Relief Pairs to Prevent Deferral of Service

OKGE	MUSTANG 69KV	53	-0.02522	WERE	EMPORIA ENERGY CENTER 345KV	180	0.01611	-0.04133	64
OKGE	MUSTANG 69KV	53	-0.02522	WERE	JEFFREY ENERGY CENTER 230KV	730	0.0162	-0.04142	64
OKGE	MUSTANG 69KV	53	-0.02522	WERE	JEFFREY ENERGY CENTER 345KV	1460	0.01611	-0.04133	64
AEPW	SOUTHWESTERN STATION 138KV	302	-0.0248	WERE	GILL ENERGY CENTER 138KV	26	0.01649	-0.04129	64
AEPW	SOUTHWESTERN STATION 138KV	302	-0.0248	WERE	JEFFREY ENERGY CENTER 230KV	730	0.0162	-0.041	64
GRDA	BOOMER 69KV	24	-0.0226	WERE	EVANS ENERGY CENTER 138KV	514.7959	0.01813	-0.04073	65
OKGE	MUSTANG 138KV	149.5	-0.0239	WERE	GILL ENERGY CENTER 138KV	26	0.01649	-0.04039	65
OMPA	OMPA-PONCA CITY 69KV	128.8107	-0.02591	WERE	TECUMSEH ENERGY CENTER 115KV	70	0.01459	-0.0405	65
AEPW	SOUTHWESTERN STATION 138KV	302	-0.0248	WERE	EMPORIA ENERGY CENTER 345KV	180	0.01611	-0.04091	65
AEPW	SOUTHWESTERN STATION 138KV	302	-0.0248	WERE	JEFFREY ENERGY CENTER 345KV	1460	0.01611	-0.04091	65
GRDA	BOOMER 69KV	24	-0.0226	WERE	MARSHGEN1 0.6900 34KV	30	0.01721	-0.03981	66
OKGE	HORSESHOE LAKE 138KV	294	-0.02221	WERE	EVANS ENERGY CENTER 138KV	514.7959	0.01813	-0.04034	66
OKGE	MCCLAIN 138KV	38.4023	-0.02295	WERE	MARSHGEN1 0.6900 34KV	30	0.01721	-0.04016	66
OKGE	MUSTANG 138KV	149.5	-0.0239	WERE	EMPORIA ENERGY CENTER 345KV	180	0.01611	-0.04001	66
OKGE	MUSTANG 138KV	149.5	-0.0239	WERE	JEFFREY ENERGY CENTER 230KV	730	0.0162	-0.0401	66
OKGE	MUSTANG 138KV	149.5	-0.0239	WERE	JEFFREY ENERGY CENTER 345KV	1460	0.01611	-0.04001	66
OKGE	MUSTANG 69KV	53	-0.02522	WERE	TECUMSEH ENERGY CENTER 115KV	70	0.01459	-0.03981	66
OKGE	HORSESHOE LAKE 138KV	294	-0.02221	WERE	MARSHGEN1 0.6900 34KV	30	0.01721	-0.03942	67
OKGE	MCCLAIN 138KV	38.4023	-0.02295	WERE	GILL ENERGY CENTER 138KV	26	0.01649	-0.03944	67
OMPA	OMPA-PONCA CITY 69KV	128.8107	-0.02591	WERE	LAWRENCE ENERGY CENTER 115KV	105	0.01353	-0.03944	67
OMPA	OMPA-PONCA CITY 69KV	128.8107	-0.02591	WERE	LAWRENCE ENERGY CENTER 230KV	369.9012	0.0138	-0.03971	67
OKGE	REDBUD 345KV	166	-0.02124	WERE	EVANS ENERGY CENTER 138KV	514.7959	0.01813	-0.03937	67
AEPW	SOUTHWESTERN STATION 138KV	302	-0.0248	WERE	TECUMSEH ENERGY CENTER 115KV	70	0.01459	-0.03939	67
OKGE	SPRING CREEK UNIT 3 AND 4 345KV	36	-0.02142	WERE	EVANS ENERGY CENTER 138KV	514.7959	0.01813	-0.03955	67
OKGE	TINKER 5G 138KV	62	-0.02157	WERE	EVANS ENERGY CENTER 138KV	514.7959	0.01813	-0.0397	67
