



***System Impact Study SPP-2002-129
For Transmission Service
Requested By
Western Resources Generation Services***

From WR To EES

***For a Reserved Amount Of 50 MW
From 11/1/02
To 11/1/03***

SPP Coordinated Planning

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1. Executive Summary

Western Resources Generation Services (WRGS) has requested a system impact study for long-term Firm Point-to-Point transmission service from WR to EES. The period of the transaction is from 11/1/02 to 11/1/03. The request is for OASIS reservation 374672 for an amount of 50 MW.

The principal objective of this study is to identify system problems and potential system modifications necessary to facilitate the additional 50 MW transfer while maintaining system reliability.

New overloads caused by the 50 MW transfer were identified along with determining the impact of the transfer on any previously assigned and identified facilities.

The WR to EES 50MW transfer causes new facility overloads on the SPP transmission system, as well as increasing the loading on previously identified facilities. If no options are available for relieving these impacted facilities, the request for service will be refused. The WR to EES transfer was studied for the requested time period only. If the limiting constraints for the WR to EES transfer are relieved, the impact study must be extended to include the entire planning horizon prior to accepting the request for service. Pursuant to the decision of the FERC in Dkt. No. ER02-86, the transfer must be studied for the total planning horizon to determine if capacity is available for renewal of service with no restrictions.

Due to the start date and queue position of the WR to EES transfer, several higher priority requests in study were included in the models for the analysis of the WR to EES 50MW transfer.

2. Introduction

Western Resources Generation Services (WRGS) has requested an impact study for transmission service from WR to EES.

The principal objective of this study is to identify the restraints on the SPP Regional Tariff System that may limit the transfer to less than 50 MW. This study includes steady-state contingency analyses (PSS/E function ACCC) and Available Transfer Capability (ATC) analyses.

The steady-state analyses consider the impact of the 50 MW transfer on transmission line loading and transmission bus voltages for outages of single and selected multiple transmission lines and transformers on the SPP system.

3. Study Methodology

A. Description

Two analyses were conducted to determine the impact of the 50 MW transfer on the system. The first analysis was conducted to identify any new overloads caused by the 50 MW transfer. The second analysis was done to ensure that available capacity exists on previously identified circuits.

The first analysis was to study the steady-state analysis impact of the 50 MW transfer on the SPP system. The second step was to study Available Transfer Capability (ATC) of the facilities identified in the steady-state analysis impact. The steady-state analysis was done to ensure current SPP Criteria and NERC Planning Standards requirements are fulfilled. The Southwest Power Pool (SPP) conforms to the NERC Planning Standards, which provide the strictest requirements, related to thermal overloads with a contingency. It requires that all facilities be within emergency ratings after a contingency.

The second analysis was done to determine the impact of the transfer on previously assigned and identified facilities.

B. Model Updates

SPP used six seasonal models to study the WR to EES 50 MW transfer for the requested service period. The SPP 2002 Series Cases 2002 Fall, 2002/03 Winter Peak, 2003 April Minimum, 2003 Spring Peak, 2003 Summer Peak, and 2003 Fall Peak were used to study the impact of the 50 MW transfer on the SPP system during the requested service period of 11/1/02 to 11/1/03.

The chosen base case models were modified to reflect the most current modeling information. The cases were modified to reflect future firm transfers during the requested service period that were not already included in the January 2002 base case series models.

C. Transfer Analysis

Using the created models and the ACCC function of PSS/E, single and select double contingency outages were analyzed. Then full AC solution was used to obtain the most accurate results possible. Any facility overloaded, using MVA ratings, in the transfer case and not overloaded in the base case was flagged. The PSS/E options chosen to conduct the Impact Study analysis can be found in Appendix A.

4. Study Results

A. Study Analysis Results

Tables 1, 2, and 3 contain the analysis results of the System Impact Study. The tables identify the seasonal case in which the event occurred; the emergency rating of the overloaded circuit (Rate B), the contingent loading percentage of circuit with and without the studied transfer, the estimated ATC value using interpolation if calculated, any SPP identification or assignment of the event, and any solutions received from the transmission owners.

Table 1 shows the new SPP facility overloads caused by the 50 MW transfer. Available solutions are given in the table.

Table 2 documents overloads on Non SPP Regional Tariff participants' transmission systems caused by the 50 MW transfer.

Table 3 documents the 50 MW transfer impact on previously assigned and identified SPP facilities. Available solutions are given in the table.

Tables 1a and 3a of Appendix B documents the modeling representation of the events identified in Tables 1 and 3 respectively to include bus numbers and bus names.

Table 1 – SPP Facility Overloads caused by the WR to EES 50 MW Transfer

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	BC % Loading	TC % Loading	Outaged Branch Causing Overload	ATC (MW)
03SP	AEPW-SWPA	Eureka Springs - Table Rock 161KV	167	99.6	100.1	Eureka Springs - Osage 161KV	37
03SP	AEPW-AEPW	Flint Creek - Gentry REC 161KV	353	100.0	100.1	Clarksville - Dardanelle 161KV	0
03SP	AEPW-AEPW	Flint Creek - Gentry REC 161KV	353	100.0	100.1	Chelsea - Northeast Station 138KV	0
03SP	WFEC-OKGE	Franklin SW - Midwest Tap 138KV	215	100.0	100.2	Canadian - Canadian SW 138KV	0
03SP	WERE-WERE	County Line - Hook Jct 115KV	92	99.6	109.4	Tecumseh Energy Center - Tecumseh Hill 115KV	2
03SP	WERE-WERE	Farmer's Consumer CO-OP - Wakarusa Junctions Switching Station	92	99.8	100.8	Thornton Street - Wakarusa Junction Switching Station 115KV	12
03SP	WERE-WERE	Hutchinson Gas Turbine Station - Circle 115KV	152	98.6	102.2	Loran - Meadow 69KV	19
03SP	WERE-WERE	Hutchinson Gas Turbine Station - Circle 115KV	152	96.7	100.2	Meadow - Wood Jct. 69KV	47
03FA	SWPA-SWPA	Ozark - Clarksville 161KV	218	99.1	100.1	ANO - Fort Smith 500KV	44

Table 2 – Non - SPP Facility Overloads caused by the WR to EES 50 MW Transfer

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	BC % Loading	TC % Loading	Outaged Branch Causing Overload
03AP	EES-EES	97920 6PPG 23 230 to 98052 2PPC SO 69.0 CKT 1	160	99.3	100.1	97920 6PPG 23 230 to 98051 2PPC NO 69.0 CKT1
03G	EES-EES	97487 4MT.ZION 138 to 97480 L558T485 138 CKT 1	206	99.6	100.1	97454 4WALDEN 138 to 97514 4GRIMES 138 CKT1
03G	EES-EES	97920 6PPG 23 230 to 98052 2PPC SO 69.0 CKT 1	160	99.4	100.1	97920 6PPG 23 230 to 98051 2PPC NO 69.0 CKT1
03G	EES-EES	99387 3MURF-S 115 to 99389 4MURFRE 138 CKT 1	60	99.9	100.6	99486 8ANO 50 500 to 99565 8MABEL 500 CKT1
03G	EES-EES	99387 3MURF-S 115 to 99389 4MURFRE 138 CKT 1	60	99.5	100.2	99197 8P HILL 500 to 99572 8MAYFL 500 CKT1
03G	EES-EES	99389 4MURFRE 138 to 99387 3MURF-S 115 CKT 1	60	99.5	100.2	53232 MCNAB 3 115 to 53303 OKAY 3 115 CKT1
03SP	AECI-AECI	96654 2MILO 69.0 to 96802 2CLARK 69.0 CKT 1	36	100.0	100.2	52690 CARTHG 269.0 to 96649 2JASPER 69.0 CKT1
03SP	AECI-AECI	96751 2REEDS 69.0 to 96659 2BOWRML 69.0 CKT 1	36	99.9	100.1	59471 NEO184 5 161 to 59496 NOL435 5 161 CKT1
03SP	EES-EES	97454 4WALDEN 138 to 97469 4APRIL 138 CKT 1	206	99.9	100.5	97691 8CYPRESS 500 to 97717 8HARTBRG 500 CKT1
03SP	EES-EES	97454 4WALDEN 138 to 97469 4APRIL 138 CKT 1	206	99.4	100.1	55224 MUSKOG7 345 to 55302 FTSMITH7 345 CKT1
03SP	EES-EES	97480 L558T485 138 to 97484 4HUNTSVL 138 CKT 1	206	99.7	100.5	97717 8HARTBRG 500 to 99162 8MTOLIV 500 CKT1
03SP	EES-EES	97480 L558T485 138 to 97484 4HUNTSVL 138 CKT 1	206	99.8	100.5	55305 FTSMITH8 500 to 99486 8ANO 50 500 CKT1
03SP	EES-EES	97480 L558T485 138 to 97484 4HUNTSVL 138 CKT 1	206	99.6	100.3	50023 CARROLL6 230 to 50046 DOLHILL6 230 CKT1
03SP	EES-EES	97487 4MT.ZION 138 to 97480 L558T485 138 CKT 1	206	100.0	100.6	97698 4JASPER 138 to 97704 4RAYBURN 138 CKT1
03SP	EES-EES	97487 4MT.ZION 138 to 97480 L558T485 138 CKT 1	206	99.9	100.5	50090 IPAPER 4 138 to 53461 WALLAKE4 138 CKT1
03SP	EES-EES	97487 4MT.ZION 138 to 97480 L558T485 138 CKT 1	206	99.9	100.5	97714 6CHINA 230 to 97716 6SABINE 230 CKT1
03SP	EES-EES	97487 4MT.ZION 138 to 97480 L558T485 138 CKT 1	206	99.9	100.5	59481 MON383 7 345 to 59984 BRKLN6 7 345 CKT1
03SP	EES-EES	97487 4MT.ZION 138 to 97480 L558T485 138 CKT 1	206	99.9	100.5	53140 FLINTCR7 345 to 59481 MON383 7 345 CKT1
03SP	EES-EES	97514 4GRIMES 138 to 97454 4WALDEN 138 CKT 1	206	100.0	100.5	50050 ELEESV 6 230 to 50177 RODEMR 6 230 CKT1
03SP	EES-EES	97514 4GRIMES 138 to 97454 4WALDEN 138 CKT 1	206	100.0	100.5	97693 4CHINA 138 to 97714 6CHINA 230 CKT1
03SP	EES-EES	97514 4GRIMES 138 to 97454 4WALDEN 138 CKT 1	206	99.9	100.4	96042 7HUBEN 345 to 96045 7MORGAN 345 CKT1
03SP	EES-EES	97514 4GRIMES 138 to 97454 4WALDEN 138 CKT 1	206	99.9	100.4	53321 SNASHVL4 138 to 99389 4MURFRE 138 CKT1
03SP	EES-EES	97514 4GRIMES 138 to 97454 4WALDEN 138 CKT 1	206	99.9	100.4	97626 4RAYWOOD 138 to 97693 4CHINA 138 CKT1
03SP	EES-EES	97708 4TOLEDO 138 to 97686 4LEACH 138 CKT 1	144.6	99.7	100.2	53609 LEBROCK7 345 to 53637 TENRUSK7 345 CKT1
03SP	EES-EES	97708 4TOLEDO 138 to 97686 4LEACH 138 CKT 1	144.6	99.5	100.1	50023 CARROLL6 230 to 50126 MESSICK6 230 CKT1
03FA	CELE-CELE	50045 DOLHILL7 345 to 50046 DOLHILL6 230 CKT 1	700	99.8	100.1	53609 LEBROCK7 345 to 53637 TENRUSK7 345 CKT1
03FA	EES-EES	97522 4TUBULAR 138 to 97453 4DOBBIN 138 CKT 1	112	99.4	100.1	50057 FISHER 4 138 to 50199 VP TAP 4 138 CKT1
03FA	EES-EES	97539 4WDHAVN 138 to 97459 4CONROE 138 CKT 1	206	99.7	100.2	53549 JACKSNV4 138 to 53588 OVERTON4 138 CKT1
03FA	EES-EES	97539 4WDHAVN 138 to 97459 4CONROE 138 CKT 1	206	99.6	100.1	53528 DIANA 7 345 to 53615 WELSH 7 345 CKT2
03FA	EES-EES	97708 4TOLEDO 138 to 97686 4LEACH 138 CKT 1	144.6	99.8	100.2	53519 CARTREA4 138 to 53598 ROKHILL4 138 CKT1
03FA	EES-EES	97708 4TOLEDO 138 to 97686 4LEACH 138 CKT 1	144.6	99.7	100.2	53603 SCOTTSV4 138 to 53605 SEMRSHL4 138 CKT1
03FA	EES-EES	97708 4TOLEDO 138 to 97686 4LEACH 138 CKT 1	144.6	99.7	100.1	53522 CHEROKE4 138 to 53611 TATUM 4 138 CKT1
03FA	EES-EES	97708 4TOLEDO 138 to 97686 4LEACH 138 CKT 1	144.6	99.7	100.1	53598 ROKHILL4 138 to 53611 TATUM 4 138 CKT1
03FA	EES-EES	97708 4TOLEDO 138 to 97686 4LEACH 138 CKT 1	144.6	99.6	100.1	53522 CHEROKE4 138 to 53557 KNOXLEE4 138 CKT1

Table 3 – Previously Assigned and Identified SPP Facilities Impacted by the WR to EES 50 MW Transfer

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	BC % Loading	TC % Loading	Outaged Branch Causing Overload	ATC (MW)	Comment
02FA	WERE-WERE	Coffey County No. 4 Vernon - Green 69KV	45	105.0	106.6	La Cygne to Wolf Creek 345kV	0	Westar Transmission Operating Directive 1304
02FA	WERE-WERE	Circleville - Hoyt HTI Switching JCT 115KV	92	110.1	110.8	Hoyt - Stranger Creek 345kV	0	Replace 82 Structures
02FA	WERE-WERE	Athens Switching Station - Coffey County No. 4 69KV	45	103.7	105.3	La Cygne to Wolf Creek 345kV	0	Westar Transmission Operating Directive 1304
02WP	OKGE-OKGE	Pecan Creek 345/161KV Transformer	369	105.3	105.8	Muskogee - Fort Smith 345KV	0	Add 2nd 345/161 kV 369MVA unit
02WP	WERE-WERE	Circleville - King Hill N.M. Coop 115KV	92	105.0	105.6	Hoyt - Stranger Creek 345kV	0	Transmission Operating Directive 803
02WP	WERE-WERE	Circleville - Hoyt HTI Switching JCT 115KV	97	111.0	111.6	Hoyt - Stranger Creek 345kV	0	Replace 82 Structures
02WP	AEPW-AEPW	Alumax Tap - NW Texarkana 138KV	287	100.0	100.2	NW Texarkana-Bann T - Northwest Texarkana 138KV	0	Replace Switches Alumax Tap
03G	AEPW-AEPW	South Shreveport - Wallace Lake 138KV	210	110.2	110.8	Dolet Hills 345/230KV Transformer	0	Dolet Hills Operating Guide Monitor Line at 260 MVA
03G	OKGE-OKGE	Pecan Creek 345/161KV Transformer	369	114.5	114.9	Muskogee - Fort Smith 345KV	0	Add 2nd 345/161 kV 369MVA unit
03G	AEPW-AEPW	IPC Jefferson - Lieberman 138 KV	154	102.5	103.0	Longwood - Wilkes 345KV	0	Reconductor 26.35 miles of 336 ACSR with 795 ACSR, Replace Switches @ Lieberman, Reset Relays @ Jefferson IPC, & Reconductor 0.65 miles 397MCM to 795MCM
03G	SWPA-SWPA	Glencoe - Norfolk 161KV	112	104.6	105.0	Dell - Ises 500KV	0	Remove wave trap. Switch relaying channel to fiber optic shield wire. To be completed by SWPA for own needs.
03G	SWPA-SWPA	Glencoe - Norfolk 161KV	112	102.3	102.8	Norfolk - West Plains 161KV	0	"
03G	SWPA-SWPA	Glencoe - Norfolk 161KV	112	101.1	101.6	KEO - WM-EHV 500KV	0	"
03G	WERE-WERE	Coffey County No. 4 Vernon - Green 69KV	45	114.0	115.5	La Cygne to Wolf Creek 345kV	0	Westar Transmission Operating Directive 1304
03G	WERE-WERE	Circleville - King Hill N.M. Coop 115KV	92	101.5	102.3	Hoyt - Stranger Creek 345kV	0	Transmission Operating Directive 803
03G	WERE-WERE	Circleville - Hoyt HTI Switching JCT 115KV	97	109.7	110.4	Hoyt - Stranger Creek 345kV	0	Replace 82 Structures
03G	WERE-WERE	Athens Switching Station - Coffey County No. 4 69KV	45	112.7	114.2	La Cygne to Wolf Creek 345kV	0	Westar Transmission Operating Directive 1304
03SP	AEPW-AEPW	Wilkes - Jefferson Switching 138KV	261	106.1	106.6	Longwood - Wilkes 345KV	0	Solution Undetermined
03SP	WERE-WERE	West McPherson - Phillips Junction South 115KV	68	115.4	120.7	East McPherson - Summit 230KV	0	Transmission Operating Directive 613
03SP	SWPA-OKGE	Van Buren - VBI 161KV	335	126.0	126.8	Muskogee - Fort Smith 345KV	0	SPA: Replace metering CTs, disconnect switches, breakers, and bus differential relaying at Van Buren. OG&E Replace Switch and reconnect CT ratio at VBI.
03SP	SWPA-OKGE	Van Buren - VBI 161KV	335	111.7	112.2	AES - Bonanza Tap 161KV	0	"
03SP	WERE-WERE	Stull Switching Station - Tecumseh Hill 115 KV	92	132.7	137.3	Hoyt - Stranger Creek 345kV	0	WERE Transmission Op Directive 803
03SP	AEPW-AEPW	South Shreveport - Wallace Lake 138KV	209	135.4	136.2	Dolet Hills 345/230KV Transformer	0	Dolet Hills Operating Guide Monitor Line at 260 MVA
03SP	AEPW-AEPW	Scottsville - Southeast Marshall 138KV	287	106.6	107.0	Longwood - Wilkes 345KV	0	Solution Undetermined
03SP	AEPW-AEPW	Sabine Mining Co. - Southeast Marshall 138KV	287	122.7	123.0	Longwood - Wilkes 345KV	0	"
03SP	AEPW-AEPW	Sabine Mining Co. - Southeast Marshall 138KV	287	106.4	106.7	Southwest Shreveport - Diana 345KV	0	"
03SP	AEPW-AEPW	Rock Hill - Tatum 138KV	209	141.2	141.7	Multiple Outage Contingency Southwest Shreveport to Longwood, 345kV Southwest Shreveport to Diana, 345kV	0	Reconductor 0.81 miles 666MCM to 1272 ACSR
03SP	AEPW-AEPW	Rock Hill - Tatum 138KV	209	126.0	126.4	Longwood - Wilkes 345KV	0	"
03SP	AEPW-AEPW	Rock Hill - Tatum 138KV	209	120.0	120.3	Southwest Shreveport - Diana 345KV	0	"
03SP	AEPW-AEPW	Rock Hill - Tatum 138KV	209	99.8	100.0	Southwest Shreveport 345/138KV Transformer	0	"
03SP	SWPA-SWPA	Robert S. Kerr - Van Buren 161KV	223	100.5	100.8	AES - Bonanza Tap 161KV	0	Solution Undetermined

Table 3 – continued - Previously Assigned and Identified SPP Facilities Impacted by the WR to EES 50 MW Transfer

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	BC % Loading	TC % Loading	Outaged Branch Causing Overload	ATC (MW)	Comment
03SP	AEPW-AEPW	Pirkey - Sabine Mining Co. 138KV	340	105.8	106.1	Longwood - Wilkes 345KV	0	"
03SP	WERE-WERE	Philips - South Philips 115kV	160	106.4	111.2	East McPherson - Summit 230KV	0	"
03SP	OKGE-OKGE	Pecan Creek 345/161KV Transformer	369	136.1	136.5	Muskogee - Fort Smith 345KV	0	Add 2nd 345/161 kV 369MVA unit
03SP	AEPW-AEPW	Patterson - South Nashville 138KV	118	137.5	138.0	Longwood - ELD EHV 345KV	0	Rebuild 17.72 miles of 4/0 CU with 795 ACSR.
03SP	AEPW-AEPW	Patterson - South Nashville 138KV	118	119.0	119.6	Muskogee - Fort Smith 345KV	0	"
03SP	AEPW-AEPW	Patterson - South Nashville 138KV	118	118.6	119.1	Longwood - Wilkes 345KV	0	"
03SP	AEPW-AEPW	Patterson - South Nashville 138KV	118	109.2	109.6	Southwest Shreveport - Diana 345KV	0	"
03SP	AEPW-AEPW	Patterson - South Nashville 138KV	118	100.0	100.3	Broken Bow - Dominan 138KV	0	"
03SP	EMDE-EMDE	Oakland North - Oronogo JCT. 161KV	214	104.7	105.1	Tipton Ford - Joplin Southwest 161KV	0	Reconstruct and replace 1.4 miles of 556 ACSR with Bundled 556 ACSR
03SP	EES-SWPA	Norfolk - Southland 161KV	162	101.2	102.3	Buford Tap - Bull Shoals 161KV	0	Solution Undetermined
03SP	EES-SWPA	Norfolk - Southland 161KV	162	100.2	101.3	Buford Tap - Norfolk 161KV	0	"
03SP	AEPW-AEPW	Noram - Raines 138KV	234	121.6	122.0	Multiple Outage Contingency Southwest Shreveport to Longwood, 345kV Southwest Shreveport to Diana, 345KV	0	Rebuild 5.58 miles of 2-266 ACSR with 1590 ACSR
03SP	SWPA-OKGE	Muskogee Tap - Muskogee 161KV	223	100.0	100.6	Muskogee - Fort Smith 345KV	0	OKGE: Replace 800A wave trap at Muskogee and increase relay CTR to 1200-5. SPA: None.
03SP	AEPW-EES	Murfreesboro - South Nashville 138KV	105	127.1	127.7	Longwood - ELD EHV 345KV	0	Replace South Nashville Wavetrap
03SP	AEPW-EES	Murfreesboro - South Nashville 138KV	105	126.7	127.3	ELD EHV 500/345KV Transformer	0	"
03SP	AEPW-EES	Murfreesboro - South Nashville 138KV	105	107.0	107.6	Muskogee - Fort Smith 345KV	0	"
03SP	AEPW-EES	Murfreesboro - South Nashville 138KV	105	106.6	107.0	Longwood - Wilkes 345KV	0	"
03SP	WERE-WERE	Mockingbird Hill Switching Station - Stull Switching Station 115 KV	92	126.1	130.8	Hoyt - Stranger Creek 345KV	0	Westar mitigation planned in 2005.
03SP	AEPW-AEPW	Marshall - North Marshall 69KV	72	118.0	122.1	Crockett - Grimes 345KV	0	Replace 350 CU bus & jumpers @ North Marshall
03SP	AEPW-AEPW	Magazine REC - North Magazine 161KV	155	129.2	131.0	ANO - Fort Smith 500KV	0	Solution Undetermined
03SP	AEPW-AEPW	Longwood - Oak Pan-Harr REC 138KV	209	117.0	117.5	Multiple Outage Contingency Southwest Shreveport to Longwood, 345kV Southwest Shreveport to Diana, 345kV	0	Rebuild 1.8 miles of 666 ACSR with 1590 ACSR
03SP	AEPW-AEPW	Longwood - Noram 138KV	234	122.8	123.2	Multiple Outage Contingency Southwest Shreveport to Longwood, 345kV Southwest Shreveport to Diana, 345kV	0	Reconductor 4.66 miles of bundled 266 ACSR with 1590 ACSR & replace jumpers
03SP	AECI-SWPA	Liberty Tap - Van Buren 161kV	189	127.5	128.9	Muskogee - Fort Smith 345KV	0	Solution Undetermined
03SP	SWPA-AECI	Liberty Tap - Sallisaw 161kV	189	130.5	131.8	Muskogee - Fort Smith 345KV	0	"
03SP	AEPW-AEPW	IPC Jefferson - Lieberman 138 KV	136	151.6	152.2	Longwood - Wilkes 345KV	0	Reconductor 26.35 miles of 336 ACSR with 795 ACSR, Replace Switches @ Lieberman, Reset Relays @ Jefferson IPC, & Reconductor 0.65 miles 397MCM to 795MCM
03SP	AEPW-AEPW	IPC Jefferson - Lieberman 138 KV	136	151.6	152.2	Longwood - Wilkes 345KV	0	"
03SP	AEPW-AEPW	IPC Jefferson - Lieberman 138 KV	136	102.8	103.3	Southwest Shreveport - Diana 345KV	0	"
03SP	AEPW-CELE	International Paper - Wallace Lake 138KV	209	132.3	133.1	Dolet Hills 345/230KV Transformer	0	Dolet Hills Operating Guide Monitor Line at 260 MVA