GRDA	BOOMER 69KV	24	-0.0226	WERE	EMPORIA ENERGY CENTER 345KV	180	0.01611	-0.03871	68
GRDA	BOOMER 69KV	24	-0.0226	WERE	GILL ENERGY CENTER 138KV	26	0.01649	-0.03909	68
GRDA	BOOMER 69KV	24	-0.0226	WERE	JEFFREY ENERGY CENTER 230KV	730	0.0162	-0.0388	68
GRDA	BOOMER 69KV	24	-0.0226	WERE	JEFFREY ENERGY CENTER 345KV	1460	0.01611	-0.03871	68
OKGE	HORSESHOE LAKE 138KV	294	-0.02221	WERE	GILL ENERGY CENTER 138KV	26	0.01649	-0.0387	68
OKGE	MCCLAIN 138KV	38.4023	-0.02295	WERE	EMPORIA ENERGY CENTER 345KV	180	0.01611	-0.03906	68
OKGE	MCCLAIN 138KV	38.4023	-0.02295	WERE	JEFFREY ENERGY CENTER 230KV	730	0.0162	-0.03915	68
OKGE	MCCLAIN 138KV	38.4023	-0.02295	WERE	JEFFREY ENERGY CENTER 345KV	1460	0.01611	-0.03906	68
OKGE	MUSTANG 69KV	53	-0.02522	WERE	LAWRENCE ENERGY CENTER 115KV	105	0.01353	-0.03875	68
OKGE	MUSTANG 69KV	53	-0.02522	WERE	LAWRENCE ENERGY CENTER 230KV	369.9012	0.0138	-0.03902	68
AEPW	SOUTHWESTERN STATION 138KV	302	-0.0248	WERE	LAWRENCE ENERGY CENTER 230KV	369.9012	0.0138	-0.0386	68
OKGE	SPRING CREEK UNIT 3 AND 4 345KV	36	-0.02142	WERE	MARSHGEN1 0.6900 34KV	30	0.01721	-0.03863	68
OKGE	TINKER 5G 138KV	62	-0.02157	WERE	MARSHGEN1 0.6900 34KV	30	0.01721	-0.03878	68
OKGE	HORSESHOE LAKE 138KV	294	-0.02221	WERE	EMPORIA ENERGY CENTER 345KV	180	0.01611	-0.03832	69
OKGE	HORSESHOE LAKE 138KV	294	-0.02221	WERE	JEFFREY ENERGY CENTER 230KV	730	0.0162	-0.03841	69
OKGE	HORSESHOE LAKE 138KV	294	-0.02221	WERE	JEFFREY ENERGY CENTER 345KV	1460	0.01611	-0.03832	69
OKGE	MUSTANG 138KV	149.5	-0.0239	WERE	TECUMSEH ENERGY CENTER 115KV	70	0.01459	-0.03849	69
OKGE	REDBUD 345KV	166	-0.02124	WERE	MARSHGEN1 0.6900 34KV	30	0.01721	-0.03845	69
AEPW	SOUTHWESTERN STATION 138KV	302	-0.0248	WERE	LAWRENCE ENERGY CENTER 115KV	105	0.01353	-0.03833	69
OKGE	TINKER 5G 138KV	62	-0.02157	WERE	GILL ENERGY CENTER 138KV	26	0.01649	-0.03806	69
WFEC	ANADARKO 69KV	70	-0.02783	WERE	COFFEY CO SUB 34KV	401	0.01014	-0.03797	70
OKGE	MCCLAIN 138KV	38.4023	-0.02295	WERE	TECUMSEH ENERGY CENTER 115KV	70	0.01459	-0.03754	70
OKGE	MUSTANG 138KV	149.5	-0.0239	WERE	LAWRENCE ENERGY CENTER 230KV	369.9012	0.0138	-0.0377	70
OKGE	REDBUD 345KV	166	-0.02124	WERE	GILL ENERGY CENTER 138KV	26	0.01649	-0.03773	70
OKGE	SPRING CREEK UNIT 3 AND 4 345KV	36	-0.02142	WERE	EMPORIA ENERGY CENTER 345KV	180	0.01611	-0.03753	70