Table 3 – continued - Previously Assigned and Identified SPP Facilities Impacted by the WR to EES 50 MW Transfer

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	BC % Loading	TC % Loading	Outaged Branch Causing Overload	ATC (MW)	Comment
03SP	AEPW-AEPW	Hugo Tap - Valliant 138KV	210	105.0	105.3	Hugo Power Plant - Valliant 138KV	0	Replace Wavetrapp @ Valliant
03SP	AEPW-AEPW	Hugo Tap - Valliant 138KV	210	103.3	103.6	Idabel - Valliant 138KV	0	"
03SP	AEPW-AEPW	Hugo Tap - Valliant 138KV	210	102.6	103.5	Lydia - Valliant 345KV	0	"
03SP	AEPW-AEPW	Hugo Tap - Valliant 138KV	210	100.9	101.1	Holy Creek - Idabel 138KV	0	"
03SP	OKGE-OKGE	Highway 59 - VBI 161KV	167	132.1	133.6	Muskogee - Fort Smith 345KV	0	OKGE: Replace 600A Switch 131 in VBI Substation with 1200A and rebuild 1.12 mile with 477 ACSR.
03SP	GRRD-OKGE	Highway 59 - Tahlequah 161KV	167	138.8	140.2	Muskogee - Fort Smith 345KV	0	Remove switches & replace structures.
03SP	SWPA-SWPA	Gore - Sallisaw 161KV	189	135.0	136.1	Muskogee - Fort Smith 345KV	0	Increase clearances of approximately ten spans
03SP	SWPA-SWPA	Gore - Muskogee Tap 161KV	206	117.8	118.8	Muskogee - Fort Smith 345KV	0	Reconductor 16 miles with 795ACSR
03SP	SWPA-SWPA	Glencoe - Norfolk 161KV	112	103.9	104.4	Norfolk - West Plains 161KV	0	Remove wave trap. Switch relaying channel to fiber optic shield wire. To be completed by SWPA for own needs.
03SP	SWPA-SWPA	Glencoe - Norfolk 161KV	112	100.2	100.8	Huben - Morgan 345KV	0	"
03SP	WERE-WERE	Gill Energy Center East - Oatville 69KV	72	121.2	122.1	Gill Energy Center East - Macarthur 69KV	0	Replace disconnect switches at Gill 69kV (use 800A.), Replace line switch at Oatville 69kV (use 800 A.)
03SP	WERE-WERE	Gill Energy Center East - Oatville 69KV	72	109.9	110.6	Gill Energy Center West - Haysville Junction 69KV	0	"
03SP	WERE-WERE	Gill Energy Center East - Macarthur 69KV	68	112.1	112.8	Gill Energy Center East - Oatville 69KV	0	Replace sub bus and jumpers at MacArthur 69kV
03SP	AEPW-EES	Fulton - Patmos 115kV	174	109.8	110.1	Crockett - Grimes 345KV	0	Recond. 7.1 miles with 1590 ACSR
03SP	AEPW-EES	Fulton - Patmos 115kV	174	101.8	102.3	Dolet Hills 345/230KV Transformer	0	"
03SP	AEPW-EES	Fulton - Patmos 115kV	174	100.3	100.7	Longwood - Wilkes 345KV	0	"
03SP	OKGE-OKGE	Fort Smith 500/345KV Transformer	720	114.5	115.4	Fort Smith 345/161KV Transformer	0	Solution Undetermined
03SP	OKGE-OKGE	Fort Smith 500/345KV Transformer	720	113.3	114.5	Pittsburg - Valliant 345KV	0	"
03SP	OKGE-OKGE	Fort Smith 500/345KV Transformer	720	110.3	111.2	Delaware - Neosho 345KV	0	"
03SP	OKGE-OKGE	Fort Smith 345/161KV Transformer	493	124.9	125.6	Fort Smith 500/345KV Transformer	0	"
03SP	OKGE-OKGE	Fort Smith - Muskogee 345KV	956	100.9	101.6	Delaware - Neosho 345KV	0	"
03SP	AEPW-AEPW	Flournoy - Oak Pan-Harr REC 138KV	209	110.9	111.4	Multiple Outage Contingency Southwest Shreveport to Longwood, 345kV Southwest Shreveport to Diana, 345kV	0	Rebuild 10.42 miles 666 ACSR to 1272 ACSR.
03SP	OKGE-AEPW	Fixico Tap - Maud 138KV	107	133.6	134.3	Pittsburg - Valliant 345KV	0	Rebuild 11.83 miles of 3/0 shielded Copperweld with 795 ACSR by AEP.
03SP	OKGE-AEPW	Fixico Tap - Maud 138KV	107	125.2	125.6	Muskogee - Fort Smith 345KV	0	"
03SP	AEPW-EES	Eureka Springs to Osage 161KV	244	102.0	102.7	Muskogee - Fort Smith 345KV	0	Solution Undetermined
03SP	AEPW-EES	Danville - Magazine REC 161KV	155	126.1	127.8	ANO - Fort Smith 500KV	0	"
03SP	AEPW-EES	Crockett - Grimes 345KV	789	108.9	109.5	Longwood - ELD EHV 345KV	0	Expedite resetting of CTs assigned to SPP-2001-365
03SP	AEPW-EES	Crockett - Grimes 345KV	789	103.7	104.3	Dolet Hills 345/230KV Transformer	0	"
03SP	AEPW-EES	Crockett - Grimes 345KV	789	102.1	102.6	Richard - Webre 500KV	0	"
03SP	SPRM-AECI	Clay - Logan 161KV	185	107.9	108.8	Huben - Morgan 345KV	0	Replace transmission line structures to allow operation at 100C
03SP	WERE-WERE	Circleville - King Hill N.M. Coop 115KV	92	117.3	118.6	Hoyt - Stranger Creek 345KV	0	Transmission Operating Directive 803

Table 3 – continued - Previously Assigned and Identified SPP Facilities Impacted by the WR to EES 50 MW Transfer

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	BC % Loading	TC % Loading	Outaged Branch Causing Overload	ATC (MW)	Comment
03SP	WERE-WERE	Circleville - Hoyt HTI Switching JCT 115KV	97	130.4	131.7	Hoyt - Stranger Creek 345kV	0	Replace 82 Structures
03SP	WERE-WERE	Circleville - Hoyt HTI Switching JCT 115KV	97	107.2	108.1	Iatan - St. Joe 345KV	0	"
03SP	WERE-WERE	Circleville - Hoyt HTI Switching JCT 115KV	97	101.7	102.5	Clifton - Greenleaf 115KV	0	"
03SP	WERE-WERE	Circleville - Hoyt HTI Switching JCT 115KV	97	101.1	102.3	Kelly - Tecumseh Hill 161KV	0	"
03SP	AEPW-AEPW	Cherokee REC - Tatum 138KV	209	142.9	143.4	Multiple Outage Contingency Southwest Shreveport to Longwood, 345kV Southwest Shreveport to Diana, 345kV	0	Reconductor 6.25 miles of 666 ACSR with 1272 ACSR
03SP	AEPW-AEPW	Cherokee REC - Tatum 138KV	209	127.7	128.1	Longwood - Wilkes 345KV	0	"
03SP	AEPW-AEPW	Cherokee REC - Tatum 138KV	209	121.7	122.0	Southwest Shreveport - Diana 345KV	0	"
03SP	AEPW-AEPW	Cherokee REC - Knox Lee 138KV	209	149.0	149.5	Multiple Outage Contingency Southwest Shreveport to Longwood, 345kV Southwest Shreveport to Diana, 345kV	0	Reconductor 3.25 miles of 666 ACSR with 1272 ACSR
03SP	AEPW-AEPW	Cherokee REC - Knox Lee 138kV	209	134.3	140.0	Crockett - Grimes 345KV	0	"
03SP	AEPW-AEPW	Cherokee REC - Knox Lee 138kV	209	133.8	134.2	Longwood - Wilkes 345KV	0	"
03SP	AEPW-AEPW	Cherokee REC - Knox Lee 138KV	209	104.7	105.0	Muskogee - Fort Smith 345KV	0	"
03SP	EES-SWPA	Bull Shoals - Midway 161KV	162	155.8	156.9	Buford Tap - Bull Shoals 161KV	0	Third Party Facility with SWPA Terminal Equip Limitations Replace disconnect switches, metering CTs and wave trap at Bull Shoals by SPA.
03SP	EES-SWPA	Bull Shoals - Midway 161KV	162	128.1	128.5	Ises - Morefield 161KV	0	"
03SP	SWPA-EES	Bull Shoals - Midway 161KV	162	115.0	115.8	Muskogee - Fort Smith 345KV	0	"
03SP	EES-SWPA	Bull Shoals - Midway 161KV	162	111.0	111.5	Fletcher - Sweet Water 161KV	0	"
03SP	EES-SWPA	Bull Shoals - Midway 161KV	162	108.7	109.3	Longwood - Wilkes 345KV	0	"
03SP	EES-SWPA	Bull Shoals - Midway 161KV	162	107.4	108.0	Southwest Shreveport - Diana 345KV	0	"
03SP	SWPA-SWPA	Buford Tap - Norfolk 161KV	189	122.6	123.5	Bull Shoals - Midway 161KV	0	Resag conductor and replace structures as necessary
03SP	SWPA-SWPA	Buford Tap - Norfolk 161KV	189	106.3	107.3	Midway - Mountain Home 161KV	0	"
03SP	SWPA-SWPA	Buford Tap - Bull Shoals 161KV	223	104.8	105.6	Bull Shoals - Midway 161KV	0	Replace three 600A switches @ Bull Shoals w/ 1200 A switches. Resag conductor and replace structures as necessary to achieve 195 MW rating.
03SP	AEPW-SWPA	Broken Bow - Craig Junction 138kV	107	110.5	111.4	BBDAMTP - Mountain River 138kV	0	SWPA: Reconnect metering CTs to 800/5 ratio. AEPW: Rebuild 7.66 miles of 3/0 CW CU with 795 ACSR
03SP	AEPW-SWPA	Broken Bow - Craig Junction 138kV	107	106.5	107.5	Craig Junction - Mountain River 138KV	0	"
03SP	AEPW-AEPW	Bonanza - Hackett AECC 161KV	177	113.3	114.1	ANO - Fort Smith 500KV	0	Solution Undetermined
03SP	OKGE-AEPW	Bonanza - Bonanza Tap 161KV	177	121.8	122.5	ANO - Fort Smith 500KV	0	Rebuild 0.06 miles of 397.5 ACSR with 795MCM ACSR
03SP	SWPA-AEPW	Beaver - Eureka Springs 161KV	274	133.4	134.0	Monett - Brookline 345KV	0	AEPW Reconductor 1.25 miles with 1590ACSR SWPA Reconnect CT's; Replace metering & reset relays
03SP	SWPA-AEPW	Beaver - Eureka Springs 161KV	274	133.3	133.9	Flint Creek - Monett 345KV	0	"
03SP	SWPA-AEPW	Beaver - Eureka Springs 161KV	274	133.3	133.8	Flint Creek - Monett 345KV	0	"
03SP	SWPA-AEPW	Beaver - Eureka Springs 161KV	274	128.9	129.7	Muskogee - Fort Smith 345KV	0	"

Table 3 – continued - Previously Assigned and Identified SPP Facilities Impacted by the WR to EES 50 MW Transfer