OKGE	SPRING CREEK UNIT 3 AND 4 345KV	36	-0.02142	WERE	GILL ENERGY CENTER 138KV	26	0.01649	-0.03791	70
OKGE	SPRING CREEK UNIT 3 AND 4 345KV	36	-0.02142	WERE	JEFFREY ENERGY CENTER 230KV	730	0.0162	-0.03762	70
OKGE	SPRING CREEK UNIT 3 AND 4 345KV	36	-0.02142	WERE	JEFFREY ENERGY CENTER 345KV	1460	0.01611	-0.03753	70
OKGE	TINKER 5G 138KV	62	-0.02157	WERE	EMPORIA ENERGY CENTER 345KV	180	0.01611	-0.03768	70
OKGE	TINKER 5G 138KV	62	-0.02157	WERE	JEFFREY ENERGY CENTER 230KV	730	0.0162	-0.03777	70
OKGE	TINKER 5G 138KV	62	-0.02157	WERE	JEFFREY ENERGY CENTER 345KV	1460	0.01611	-0.03768	70
GRDA	BOOMER 69KV	24	-0.0226	WERE	TECUMSEH ENERGY CENTER 115KV	70	0.01459	-0.03719	71
OKGE	MUSTANG 138KV	149.5	-0.0239	WERE	LAWRENCE ENERGY CENTER 115KV	105	0.01353	-0.03743	71
OKGE	REDBUD 345KV	166	-0.02124	WERE	EMPORIA ENERGY CENTER 345KV	180	0.01611	-0.03735	71
OKGE	REDBUD 345KV	166	-0.02124	WERE	JEFFREY ENERGY CENTER 230KV	730	0.0162	-0.03744	71
OKGE	REDBUD 345KV	166	-0.02124	WERE	JEFFREY ENERGY CENTER 345KV	1460	0.01611	-0.03735	71
OKGE	SEMINOLE 345KV	559.6	-0.01884	WERE	EVANS ENERGY CENTER 138KV	514.7959	0.01813	-0.03697	71
OKGE	HORSESHOE LAKE 138KV	294	-0.02221	WERE	TECUMSEH ENERGY CENTER 115KV	70	0.01459	-0.0368	72
OKGE	MCCLAIN 138KV	38.4023	-0.02295	WERE	LAWRENCE ENERGY CENTER 115KV	105	0.01353	-0.03648	72
OKGE	MCCLAIN 138KV	38.4023	-0.02295	WERE	LAWRENCE ENERGY CENTER 230KV	369.9012	0.0138	-0.03675	72
OKGE	SEMINOLE 138KV	302.5742	-0.0187	WERE	EVANS ENERGY CENTER 138KV	514.7959	0.01813	-0.03683	72
OKGE	HORSESHOE LAKE 138KV	294	-0.02221	WERE	LAWRENCE ENERGY CENTER 230KV	369.9012	0.0138	-0.03601	73
OMPA	OMPA-PONCA CITY 69KV	128.8107	-0.02591	WERE	COFFEY CO SUB 34KV	401	0.01014	-0.03605	73
OKGE	SEMINOLE 345KV	559.6	-0.01884	WERE	MARSHGEN1 0.6900 34KV	30	0.01721	-0.03605	73
OKGE	SPRING CREEK UNIT 3 AND 4 345KV	36	-0.02142	WERE	TECUMSEH ENERGY CENTER 115KV	70	0.01459	-0.03601	73
OKGE	TINKER 5G 138KV	62	-0.02157	WERE	TECUMSEH ENERGY CENTER 115KV	70	0.01459	-0.03616	73
OKGE	HORSESHOE LAKE 138KV	294	-0.02221	WERE	LAWRENCE ENERGY CENTER 115KV	105	0.01353	-0.03574	74
OKGE	REDBUD 345KV	166	-0.02124	WERE	TECUMSEH ENERGY CENTER 115KV	70	0.01459	-0.03583	74
OKGE	SEMINOLE 138KV	302.5742	-0.0187	WERE	MARSHGEN1 0.6900 34KV	30	0.01721	-0.03591	74
OKGE	MUSTANG 69KV	53	-0.02522	WERE	COFFEY CO SUB 34KV	401	0.01014	-0.03536	75
OKGE	REDBUD 345KV	166	-0.02124	WERE	LAWRENCE ENERGY CENTER 230KV	369.9012	0.0138	-0.03504	75