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	BC % Loading	TC % Loading	Outaged Branch Causing Overload	ATC (MW)	Comment
03SP	AEPW-AEPW	Arsenal Hill - Raines 138KV	234	111.2	111.5	Multiple Outage Contingency Southwest Shreveport to Longwood, 345kV Southwest Shreveport to Diana, 345kV	0	Rebuild 5.32 miles 2-266MCM ACSR with 1590MCM ACSR
03SP	AEPW-AEPW	Alumax Tap - NW Texarkana 138KV	261	128.9	129.1	NW Texarkana-Bann T - Northwest Texarkana 138KV	0	Replace Switches Alumax Tap
03SP	AEPW-AEPW	Alumax Tap - Bann 138KV	261	122.9	123.1	NW Texarkana-Bann T - Northwest Texarkana 138KV	0	'Replace six (6) 138 kV switches, five at Bann & one at Alumax Tap.
03SP	WERE-WERE	166th Street - Jarbalo Junction Switching Station 115kV	97	112.6	113.4	Midland Junction - Pentagon 115KV	0	Transmission Operating Directive 1202
03SP	WERE-WERE	166th Street - Jarbalo Junction Switching Station 115kV	97	103.1	103.9	Iatan - St. Joe 345KV	0	"
03SP	OKGE-OKGE	Muskogee - Pecan Creek 345KV	478	106.0	106.4	Muskogee - Fort Smith 345KV	0	Change CT Ratio @ Pecan Creek.
03SP	OKGE-OKGE	Fort Smith 500/345KV Transformer	720	99.8	100.9	Lydia - Valliant 345KV	10	Solution Undetermined
03SP	WERE-WERE	Gill Energy Center East - Oatville 69KV	72	99.8	100.5	Hoover South - Sheridan 69KV	13	Replace disconnect switches at Gill 69kV (use 800A.), Replace line switch at Oatville 69kV (use 800 A.)
03SP	OKGE-OKGE	Fort Smith 500/161KV Transformer	480	99.0	101.7	Fort Smith 500/345KV Transformer	18	Solution Undetermined
03SP	AEPW-AEPW	Patterson - South Nashville 138KV	118	99.9	100.2	Broken Bow Tap - Idabel 138KV	21	Rebuild 17.72 miles of 4/0 CU with 795 ACSR.
03SP	OKGE-OKGE	Fort Smith - Muskogee 345KV	956	99.6	100.4	Huben - Morgan 345KV	22	Solution Undetermined
03SP	WERE-WERE	166th Street - Jarbalo Junction Switching Station 115kV	97	99.7	100.4	Eudora Township - Wakarusa Junction Switching Station 115KV	24	Transmission Operating Directive 1202
03SP	AEPW-AEPW	Patterson - South Nashville 138KV	118	99.8	100.2	Dell - Ises 500KV	25	Rebuild 17.72 miles of 4/0 CU with 795 ACSR.
03SP	AEPW-AEPW	Patterson - South Nashville 138KV	118	99.8	100.2	Broken Bow - Holy Creek 138KV	26	"
03SP	OKGE-OKGE	Fort Smith - Muskogee 345KV	956	99.5	100.4	Lydia - Valliant 345KV	28	Solution Undetermined
03SP	AEPW-AEPW	Rock Hill - Tatum 138KV	209	99.9	100.1	Southwest Shreveport - Western Electric T 138KV	32	Reconductor 0.81 miles 666MCM to 1272 ACSR
03SP	OKGE-OKGE	Fort Smith 500/345KV Transformer	720	99.4	100.3	Chamber Springs - Clarksville 345KV	34	Solution Undetermined
03SP	EMDE-EMDE	Oakland North - Oronogo JCT. 161KV	214	99.7	100.1	Asbury - Purcell Southwest 161KV	34	Reconstruct and replace 1.4 miles of 556 ACSR with Bundled 556 ACSR
03SP	OKGE-OKGE	Fort Smith 500/345KV Transformer	720	99.4	100.3	Chamber Springs 345/161KV Transformer	35	Solution Undetermined
03SP	AEPW-AEPW	Patterson - South Nashville 138KV	118	99.7	100.0	ELD EHV - Mt. Olive 500KV	45	Rebuild 17.72 miles of 4/0 CU with 795 ACSR.
03FA	AEPW-AEPW	Wilkes 345/138KV	493	106.9	107.3	Longwood - Wilkes 345KV	0	Solution Undetermined
03FA	SWPA-OKGE	Van Buren - VBI 161KV	335	109.3	110.1	Muskogee - Fort Smith 345KV	0	SPA: Replace metering CTs, disconnect switches, breakers, and bus differential relaying at Van Buren. OG&E Replace Switch and reconnect CT ratio at VBI.
03FA	SWPA-OKGE	Van Buren - VBI 161KV	335	102.2	102.7	AES - Bonanza Tap 161KV	0	"
03FA	WERE-WERE	Stull Switching Station - Tecumseh Hill 115 KV	92	108.9	109.5	Hoyt - Stranger Creek 345kV	0	WERE Transmission Op Directive 803
03FA	AEPW-AEPW	Sabine Mining Co. - Southeast Marshall 138KV	287	108.0	108.3	Longwood - Wilkes 345KV	0	Solution Undetermined
03FA	AEPW-AEPW	Rock Hill - Tatum 138KV	236	101.0	101.4	Multiple Outage Contingency Southwest Shreveport to Longwood, 345kV Southwest Shreveport to Diana, 345kV	0	Reconductor 0.81 miles 666MCM to 1272 ACSR
03FA	OKGE-OKGE	Pecan Creek 345/161KV Transformer	369	118.3	118.8	Muskogee - Fort Smith 345KV	0	Add 2nd 345/161 kV 369MVA unit
03FA	EES-SWPA	Norfolk - Southland 161KV	162	108.8	109.8	Buford Tap - Bull Shoals 161KV	0	Solution Undetermined
03FA	EES-SWPA	Norfolk - Southland 161KV	162	108.1	109.1	Buford Tap - Norfolk 161KV	0	"
03FA	WERE-WERE	Mockingbird Hill Switching Station - Stull Switching Station 115 KV	92	104.3	104.9	Hoyt - Stranger Creek 345kV	0	Westar mitigation planned in 2005.

Table 3 – continued - Previously Assigned and Identified SPP Facilities Impacted by the WR to EES 50 MW Transfer

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	BC % Loading	TC % Loading	Outaged Branch Causing Overload	ATC (MW)	Comment
03FA	AEPW-AEPW	McNab REC - Okay 115KV	149	109.9	110.5	Longwood - Wilkes 345KV	0	Solution Undetermined
03FA	AEPW-AEPW	McNab REC - Okay 115KV	149	106.6	107.2	Muskogee - Fort Smith 345KV	0	"
03FA	AEPW-AEPW	McNab REC - Okay 115KV	149	103.1	103.7	Patterson - South Nashville 138KV	0	"
03FA	AEPW-AEPW	McNab REC - Okay 115KV	149	102.8	103.4	Lebrock - Tenaska Rusk County 345KV	0	"
03FA	AEPW-AEPW	McNab REC - Okay 115KV	149	101.6	102.1	Southwest Shreveport - Diana 345KV	0	"
03FA	AEPW-AEPW	Magazine REC - North Magazine 161KV	177	127.3	129.0	ANO - Fort Smith 500KV	0	"
03FA	AEPW-AEPW	IPC Jefferson - Lieberman 138 KV	154	114.6	115.1	Longwood - Wilkes 345KV	0	Reconductor 26.35 miles of 336 ACSR with 795 ACSR, Replace Switches @ Lieberman, Reset Relays @ Jefferson IPC, & Reconductor 0.65 miles 397MCM to 795MCM
03FA	AEPW-AEPW	Hugo Tap - Valliant 138KV	210	109.3	110.2	Lydia - Valliant 345KV	0	Replace Wavetrap @ Valliant
03FA	AEPW-WFEC	Hugo Power Plant - Valliant 138KV	288	100.3	101.3	Pittsburg - Valliant 345KV	0	Solution Undetermined
03FA	OKGE-OKGE	Highway 59 - VBI 161KV	167	103.4	104.9	Muskogee - Fort Smith 345KV	0	OKGE: Replace 600A Switch 131 in VBI Substation with 1200A and rebuild 1.12 mile with 477 ACSR.
03FA	GRRD-OKGE	Highway 59 - Tahlequah 161KV	167	108.6	110.0	Muskogee - Fort Smith 345KV	0	Remove switches & replace structures.
03FA	GRRD-OKGE	Highway 59 - Tahlequah 161KV	167	108.6	110.0	Muskogee - Fort Smith 345KV	0	"
03FA	SWPA-SWPA	Glencoe - Norfolk 161KV	112	113.3	113.8	Norfolk - West Plains 161KV	0	Remove wave trap. Switch relaying channel to fiber optic shield wire. To be completed by SWPA for own needs.
03FA	SWPA-SWPA	Glencoe - Norfolk 161KV	112	110.4	110.9	Huben - Morgan 345KV	0	"
03FA	SWPA-SWPA	Glencoe - Norfolk 161KV	112	108.3	108.8	Greers Ferry - Jonesborro 161KV	0	"
03FA	SWPA-SWPA	Glencoe - Norfolk 161KV	112	106.4	106.9	Muskogee - Fort Smith 345KV	0	"
03FA	SWPA-SWPA	Glencoe - Norfolk 161KV	112	104.8	105.4	Pittsburg - Valliant 345KV	0	"
03FA	OKGE-OKGE	Fort Smith 500/345KV Transformer	720	101.3	102.5	Pittsburg - Valliant 345KV	0	Solution Undetermined
03FA	OKGE-OKGE	Fort Smith 500/345KV Transformer	720	101.0	102.0	Fort Smith 345/161KV Transformer	0	"
03FA	OKGE-OKGE	Fort Smith 500/161KV Transformer	480	104.1	105.7	Fort Smith 500/345KV Transformer	0	"
03FA	OKGE-OKGE	Fort Smith 345/161KV Transformer	493	106.1	106.8	Fort Smith 500/345KV Transformer	0	"
03FA	OKGE-AEPW	Fixico Tap - Maud 138KV	122	124.2	124.8	Pittsburg - Valliant 345KV	0	Rebuild 11.83 miles of 3/0 shielded Copperweld with 795 ACSR by AEP.
03FA	OKGE-AEPW	Fixico Tap - Maud 138KV	122	110.8	111.2	Muskogee - Fort Smith 345KV	0	"
03FA	AEPW-EES	Danville - Magazine REC 161KV	177	125.4	127.1	ANO - Fort Smith 500KV	0	Solution Undetermined
03FA	AEPW-EES	Crockett - Grimes 345KV	789	111.1	111.7	Hartburg - Mt. Olive 500KV	0	Expedite resetting of CTs assigned to SPP-2001-365
03FA	AEPW-EES	Crockett - Grimes 345KV	789	108.1	108.6	Richard - Webre 500KV	0	"
03FA	AEPW-EES	Crockett - Grimes 345KV	789	106.9	107.4	Cypress - Hartburg 500KV	0	"
03FA	AEPW-EES	Crockett - Grimes 345KV	789	105.0	105.5	Longwood - Wilkes 345KV	0	"
03FA	AEPW-EES	Crockett - Grimes 345KV	789	103.9	104.3	Southwest Shreveport - Diana 345KV	0	"
03FA	SPRM-AECI	Clay - Logan 161KV	185	118.3	119.2	Huben - Morgan 345KV	0	Replace transmission line structures to allow operation at 100C
03FA	WERE-WERE	Circleville - King Hill N.M. Coop 115KV	92	111.3	112.4	Hoyt - Stranger Creek 345kV	0	Transmission Operating Directive 803
03FA	WERE-WERE	Circleville - Hoyt HTI Switching JCT 115KV	97	119.1	120.2	Hoyt - Stranger Creek 345kV	0	Replace 82 Structures

Table 3 – continued - Previously Assigned and Identified SPP Facilities Impacted by the WR to EES 50 MW Transfer