OKGE	SEMINOLE 138KV	302.5742	-0.0187	WERE	GILL ENERGY CENTER 138KV	26	0.01649	-0.03519	75
OKGE	SEMINOLE 345KV	559.6	-0.01884	WERE	GILL ENERGY CENTER 138KV	26	0.01649	-0.03533	75
OKGE	SEMINOLE 345KV	559.6	-0.01884	WERE	JEFFREY ENERGY CENTER 230KV	730	0.0162	-0.03504	75
OKGE	SPRING CREEK UNIT 3 AND 4 345KV	36	-0.02142	WERE	LAWRENCE ENERGY CENTER 230KV	369.9012	0.0138	-0.03522	75
OKGE	TINKER 5G 138KV	62	-0.02157	WERE	LAWRENCE ENERGY CENTER 115KV	105	0.01353	-0.0351	75
OKGE	TINKER 5G 138KV	62	-0.02157	WERE	LAWRENCE ENERGY CENTER 230KV	369.9012	0.0138	-0.03537	75
WFEC	ANADARKO 69KV	70	-0.02783	WERE	ELK RIVER 345KV	150	0.0068	-0.03463	76
OKGE	REDBUD 345KV	166	-0.02124	WERE	LAWRENCE ENERGY CENTER 115KV	105	0.01353	-0.03477	76
OKGE	SEMINOLE 138KV	302.5742	-0.0187	WERE	EMPORIA ENERGY CENTER 345KV	180	0.01611	-0.03481	76
OKGE	SEMINOLE 138KV	302.5742	-0.0187	WERE	JEFFREY ENERGY CENTER 230KV	730	0.0162	-0.0349	76
OKGE	SEMINOLE 138KV	302.5742	-0.0187	WERE	JEFFREY ENERGY CENTER 345KV	1460	0.01611	-0.03481	76
OKGE	SEMINOLE 345KV	559.6	-0.01884	WERE	EMPORIA ENERGY CENTER 345KV	180	0.01611	-0.03495	76
OKGE	SEMINOLE 345KV	559.6	-0.01884	WERE	JEFFREY ENERGY CENTER 345KV	1460	0.01611	-0.03495	76
AEPW	SOUTHWESTERN STATION 138KV	302	-0.0248	WERE	COFFEY CO SUB 34KV	401	0.01014	-0.03494	76
OKGE	SPRING CREEK UNIT 3 AND 4 345KV	36	-0.02142	WERE	LAWRENCE ENERGY CENTER 115KV	105	0.01353	-0.03495	76
WFEC	ANADARKO 69KV	70	-0.02783	WERE	CANEYWF1 0.6900 34KV	199.8	0.00616	-0.03399	78
OKGE	MUSTANG 138KV	149.5	-0.0239	WERE	COFFEY CO SUB 34KV	401	0.01014	-0.03404	78
OKGE	SEMINOLE 138KV	302.5742	-0.0187	WERE	TECUMSEH ENERGY CENTER 115KV	70	0.01459	-0.03329	79
OKGE	SEMINOLE 345KV	559.6	-0.01884	WERE	TECUMSEH ENERGY CENTER 115KV	70	0.01459	-0.03343	79
OKGE	MCCLAIN 138KV	38.4023	-0.02295	WERE	COFFEY CO SUB 34KV	401	0.01014	-0.03309	80

Table 4 - Potential Redispatch Relief Pairs to Prevent Deferral of Service

AEPW	WELEETKA 138KV	157	-0.01484	WERE	EVANS ENERGY CENTER 138KV	514.7959	0.01813	-0.03297	80
OMPA	OMPA-PONCA CITY 69KV	128.8107	-0.02591	WERE	ELK RIVER 345KV	150	0.0068	-0.03271	81
OKGE	SEMINOLE 138KV	302.5742	-0.0187	WERE	LAWRENCE ENERGY CENTER 230KV	369.9012	0.0138	-0.0325	81
OKGE	SEMINOLE 345KV	559.6	-0.01884	WERE	LAWRENCE ENERGY CENTER 230KV	369.9012	0.0138	-0.03264	81