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	BC % Loading	TC % Loading	Outaged Branch Causing Overload	ATC (MW)	Comment
03FA	WERE-WERE	Circleville - Hoyt HTI Switching JCT 115KV	97	100.2	101.0	Iatan - St. Joe 345KV	0	"
03FA	AEPW-AEPW	Cherokee REC - Tatum 138KV	236	102.1	102.4	Multiple Outage Contingency Southwest Shreveport to Longwood, 345kV Southwest Shreveport to Diana, 345kV	0	Reconductor 6.25 miles of 666 ACSR with 1272 ACSR
03FA	AEPW-AEPW	Cherokee - Knox Lee 138KV	236	106.9	107.2	Multiple Outage Contingency Southwest Shreveport to Longwood, 345kV Southwest Shreveport to Diana, 345kV	0	Reconductor 3.25 miles of 666 ACSR with 1272 ACSR
03FA	SWPA-EES	Bull Shoals - Midway 161KV	162	142.7	143.7	Buford Tap - Bull Shoals 161KV	0	Third Party Facility with SWPA Terminal Equip Limitations Replace disconnect switches, metering CTs and wave trap at Bull Shoals by SPA.
03FA	SWPA-EES	Bull Shoals - Midway 161KV	162	101.4	102.2	Muskogee - Fort Smith 345KV	0	"
03FA	SWPA-SWPA	Buford Tap - Norfork 161KV	189	115.0	115.9	Bull Shoals - Midway 161KV	0	Resag conductor and replace structures as necessary
03FA	SWPA-SWPA	Buford Tap - Norfork 161KV	189	104.9	105.8	Midway - Mountain Home 161KV	0	"
03FA	AEPW-SWPA	Broken Bow - Craig Junction 138kV	122	117.8	118.7	BBDAMTP - Mountain River 138kV	0	SWPA: Reconnect metering CTs to 800/5 ratio. AEPW: Rebuild 7.66 miles of 3/0 CW CU with 795 ACSR
03FA	AEPW-SWPA	Broken Bow - Craig Junction 138kV	122	115.4	116.2	Craig Junction - Mountain River 138KV	0	"
03FA	SWPA-AEPW	Beaver - Eureka Springs 161KV	287	118.9	119.3	Monett - Brookline 345KV	0	AEPW Reconductor 1.25 miles with 1590ACSR SWPA Reconnect CT's; Replace metering & reset relays
03FA	SWPA-AEPW	Beaver - Eureka Springs 161KV	287	118.9	119.3	Flint Creek - Monett 345KV	0	"
03FA	SWPA-AEPW	Beaver - Eureka Springs 161KV	287	112.2	113.0	Muskogee - Fort Smith 345KV	0	"
03FA	SWPA-AEPW	Beaver - Eureka Springs 161KV	287	102.9	103.3	Delaware - Northeast Station 345KV	0	"
03FA	SWPA-AEPW	Beaver - Eureka Springs 161KV	287	101.7	102.3	Pittsburg - Valliant 345KV	0	"
03FA	AEPW-AEPW	Ashdown REC - Patterson 115KV	149	103.4	103.8	Longwood - Wilkes 345KV	0	Solution Undetermined
03FA	AEPW-AEPW	Ashdown REC - Patterson 115KV	149	100.1	100.6	Midway REC - Nashville 69KV	0	"
03FA	AEPW-AEPW	Ashdown REC - Okay 115KV	149	100.3	100.8	Longwood - Wilkes 345KV	0	"
03FA	AEPW-AEPW	Alumax Tap - NW Texarkana 138KV	294	108.7	108.9	NW Texarkana-Bann T - Northwest Texarkana 138KV	0	Replace Switches Alumax Tap
03FA	AEPW-AEPW	Alumax Tap - Bann 138KV	287	106.0	106.2	NW Texarkana-Bann T - Northwest Texarkana 138KV	0	'Replace six (6) 138 kV switches, five at Bann & one at Alumax Tap.
03FA	OKGE-OKGE	Fort Smith 500/345KV Transformer	720	99.7	100.8	Lydia - Valliant 345KV	15	Solution Undetermined
03FA	AEPW-AEPW	Ashdown REC - Patterson 115KV	149	99.8	100.3	Muskogee - Fort Smith 345KV	17	"

5. Conclusion

The WR to EES 50MW transfer causes new facility overloads on the SPP transmission system, as well as increasing the loading on previously identified facilities. If no options are available for relieving these impacted facilities, the request for service will be refused. The WR to EES transfer was studied for the requested time period only. If the limiting constraints for the WR to EES transfer are relieved, the impact study must be extended to include the entire planning horizon prior to accepting the request for service. Pursuant to the decision of the FERC in Dkt. No. ER02-86, the transfer must be studied for the total planning horizon to determine if capacity is available for renewal of service with no restrictions.

Appendix A

PSS/E CHOICES IN RUNNING LOAD FLOW PROGRAM AND ACCC

BASE CASES:

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

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

ACCC CASES:

Solutions – AC contingency checking (ACCC)

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

Newton Solution:

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

Appendix B

Table 1a – Model Data for SPP Facility Overloads caused by the WR to EES 50 MW Transfer

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	BC % Loading	TC % Loading	Outaged Branch Causing Overload	ATC (MW)
03SP	AEPW-SWPA	53136 EUREKA 5 161 to 52672 TABLE R5 161 CKT 1	167	99.6	100.1	53136 EUREKA 5 161 to 99832 5OSAGE # 161 CKT1	37
03SP	AEPW-AEPW	53187 GENTRYR5 161 to 53139 FLINTCR5 161 CKT 1	353	100.0	100.1	52708 DARDANE5 161 to 52714 CLARKSV5 161 CKT1	0
03SP	AEPW-AEPW	53187 GENTRYR5 161 to 53139 FLINTCR5 161 CKT 1	353	100.0	100.1	53945 N.E.S.-4 138 to 53959 CHELSA4 138 CKT1	0
03SP	WFEC-OKGE	55917 FRNKLNS4 138 to 54946 MIDWEST4 138 CKT 1	215	100.0	100.2	54947 CANADAN4 138 to 55842 CANADNS4 138 CKT1	0
03SP	WERE-WERE	57153 COLINE 3 115 to 57192 HOOKJCT3 115 CKT 1	92	99.6	109.4	57180 TEC E 3 115 to 57182 TECHILE3 115 CKT1	2
03SP	WERE-WERE	57236 COOP 3 115 to 57277 WAKARUS3 115 CKT 1	92	99.8	100.8	57271 SWLWRNC3 115 to 57277 WAKARUS3 115 CKT1	12
03SP	WERE-WERE	57421 HEC GT 3 115 to 57413 CIRCLE 3 115 CKT 1	152	98.6	102.2	57512 43LORAN269.0 to 57517 MEADOW 269.0 CKT1	19
03SP	WERE-WERE	57421 HEC GT 3 115 to 57413 CIRCLE 3 115 CKT 1	152	96.7	100.2	57517 MEADOW 269.0 to 57526 16WOODJ269.0 CKT1	47
03FA	SWPA-SWPA	52716 OZARK H5 161 to 52714 CLARKSV5 161 CKT 1	218	99.1	100.1	55305 FTSMITH8 500 to 99486 8ANO 50 500 CKT1	44

Table 3a – Model Data for SPP Facility Overloads caused by the WR to EES 50 MW Transfer

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	BC % Loading	TC % Loading	Outaged Branch Causing Overload	ATC (MW)	Comment
02FA	WERE-WERE	57636 GREEN 269.0 to 57631 CC4VERN269.0 CKT 1	45	105.0	106.6	56797 WOLFCRK7 345 to 57981 LACYGNE7 345 CKT1	0	Westar Transmission Operating Directive 1304
02FA	WERE-WERE	57165 HTI JCT3 115 to 57152 CIRCLVL3 115 CKT 1	92	110.1	110.8	56765 HOYT 7 345 to 56772 STRANGR7 345 CKT1	0	Replace 82 Structures
02FA	WERE-WERE	57631 CC4VERN269.0 to 57623 ATHENS 269.0 CKT 1	45	103.7	105.3	56797 WOLFCRK7 345 to 57981 LACYGNE7 345 CKT1	0	Westar Transmission Operating Directive 1304
02WP	OKGE-OKGE	55235 PECANCK7 345 to 55234 PECANCK5 161 CKT 1	369	105.3	105.8	55224 MUSKOG7 345 to 55302 FTSMITH7 345 CKT1	0	Add 2nd 345/161 kV 369MVA unit
02WP	WERE-WERE	57152 CIRCLVL3 115 to 57331 KING HL3 115 CKT 1	92	105.0	105.6	56765 HOYT 7 345 to 56772 STRANGR7 345 CKT1	0	Transmission Operating Directive 803
02WP	WERE-WERE	57165 HTI JCT3 115 to 57152 CIRCLVL3 115 CKT 1	97	111.0	111.6	56765 HOYT 7 345 to 56772 STRANGR7 345 CKT1	0	Replace 82 Structures
02WP	AEPW-AEPW	53245 ALUMXT 4 138 to 53300 NWTXARK4 138 CKT 1	287	100.0	100.2	53299 NWT-BNT4 138 to 53300 NWTXARK4 138 CKT1	0	Replace Switches Alumax Tap
03G	AEPW-AEPW	53461 WALLAKE4 138 to 53446 S SHV 4 138 CKT 1	210	110.2	110.8	50045 DOLHILL7 345 to 50046 DOLHILL6 230 CKT1	0	Dolet Hills Operating Guide Monitor Line at 260 MVA
03G	OKGE-OKGE	55235 PECANCK7 345 to 55234 PECANCK5 161 CKT 1	369	114.5	114.9	55224 MUSKOG7 345 to 55302 FTSMITH7 345 CKT1	0	Add 2nd 345/161 kV 369MVA unit
03G	AEPW-AEPW	53548 IPCJEFF4 138 to 53420 LIEBERM4 138 CKT 1	154	102.5	103.0	53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1	0	Reconductor 26.35 miles of 336 ACSR with 795 ACSR, Replace Switches @ Lieberman, Reset Relays @ Jefferson IPC, & Reconductor 0.65 miles 397MCM to 795MCM
03G	SWPA-SWPA	52648 NORFORK5 161 to 52646 GLENCOE5 161 CKT 1	112	104.6	105.0	99742 8DELL 5 500 to 99818 8ISES 5 500 CKT1	0	Remove wave trap. Switch relaying channel to fiber optic shield wire. To be completed by SWPA for own needs.
03G	SWPA-SWPA	52648 NORFORK5 161 to 52646 GLENCOE5 161 CKT 1	112	102.3	102.8	52648 NORFORK5 161 to 96123 5WPLAIN 161 CKT1	0	"
03G	SWPA-SWPA	52648 NORFORK5 161 to 52646 GLENCOE5 161 CKT 1	112	101.1	101.6	99627 8KEO 50 500 to 99788 8WM-EHV 500 CKT1	0	"
03G	WERE-WERE	57636 GREEN 269.0 to 57631 CC4VERN269.0 CKT 1	45	114.0	115.5	56797 WOLFCRK7 345 to 57981 LACYGNE7 345 CKT1	0	Westar Transmission Operating Directive 1304
03G	WERE-WERE	57152 CIRCLVL3 115 to 57331 KING HL3 115 CKT 1	92	101.5	102.3	56765 HOYT 7 345 to 56772 STRANGR7 345 CKT1	0	Transmission Operating Directive 803
03G	WERE-WERE	57165 HTI JCT3 115 to 57152 CIRCLVL3 115 CKT 1	97	109.7	110.4	56765 HOYT 7 345 to 56772 STRANGR7 345 CKT1	0	Replace 82 Structures
03G	WERE-WERE	57631 CC4VERN269.0 to 57623 ATHENS 269.0 CKT 1	45	112.7	114.2	56797 WOLFCRK7 345 to 57981 LACYGNE7 345 CKT1	0	Westar Transmission Operating Directive 1304
03SP	AEPW-AEPW	53619 WILKES 4 138 to 53551 JEFFRSN4 138 CKT 1	261	106.1	106.6	53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1	0	Solution Undetermined
03SP	WERE-WERE	57438 WMCPHER3 115 to 57374 SPHILPJ3 115 CKT 1	68	115.4	120.7	56872 EMCIPHER6 230 to 56873 SUMMIT 6 230 CKT1	0	Transmission Operating Directive 613
03SP	SWPA-OKGE	52722 VAN BUR5 161 to 55339 VBI 5 161 CKT 1	335	126.0	126.8	55224 MUSKOG7 345 to 55302 FTSMITH7 345 CKT1	0	SPA: Replace metering CTs, disconnect switches, breakers, and bus differential relaying at Van Buren. OG&E Replace Switch and reconnect CT ratio at VBI.
03SP	SWPA-OKGE	52722 VAN BUR5 161 to 55339 VBI 5 161 CKT 1	335	111.7	112.2	55261 BONANZT5 161 to 55262 AES 5 161 CKT1	0	"
03SP	WERE-WERE	57182 TECHILE3 115 to 57270 STULL T3 115 CKT 1	92	132.7	137.3	56765 HOYT 7 345 to 56772 STRANGR7 345 CKT1	0	WERE Transmission Op Directive 803
03SP	AEPW-AEPW	53461 WALLAKE4 138 to 53446 S SHV 4 138 CKT 1	209	135.4	136.2	50045 DOLHILL7 345 to 50046 DOLHILL6 230 CKT1	0	Dolet Hills Operating Guide Monitor Line at 260 MVA
03SP	AEPW-AEPW	53603 SCOTTSV4 138 to 53605 SEMRSHL4 138 CKT 1	287	106.6	107.0	53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1	0	Solution Undetermined
03SP	AEPW-AEPW	53605 SEMRSHL4 138 to 53602 SABMINT4 138 CKT 1	287	122.7	123.0	53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1	0	"
03SP	AEPW-AEPW	53605 SEMRSHL4 138 to 53602 SABMINT4 138 CKT 1	287	106.4	106.7	53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT1	0	"
03SP	AEPW-AEPW	53598 ROKHILL4 138 to 53611 TATUM 4 138 CKT 1	209	141.2	141.7	Multiple Outage Contingency 53454 SW SHV 7 345 to 53424 LONGWD 7 345 CKT1 53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT 1	0	Reconductor 0.81 miles 666MCM to 1272 ACSR
03SP	AEPW-AEPW	53598 ROKHILL4 138 to 53611 TATUM 4 138 CKT 1	209	126.0	126.4	53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1	0	"
03SP	AEPW-AEPW	53598 ROKHILL4 138 to 53611 TATUM 4 138 CKT 1	209	120.0	120.3	53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT1	0	"
03SP	AEPW-AEPW	53598 ROKHILL4 138 to 53611 TATUM 4 138 CKT 1	209	99.8	100.0	53453 SW SHV 4 138 to 53454 SW SHV 7 345 CKT1	0	"
03SP	SWPA-SWPA	52782 RS KERR5 161 to 52722 VAN BUR5 161 CKT 1	223	100.5	100.8	55261 BONANZT5 161 to 55262 AES 5 161 CKT1	0	Solution Undetermined

Table 3a – continued - Model Data for SPP Facility Overloads caused by the WR to EES 50 MW Transfer

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	BC % Loading	TC % Loading	Outaged Branch Causing Overload	ATC (MW)	Comment
03SP	AEPW-AEPW	53602 SABMINT4 138 to 53592 PIRKEY 4 138 CKT 1	340	105.8	106.1	53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1	0	"
03SP	WERE-WERE	57374 SPHILPJ3 115 to 57372 PHILIPS3 115 CKT 1	160	106.4	111.2	56872 EMCIPHER6 230 to 56873 SUMMIT 6 230 CKT1	0	"
03SP	OKGE-OKGE	55235 PECANCK7 345 to 55234 PECANCK5 161 CKT 1	369	136.1	136.5	55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	0	Add 2nd 345/161 kV 369MVA unit
03SP	AEPW-AEPW	53306 PATTERS4 138 to 53321 SNASHVL4 138 CKT 1	118	137.5	138.0	53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1	0	Rebuild 17.72 miles of 4/0 CU with 795 ACSR.
03SP	AEPW-AEPW	53306 PATTERS4 138 to 53321 SNASHVL4 138 CKT 1	118	119.0	119.6	55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	0	"
03SP	AEPW-AEPW	53306 PATTERS4 138 to 53321 SNASHVL4 138 CKT 1	118	118.6	119.1	53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1	0	"
03SP	AEPW-AEPW	53306 PATTERS4 138 to 53321 SNASHVL4 138 CKT 1	118	109.2	109.6	53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT1	0	"
03SP	AEPW-AEPW	53306 PATTERS4 138 to 53321 SNASHVL4 138 CKT 1	118	100.0	100.3	55834 BROKBNW4 138 to 55878 DOMINAN4 138 CKT1	0	"
03SP	EMDE-EMDE	59467 ORO110 5 161 to 59494 OAK432 5 161 CKT 1	214	104.7	105.1	59472 TIP292 5 161 to 59483 JOP389 5 161 CKT1	0	Reconstruct and replace 1.4 miles of 556 ACSR with Bundled 556 ACSR
03SP	EES-SWPA	99835 5SOLAND# 161 to 52648 NORFORK5 161 CKT 1	162	101.2	102.3	52660 BULL SH5 161 to 52661 BUFRDTP5 161 CKT1	0	Solution Undetermined
03SP	EES-SWPA	99835 5SOLAND# 161 to 52648 NORFORK5 161 CKT 1	162	100.2	101.3	52648 NORFORK5 161 to 52661 BUFRDTP5 161 CKT1	0	"
03SP	AEPW-AEPW	53473 NORAM 4 138 to 53439 RAINES 4 138 CKT 1	234	121.6	122.0	Multiple Outage Contingency 53454 SW SHV 7 345 to 53424 LONGWD 7 345 CKT1 53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT 1	0	Rebuild 5.58 miles of 2-266 ACSR with 1590 ACSR
03SP	SWPA-OKGE	52758 MUSKTAP5 161 to 55222 MUSKOGEE5 161 CKT 1	223	100.0	100.6	55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	0	OKGE: Replace 800A wave trap at Muskogee and increase relay CTR to 1200-5. SPA: None.
03SP	AEPW-EES	53321 SNASHVL4 138 to 99389 4MURFRE 138 CKT 1	105	127.1	127.7	53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1	0	Replace South Nashville Wavetrap
03SP	AEPW-EES	53321 SNASHVL4 138 to 99389 4MURFRE 138 CKT 1	105	126.7	127.3	99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT1	0	"
03SP	AEPW-EES	53321 SNASHVL4 138 to 99389 4MURFRE 138 CKT 1	105	107.0	107.6	55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	0	"
03SP	AEPW-EES	53321 SNASHVL4 138 to 99389 4MURFRE 138 CKT 1	105	106.6	107.0	53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1	0	"
03SP	WERE-WERE	57270 STULL T3 115 to 57253 MOCKBRD3 115 CKT 1	92	126.1	130.8	56765 HOYT 7 345 to 56772 STRANGR7 345 CKT1	0	Westar mitigation planned in 2005.
03SP	AEPW-AEPW	53579 NMARSHL269.0 to 53570 MARSHAL269.0 CKT 1	72	118.0	122.1	53526 CROCKET7 345 to 97513 7GRIMES 345 CKT1	0	'Replace 350 CU bus & jumpers @ North Marshall
03SP	AEPW-AEPW	53149 NMAGZIN5 161 to 53201 MAGZREA5 161 CKT 1	155	129.2	131.0	55305 FTSMITH8 500 to 99486 8ANO 50 500 CKT1	0	Solution Undetermined
03SP	AEPW-AEPW	53457 OAKPH 4 138 to 53423 LONGWD 4 138 CKT 1	209	117.0	117.5	Multiple Outage Contingency 53454 SW SHV 7 345 to 53424 LONGWD 7 345 CKT1 53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT 1	0	Rebuild 1.8 miles of 666 ACSR with 1590 ACSR
03SP	AEPW-AEPW	53473 NORAM 4 138 to 53423 LONGWD 4 138 CKT 1	234	122.8	123.2	Multiple Outage Contingency 53454 SW SHV 7 345 to 53424 LONGWD 7 345 CKT1 53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT 1	0	Reconductor 4.66 miles of bundled 266 ACSR with 1590 ACSR & replace jumpers
03SP	AECI-SWPA	96867 5LBRTYTP 161 to 52722 VAN BUR5 161 CKT 1	189	127.5	128.9	55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	0	Solution Undetermined
03SP	SWPA-AECI	52750 SALISAW5 161 to 96867 5LBRTYTP 161 CKT 1	189	130.5	131.8	55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	0	"
03SP	AEPW-AEPW	53548 IPCJEFF4 138 to 53420 LIEBERM4 138 CKT 1	136	151.6	152.2	53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1	0	Reconductor 26.35 miles of 336 ACSR with 795 ACSR, Replace Switches @ Lieberman, Reset Relays @ Jefferson IPC, & Reconductor 0.65 miles 397MCM to 795MCM
03SP	AEPW-AEPW	53548 IPCJEFF4 138 to 53420 LIEBERM4 138 CKT 1	136	151.6	152.2	53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1	0	"
03SP	AEPW-AEPW	53548 IPCJEFF4 138 to 53420 LIEBERM4 138 CKT 1	136	102.8	103.3	53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT1	0	"
03SP	AEPW-CELE	53461 WALLAKE4 138 to 50090 IPAPER 4 138 CKT 1	209	132.3	133.1	50045 DOLHILL7 345 to 50046 DOLHILL6 230 CKT1	0	Dolet Hills Operating Guide Monitor Line at 260 MVA

Table 3a – continued - Model Data for SPP Facility Overloads caused by the WR to EES 50 MW Transfer

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	BC % Loading	TC % Loading	Outaged Branch Causing Overload	ATC (MW)	Comment
03SP	AEPW-AEPW	54014 HUGOTAP4 138 to 54044 VALIANT4 138 CKT 1	210	105.0	105.3	55948 HUGO PP4 138 to 56079 VALLANT4 138 CKT1	0	Replace Wavetrap @ Valliant
03SP	AEPW-AEPW	54014 HUGOTAP4 138 to 54044 VALIANT4 138 CKT 1	210	103.3	103.6	55953 IDABEL 4 138 to 56079 VALLANT4 138 CKT1	0	"
03SP	AEPW-AEPW	54014 HUGOTAP4 138 to 54044 VALIANT4 138 CKT 1	210	102.6	103.5	53277 LYDIA 7 345 to 54037 VALIANT7 345 CKT1	0	"
03SP	AEPW-AEPW	54014 HUGOTAP4 138 to 54044 VALIANT4 138 CKT 1	210	100.9	101.1	55946 HOLYCRK4 138 to 55953 IDABEL 4 138 CKT1	0	"
03SP	OKGE-OKGE	55347 HWY59 5 161 to 55339 VBI 5 161 CKT 1	167	132.1	133.6	55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	0	OKGE: Replace 600A Switch 131 in VBI Substation with 1200A and rebuild 1.12 mile with 477 ACSR.
03SP	GRRD-OKGE	54455 TAHLQH 5 161 to 55347 HWY59 5 161 CKT 1	167	138.8	140.2	55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	0	Remove switches & replace structures.
03SP	SWPA-SWPA	52752 GORE 5 161 to 52750 SALISAW5 161 CKT 1	189	135.0	136.1	55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	0	Increase clearances of approximately ten spans
03SP	SWPA-SWPA	52752 GORE 5 161 to 52758 MUSKTAP5 161 CKT 1	206	117.8	118.8	55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	0	Reconductor 16 miles with 795ACSR
03SP	SWPA-SWPA	52646 GLENCOE5 161 to 52648 NORFORK5 161 CKT 1	112	103.9	104.4	52648 NORFORK5 161 to 96123 5WPLAIN 161 CKT1	0	Remove wave trap. Switch relaying channel to fiber optic shield wire. To be completed by SWPA for own needs.
03SP	SWPA-SWPA	52648 NORFORK5 161 to 52646 GLENCOE5 161 CKT 1	112	100.2	100.8	96042 7HUBEN 345 to 96045 7MORGAN 345 CKT1	0	"
03SP	WERE-WERE	57795 GILL E 269.0 to 57825 OATVILL269.0 CKT 1	72	121.2	122.1	57795 GILL E 269.0 to 57813 MACARTH269.0 CKT1	0	Replace disconnect switches at Gill 69kV (use 800A.), Replace line switch at Oatville 69kV (use 800 A.)
03SP	WERE-WERE	57795 GILL E 269.0 to 57825 OATVILL269.0 CKT 1	72	109.9	110.6	57796 GILL W 269.0 to 57804 HAYSVLJ269.0 CKT1	0	"
03SP	WERE-WERE	57795 GILL E 269.0 to 57813 MACARTH269.0 CKT 1	68	112.1	112.8	57795 GILL E 269.0 to 57825 OATVILL269.0 CKT1	0	Replace sub bus and jumpers at MacArthur 69kV
03SP	AEPW-EES	53374 FULTON 3 115 to 99303 3PATMOS# 115 CKT 1	174	109.8	110.1	53526 CROCKET7 345 to 97513 7GRIMES 345 CKT1	0	Recond. 7.1 miles with 1590 ACSR
03SP	AEPW-EES	53374 FULTON 3 115 to 99303 3PATMOS# 115 CKT 1	174	101.8	102.3	50045 DOLHILL7 345 to 50046 DOLHILL6 230 CKT1	0	"
03SP	AEPW-EES	53374 FULTON 3 115 to 99303 3PATMOS# 115 CKT 1	174	100.3	100.7	53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1	0	"
03SP	OKGE-OKGE	55305 FTSMITH8 500 to 55302 FTSMITH7 345 CKT 1	720	114.5	115.4	55300 FTSMITH5 161 to 55302 FTSMITH7 345 CKT1	0	Solution Undetermined
03SP	OKGE-OKGE	55305 FTSMITH8 500 to 55302 FTSMITH7 345 CKT 1	720	113.3	114.5	54033 PITTSB-7 345 to 54037 VALIANT7 345 CKT1	0	"
03SP	OKGE-OKGE	55305 FTSMITH8 500 to 55302 FTSMITH7 345 CKT 1	720	110.3	111.2	53929 DELWARE7 345 to 56793 NEOSHO 7 345 CKT1	0	"
03SP	OKGE-OKGE	55302 FTSMITH7 345 to 55300 FTSMITH5 161 CKT 1	493	124.9	125.6	55302 FTSMITH7 345 to 55305 FTSMITH8 500 CKT1	0	"
03SP	OKGE-OKGE	55302 FTSMITH7 345 to 55224 MUSKOGEE7 345 CKT 1	956	100.9	101.6	53929 DELWARE7 345 to 56793 NEOSHO 7 345 CKT1	0	"
03SP	AEPW-AEPW	53457 OAKPH 4 138 to 53405 FLOURNY4 138 CKT 1	209	110.9	111.4	Multiple Outage Contingency 53454 SW SHV 7 345 to 53424 LONGWD 7 345 CKT1 53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT 1	0	Rebuild 10.42 miles 666 ACSR to 1272 ACSR.
03SP	OKGE-AEPW	55055 MAUD 4 138 to 54002 FIXCT4 138 CKT 1	107	133.6	134.3	54033 PITTSB-7 345 to 54037 VALIANT7 345 CKT1	0	Rebuild 11.83 miles of 3/0 shielded Copperweld with 795 ACSR by AEP.
03SP	OKGE-AEPW	55055 MAUD 4 138 to 54002 FIXCT4 138 CKT 1	107	125.2	125.6	55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	0	"
03SP	AEPW-EES	53136 EUREKA 5 161 to 99832 5OSAGE # 161 CKT 1	244	102.0	102.7	55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	0	Solution Undetermined
03SP	AEPW-EES	53201 MAGZREA5 161 to 99496 5DANVI 161 CKT 1	155	126.1	127.8	55305 FTSMITH8 500 to 99486 8ANO 50 500 CKT1	0	"
03SP	AEPW-EES	53526 CROCKET7 345 to 97513 7GRIMES 345 CKT 1	789	108.9	109.5	53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1	0	Expedite resetting of CTs assigned to SPP-2001-365
03SP	AEPW-EES	53526 CROCKET7 345 to 97513 7GRIMES 345 CKT 1	789	103.7	104.3	50045 DOLHILL7 345 to 50046 DOLHILL6 230 CKT1	0	"
03SP	AEPW-EES	53526 CROCKET7 345 to 97513 7GRIMES 345 CKT 1	789	102.1	102.6	98107 8RICHARD 500 to 98430 8WEBRE 500 CKT1	0	"
03SP	SPRM-AECI	59970 CLAY 5 161 to 97161 5LOGAN 161 CKT 1	185	107.9	108.8	96042 7HUBEN 345 to 96045 7MORGAN 345 CKT1	0	Replace transmission line structures to allow operation at 100C
03SP	WERE-WERE	57152 CIRCLVL3 115 to 57331 KING HL3 115 CKT 1	92	117.3	118.6	56765 HOYT 7 345 to 56772 STRANGR7 345 CKT1	0	Transmission Operating Directive 803
03SP	WERE-WERE	57165 HTI JCT3 115 to 57152 CIRCLVL3 115 CKT 1	97	130.4	131.7	56765 HOYT 7 345 to 56772 STRANGR7 345 CKT1	0	Replace 82 Structures