OKGE	HORSESHOE LAKE 138KV	294	-0.02221	WERE	COFFEY CO SUB 34KV	401	0.01014	-0.03235	82
OMPA	OMPA-PONCA CITY 69KV	128.8107	-0.02591	WERE	CANEYWF1 0.6900 34KV	199.8	0.00616	-0.03207	82
OKGE	SEMINOLE 138KV	302.5742	-0.0187	WERE	LAWRENCE ENERGY CENTER 115KV	105	0.01353	-0.03223	82
OKGE	SEMINOLE 345KV	559.6	-0.01884	WERE	LAWRENCE ENERGY CENTER 115KV	105	0.01353	-0.03237	82
AEPW	WELEETKA 138KV	157	-0.01484	WERE	MARSHGEN1 0.6900 34KV	30	0.01721	-0.03205	82
OKGE	MUSTANG 69KV	53	-0.02522	WERE	ELK RIVER 345KV	150	0.0068	-0.03202	83
OKGE	TINKER 5G 138KV	62	-0.02157	WERE	COFFEY CO SUB 34KV	401	0.01014	-0.03171	83
OKGE	MUSTANG 69KV	53	-0.02522	WERE	CANEYWF1 0.6900 34KV	199.8	0.00616	-0.03138	84
OKGE	PALDRW21 34.500 345KV	300	0.08398	OKGE	CRSRDW21 34.500 345KV	197.8	0.11547	-0.03149	84
OKGE	PALDRW21 34.500 345KV	300	0.08398	OKGE	SILNGW21 34.500 345KV	100	0.11547	-0.03149	84
OKGE	PALDRW21 34.500 345KV	300	0.08398	OKGE	SLINGW11 34.500 345KV	199	0.11547	-0.03149	84
OKGE	REDBUD 345KV	166	-0.02124	WERE	COFFEY CO SUB 34KV	401	0.01014	-0.03138	84
AEPW	SOUTHWESTERN STATION 138KV	302	-0.0248	WERE	ELK RIVER 345KV	150	0.0068	-0.0316	84
OKGE	SPRING CREEK UNIT 3 AND 4 345KV	36	-0.02142	WERE	COFFEY CO SUB 34KV	401	0.01014	-0.03156	84
AEPW	SOUTHWESTERN STATION 138KV	302	-0.0248	WERE	CANEYWF1 0.6900 34KV	199.8	0.00616	-0.03096	85
AEPW	WELEETKA 138KV	157	-0.01484	WERE	EMPORIA ENERGY CENTER 345KV	180	0.01611	-0.03095	85
AEPW	WELEETKA 138KV	157	-0.01484	WERE	JEFFREY ENERGY CENTER 230KV	730	0.0162	-0.03104	85
AEPW	WELEETKA 138KV	157	-0.01484	WERE	JEFFREY ENERGY CENTER 345KV	1460	0.01611	-0.03095	85
AEPW	COGENTRIX 345KV	381.723	-0.01255	WERE	EVANS ENERGY CENTER 138KV	514.7959	0.01813	-0.03068	86
OKGE	MUSTANG 138KV	149.5	-0.0239	WERE	ELK RIVER 345KV	150	0.0068	-0.0307	86
AEPW	RIVERSIDE STATION 138KV	141.6538	-0.0125	WERE	EVANS ENERGY CENTER 138KV	514.7959	0.01813	-0.03063	86
OKGE	MUSKOGEE 345KV	37.5	-0.01213	WERE	EVANS ENERGY CENTER 138KV	514.7959	0.01813	-0.03026	87
AEPW	TULSA POWER STATION 138KV	318	-0.01232	WERE	EVANS ENERGY CENTER 138KV	514.7959	0.01813	-0.03045	87
OKGE	MUSTANG 138KV	149.5	-0.0239	WERE	CANEYWF1 0.6900 34KV	199.8	0.00616	-0.03006	88

Maximum Decrement and Maximum Increment were determine from the Souce and Sink Operating Points in the study models where limiting facility was identified.

Factor = Source GSF - Sink GSF

Redispatch Amount = Relief Amount / Factor