Table 3a – continued - Model Data for SPP Facility Overloads caused by the WR to EES 50 MW Transfer

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	BC % Loading	TC % Loading	Outaged Branch Causing Overload	ATC (MW)	Comment
03SP	WERE-WERE	57165 HTI JCT3 115 to 57152 CIRCLVL3 115 CKT 1	97	107.2	108.1	57982 IATAN 7 345 to 59199 ST JOE 3 345 CKT1	0	"
03SP	WERE-WERE	57165 HTI JCT3 115 to 57152 CIRCLVL3 115 CKT 1	97	101.7	102.5	58756 CLIFTON3 115 to 58765 GRNLEAF3 115 CKT1	0	"
03SP	WERE-WERE	57165 HTI JCT3 115 to 57152 CIRCLVL3 115 CKT 1	97	101.1	102.3	56913 KELLY 5 161 to 56920 TECHILL5 161 CKT1	0	"
03SP	AEPW-AEPW	53611 TATUM 4 138 to 53522 CHEROKE4 138 CKT 1	209	142.9	143.4	Multiple Outage Contingency 53454 SW SHV 7 345 to 53424 LONGWD 7 345 CKT1 53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT 1	0	Reconductor 6.25 miles of 666 ACSR with 1272 ACSR
03SP	AEPW-AEPW	53611 TATUM 4 138 to 53522 CHEROKE4 138 CKT 1	209	127.7	128.1	53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1	0	"
03SP	AEPW-AEPW	53611 TATUM 4 138 to 53522 CHEROKE4 138 CKT 1	209	121.7	122.0	53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT1	0	"
03SP	AEPW-AEPW	53522 CHEROKE4 138 to 53557 KNOXLEE4 138 CKT 1	209	149.0	149.5	Multiple Outage Contingency 53454 SW SHV 7 345 to 53424 LONGWD 7 345 CKT1 53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT 1	0	Reconductor 3.25 miles of 666 ACSR with 1272 ACSR
03SP	AEPW-AEPW	53522 CHEROKE4 138 to 53557 KNOXLEE4 138 CKT 1	209	134.3	140.0	53526 CROCKET7 345 to 97513 7GRIMES 345 CKT1	0	"
03SP	AEPW-AEPW	53522 CHEROKE4 138 to 53557 KNOXLEE4 138 CKT 1	209	133.8	134.2	53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1	0	"
03SP	AEPW-AEPW	53522 CHEROKE4 138 to 53557 KNOXLEE4 138 CKT 1	209	104.7	105.0	55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	0	"
03SP	EES-SWPA	99825 5MIDWAY# 161 to 52660 BULL SH5 161 CKT 1	162	155.8	156.9	52661 BUFRDTP5 161 to 52660 BULL SH5 161 CKT1	0	Third Party Facility with SWPA Terminal Equip Limitations Replace disconnect switches, metering CTs and wave trap at Bull Shoals by SPA.
03SP	EES-SWPA	99825 5MIDWAY# 161 to 52660 BULL SH5 161 CKT 1	162	128.1	128.5	99817 5ISES 1 161 to 99826 5MORFLD 161 CKT1	0	"
03SP	SWPA-EES	52660 BULL SH5 161 to 99825 5MIDWAY# 161 CKT 1	162	115.0	115.8	55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	0	"
03SP	EES-SWPA	99825 5MIDWAY# 161 to 52660 BULL SH5 161 CKT 1	162	111.0	111.5	31798 SWEETWTR 161 to 96077 5FLETCH 161 CKT1	0	"
03SP	EES-SWPA	99825 5MIDWAY# 161 to 52660 BULL SH5 161 CKT 1	162	108.7	109.3	53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1	0	"
03SP	EES-SWPA	99825 5MIDWAY# 161 to 52660 BULL SH5 161 CKT 1	162	107.4	108.0	53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT1	0	"
03SP	SWPA-SWPA	52661 BUFRDTP5 161 to 52648 NORFORK5 161 CKT 1	189	122.6	123.5	52660 BULL SH5 161 to 99825 5MIDWAY# 161 CKT1	0	Resag conductor and replace structures as necessary
03SP	SWPA-SWPA	52661 BUFRDTP5 161 to 52648 NORFORK5 161 CKT 1	189	106.3	107.3	99825 5MIDWAY# 161 to 99827 5MT HOM 161 CKT1	0	"
03SP	SWPA-SWPA	52661 BUFRDTP5 161 to 52660 BULL SH5 161 CKT 1	223	104.8	105.6	52660 BULL SH5 161 to 99825 5MIDWAY# 161 CKT1	0	Replace three 600A switches @ Bull Shoals w/ 1200 A switches. Resag conductor and replace structures as necessary to achieve 195 MW rating.
03SP	AEPW-SWPA	54015 CRAIGJT4 138 to 52814 BRKN BW4 138 CKT 1	107	110.5	111.4	55823 BBDAMTP4 138 to 56004 MTRIVER4 138 CKT1	0	SWPA: Reconnect metering CTs to 800/5 ratio. AEPW: Rebuild 7.66 miles of 3/0 CW CU with 795 ACSR
03SP	AEPW-SWPA	54015 CRAIGJT4 138 to 52814 BRKN BW4 138 CKT 1	107	106.5	107.5	54015 CRAIGJT4 138 to 56004 MTRIVER4 138 CKT1	0	"
03SP	AEPW-AEPW	53126 BONANZA5 161 to 53196 HACKETT5 161 CKT 1	177	113.3	114.1	55305 FTSMITH8 500 to 99486 8ANO 50 500 CKT1	0	Solution Undetermined
03SP	OKGE-AEPW	55261 BONANZT5 161 to 53126 BONANZA5 161 CKT 1	177	121.8	122.5	55305 FTSMITH8 500 to 99486 8ANO 50 500 CKT1	0	Rebuild 0.06 miles of 397.5 ACSR with 795MCM ACSR
03SP	SWPA-AEPW	52680 BEAVER 5 161 to 53136 EUREKA 5 161 CKT 1	274	133.4	134.0	59481 MON383 7 345 to 59984 BRKLN 7 345 CKT1	0	AEPW Reconductor 1.25 miles with 1590ACSR SWPA Reconnect CT's; Replace metering & reset relays
03SP	SWPA-AEPW	52680 BEAVER 5 161 to 53136 EUREKA 5 161 CKT 1	274	133.3	133.9	53140 FLINTCR7 345 to 59481 MON383 7 345 CKT1	0	"
03SP	SWPA-AEPW	52680 BEAVER 5 161 to 53136 EUREKA 5 161 CKT 1	274	133.3	133.8	53140 FLINTCR7 345 to 59481 MON383 7 345 CKT1	0	"
03SP	SWPA-AEPW	52680 BEAVER 5 161 to 53136 EUREKA 5 161 CKT 1	274	128.9	129.7	55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	0	"
03SP	AEPW-AEPW	53439 RAINES 4 138 to 53386 ARSHILL4 138 CKT 1	234	111.2	111.5	Multiple Outage Contingency 53454 SW SHV 7 345 to 53424 LONGWD 7 345 CKT1 53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT 1	0	Rebuild 5.32 miles 2-266MCM ACSR with 1590MCM ACSR

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Table 3a – continued - Model Data for SPP Facility Overloads caused by the WR to EES 50 MW Transfer

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	BC % Loading	TC % Loading	Outaged Branch Causing Overload	ATC (MW)	Comment
03SP	AEPW-AEPW	53245 ALUMXT 4 138 to 53300 NWTXARK4 138 CKT 1	261	128.9	129.1	53299 NWT-BNT4 138 to 53300 NWTXARK4 138 CKT1	0	Replace Switches Alumax Tap
03SP	AEPW-AEPW	53250 BANN 4 138 to 53245 ALUMXT 4 138 CKT 1	261	122.9	123.1	53299 NWT-BNT4 138 to 53300 NWTXARK4 138 CKT1	0	Replace six (6) 138 kV switches, five at Bann & one at Alumax Tap.
03SP	WERE-WERE	57244 JARBALO3 115 to 57233 166TH 3 115 CKT 1	97	112.6	113.4	57252 MIDLAND3 115 to 57261 PENTAGN3 115 CKT1	0	Transmission Operating Directive 1202
03SP	WERE-WERE	57244 JARBALO3 115 to 57233 166TH 3 115 CKT 1	97	103.1	103.9	57982 IATAN 7 345 to 59199 ST JOE 3 345 CKT1	0	"
03SP	OKGE-OKGE	55235 PECANCK7 345 to 55224 MUSKOG7 345 CKT 1	478	106.0	106.4	55224 MUSKOG7 345 to 55302 FTSMITH7 345 CKT1	0	Change CT Ratio @ Pecan Creek.
03SP	OKGE-OKGE	55302 FTSMITH7 345 to 55305 FTSMITH8 500 CKT 1	720	99.8	100.9	53277 LYDIA 7 345 to 54037 VALIANT7 345 CKT1	10	Solution Undetermined
03SP	WERE-WERE	57795 GILL E 269.0 to 57825 OATVILL269.0 CKT 1	72	99.8	100.5	57806 HOOVERS269.0 to 57841 SHERIDN269.0 CKT1	13	Replace disconnect switches at Gill 69kV (use 800A.), Replace line switch at Oatville 69kV (use 800 A.)
03SP	OKGE-OKGE	55305 FTSMITH8 500 to 55300 FTSMITH5 161 CKT 1	480	99.0	101.7	55302 FTSMITH7 345 to 55305 FTSMITH8 500 CKT1	18	Solution Undetermined
03SP	AEPW-AEPW	53306 PATTERS4 138 to 53321 SNASHVL4 138 CKT 1	118	99.9	100.2	54011 IDABEL-4 138 to 54013 B.BOWTP4 138 CKT1	21	Rebuild 17.72 miles of 4/0 CU with 795 ACSR.
03SP	OKGE-OKGE	55302 FTSMITH7 345 to 55224 MUSKOG7 345 CKT 1	956	99.6	100.4	96042 7HUBEN 345 to 96045 7MORGAN 345 CKT1	22	Solution Undetermined
03SP	WERE-WERE	57244 JARBALO3 115 to 57233 166TH 3 115 CKT 1	97	99.7	100.4	57240 EUDORA 3 115 to 57277 WAKARUS3 115 CKT1	24	Transmission Operating Directive 1202
03SP	AEPW-AEPW	53306 PATTERS4 138 to 53321 SNASHVL4 138 CKT 1	118	99.8	100.2	99742 8DELL 5 500 to 99818 8ISES 5 500 CKT1	25	Rebuild 17.72 miles of 4/0 CU with 795 ACSR.
03SP	AEPW-AEPW	53306 PATTERS4 138 to 53321 SNASHVL4 138 CKT 1	118	99.8	100.2	55834 BROKBNW4 138 to 55946 HOLYCRK4 138 CKT1	26	"
03SP	OKGE-OKGE	55302 FTSMITH7 345 to 55224 MUSKOG7 345 CKT 1	956	99.5	100.4	53277 LYDIA 7 345 to 54037 VALIANT7 345 CKT1	28	Solution Undetermined
03SP	AEPW-AEPW	53598 ROKHILL4 138 to 53611 TATUM 4 138 CKT 1	209	99.9	100.1	53453 SW SHV 4 138 to 53464 WESTELT4 138 CKT1	32	Reconductor 0.81 miles 666MCM to 1272 ACSR
03SP	OKGE-OKGE	55305 FTSMITH8 500 to 55302 FTSMITH7 345 CKT 1	720	99.4	100.3	53155 CHAMSPR7 345 to 53756 CLARKSV7 345 CKT1	34	Solution Undetermined
03SP	EMDE-EMDE	59467 ORO110 5 161 to 59494 OAK432 5 161 CKT 1	214	99.7	100.1	59476 ASB349 5 161 to 59491 PUR421 5 161 CKT1	34	Reconstruct and replace 1.4 miles of 556 ACSR with Bundled 556 ACSR
03SP	OKGE-OKGE	55305 FTSMITH8 500 to 55302 FTSMITH7 345 CKT 1	720	99.4	100.3	53154 CHAMSPR5 161 to 53155 CHAMSPR7 345 CKT1	35	Solution Undetermined
03SP	AEPW-AEPW	53306 PATTERS4 138 to 53321 SNASHVL4 138 CKT 1	118	99.7	100.0	99162 8MTOLIV 500 to 99295 8ELDEHV 500 CKT1	45	Rebuild 17.72 miles of 4/0 CU with 795 ACSR.
03FA	AEPW-AEPW	53619 WILKES 4 138 to 53620 WILKES 7 345 CKT 1	493	106.9	107.3	53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1	0	Solution Undetermined
03FA	SWPA-OKGE	52722 VAN BUR5 161 to 55339 VBI 5 161 CKT 1	335	109.3	110.1	55224 MUSKOG7 345 to 55302 FTSMITH7 345 CKT1	0	SPA: Replace metering CTs, disconnect switches, breakers, and bus differential relaying at Van Buren. OG&E Replace Switch and reconnect CT ratio at VBI.
03FA	SWPA-OKGE	52722 VAN BUR5 161 to 55339 VBI 5 161 CKT 1	335	102.2	102.7	55261 BONANZT5 161 to 55262 AES 5 161 CKT1	0	"
03FA	WERE-WERE	57182 TECHILE3 115 to 57270 STULL T3 115 CKT 1	92	108.9	109.5	56765 HOYT 7 345 to 56772 STRANGR7 345 CKT1	0	WERE Transmission Op Directive 803
03FA	AEPW-AEPW	53605 SEMRSHL4 138 to 53602 SABMINT4 138 CKT 1	287	108.0	108.3	53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1	0	Solution Undetermined
03FA	AEPW-AEPW	53598 ROKHILL4 138 to 53611 TATUM 4 138 CKT 1	236	101.0	101.4	Multiple Outage Contingency 53454 SW SHV 7 345 to 53424 LONGWD 7 345 CKT1 53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT 1	0	Reconductor 0.81 miles 666MCM to 1272 ACSR
03FA	OKGE-OKGE	55235 PECANCK7 345 to 55234 PECANCK5 161 CKT 1	369	118.3	118.8	55224 MUSKOG7 345 to 55302 FTSMITH7 345 CKT1	0	Add 2nd 345/161 kV 369MVA unit
03FA	EES-SWPA	99835 5SOLAND# 161 to 52648 NORFORK5 161 CKT 1	162	108.8	109.8	52660 BULL SH5 161 to 52661 BUFRDTP5 161 CKT1	0	Solution Undetermined
03FA	EES-SWPA	99835 5SOLAND# 161 to 52648 NORFORK5 161 CKT 1	162	108.1	109.1	52648 NORFORK5 161 to 52661 BUFRDTP5 161 CKT1	0	"
03FA	WERE-WERE	57270 STULL T3 115 to 57253 MOCKBRD3 115 CKT 1	92	104.3	104.9	56765 HOYT 7 345 to 56772 STRANGR7 345 CKT1	0	Westar mitigation planned in 2005.
03FA	AEPW-AEPW	53303 OKAY 3 115 to 53232 MCNAB 3 115 CKT 1	149	109.9	110.5	53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1	0	Solution Undetermined
03FA	AEPW-AEPW	53303 OKAY 3 115 to 53232 MCNAB 3 115 CKT 1	149	106.6	107.2	55224 MUSKOG7 345 to 55302 FTSMITH7 345 CKT1	0	"
03FA	AEPW-AEPW	53303 OKAY 3 115 to 53232 MCNAB 3 115 CKT 1	149	103.1	103.7	53306 PATTERS4 138 to 53321 SNASHVL4 138 CKT1	0	"

Table 3a – continued - Model Data for SPP Facility Overloads caused by the WR to EES 50 MW Transfer

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	BC % Loading	TC % Loading	Outaged Branch Causing Overload	ATC (MW)	Comment
03FA	AEPW-AEPW	53303 OKAY 3 115 to 53232 MCNAB 3 115 CKT 1	149	102.8	103.4	53609 LEBROCK7 345 to 53637 TENRUSK7 345 CKT1	0	"
03FA	AEPW-AEPW	53303 OKAY 3 115 to 53232 MCNAB 3 115 CKT 1	149	101.6	102.1	53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT1	0	"
03FA	AEPW-AEPW	53149 NMAGZIN5 161 to 53201 MAGZREA5 161 CKT 1	177	127.3	129.0	55305 FTSMITH8 500 to 99486 8ANO 50 500 CKT1	0	"
03FA	AEPW-AEPW	53548 IPCJEFF4 138 to 53420 LIEBERM4 138 CKT 1	154	114.6	115.1	53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1	0	Reconductor 26.35 miles of 336 ACSR with 795 ACSR, Replace Switches @ Lieberman, Reset Relays @ Jefferson IPC, & Reconductor 0.65 miles 397MCM to 795MCM
03FA	AEPW-AEPW	54014 HUGOTAP4 138 to 54044 VALIANT4 138 CKT 1	210	109.3	110.2	53277 LYDIA 7 345 to 54037 VALIANT7 345 CKT1	0	Replace Wavetrapp @ Valliant
03FA	AEPW-WFEC	54044 VALIANT4 138 to 55948 HUGO PP4 138 CKT 1	288	100.3	101.3	54033 PITTSB-7 345 to 54037 VALIANT7 345 CKT1	0	Solution Undetermined
03FA	OKGE-OKGE	55347 HWY59 5 161 to 55339 VBI 5 161 CKT 1	167	103.4	104.9	55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	0	OKGE: Replace 600A Switch 131 in VBI Substation with 1200A and rebuild 1.12 mile with 477 ACSR.
03FA	GRRD-OKGE	54455 TAHLQH 5 161 to 55347 HWY59 5 161 CKT 1	167	108.6	110.0	55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	0	Remove switches & replace structures.
03FA	GRRD-OKGE	54455 TAHLQH 5 161 to 55347 HWY59 5 161 CKT 1	167	108.6	110.0	55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	0	"
03FA	SWPA-SWPA	52648 NORFORK5 161 to 52646 GLENCOE5 161 CKT 1	112	113.3	113.8	52648 NORFORK5 161 to 96123 5WPLAIN 161 CKT1	0	Remove wave trap. Switch relaying channel to fiber optic shield wire. To be completed by SWPA for own needs.
03FA	SWPA-SWPA	52648 NORFORK5 161 to 52646 GLENCOE5 161 CKT 1	112	110.4	110.9	96042 7HUBEN 345 to 96045 7MORGAN 345 CKT1	0	"
03FA	SWPA-SWPA	52648 NORFORK5 161 to 52646 GLENCOE5 161 CKT 1	112	108.3	108.8	52618 JONESBO5 161 to 52622 GREERSF5 161 CKT1	0	"
03FA	SWPA-SWPA	52648 NORFORK5 161 to 52646 GLENCOE5 161 CKT 1	112	106.4	106.9	55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	0	"
03FA	SWPA-SWPA	52648 NORFORK5 161 to 52646 GLENCOE5 161 CKT 1	112	104.8	105.4	54033 PITTSB-7 345 to 54037 VALIANT7 345 CKT1	0	"
03FA	OKGE-OKGE	55305 FTSMITH8 500 to 55302 FTSMITH7 345 CKT 1	720	101.3	102.5	54033 PITTSB-7 345 to 54037 VALIANT7 345 CKT1	0	Solution Undetermined
03FA	OKGE-OKGE	55305 FTSMITH8 500 to 55302 FTSMITH7 345 CKT 1	720	101.0	102.0	55300 FTSMITH5 161 to 55302 FTSMITH7 345 CKT1	0	"
03FA	OKGE-OKGE	55305 FTSMITH8 500 to 55300 FTSMITH5 161 CKT 1	480	104.1	105.7	55302 FTSMITH7 345 to 55305 FTSMITH8 500 CKT1	0	"
03FA	OKGE-OKGE	55302 FTSMITH7 345 to 55300 FTSMITH5 161 CKT 1	493	106.1	106.8	55302 FTSMITH7 345 to 55305 FTSMITH8 500 CKT1	0	"
03FA	OKGE-AEPW	55055 MAUD 4 138 to 54002 FIXCT4 138 CKT 1	122	124.2	124.8	54033 PITTSB-7 345 to 54037 VALIANT7 345 CKT1	0	Rebuild 11.83 miles of 3/0 shielded Copperweld with 795 ACSR by AEP.
03FA	OKGE-AEPW	55055 MAUD 4 138 to 54002 FIXCT4 138 CKT 1	122	110.8	111.2	55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	0	"
03FA	AEPW-EES	53201 MAGZREA5 161 to 99496 5DANVI 161 CKT 1	177	125.4	127.1	55305 FTSMITH8 500 to 99486 8ANO 50 500 CKT1	0	Solution Undetermined
03FA	AEPW-EES	53526 CROCKET7 345 to 97513 7GRIMES 345 CKT 1	789	111.1	111.7	97717 8HARTBRG 500 to 99162 8MTOLIV 500 CKT1	0	Expedite resetting of CTs assigned to SPP-2001-365
03FA	AEPW-EES	53526 CROCKET7 345 to 97513 7GRIMES 345 CKT 1	789	108.1	108.6	98107 8RICHARD 500 to 98430 8WEBRE 500 CKT1	0	"
03FA	AEPW-EES	53526 CROCKET7 345 to 97513 7GRIMES 345 CKT 1	789	106.9	107.4	97691 8CYPRESS 500 to 97717 8HARTBRG 500 CKT1	0	"
03FA	AEPW-EES	53526 CROCKET7 345 to 97513 7GRIMES 345 CKT 1	789	105.0	105.5	53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1	0	"
03FA	AEPW-EES	53526 CROCKET7 345 to 97513 7GRIMES 345 CKT 1	789	103.9	104.3	53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT1	0	"
03FA	SPRM-AECI	59970 CLAY 5 161 to 97161 5LOGAN 161 CKT 1	185	118.3	119.2	96042 7HUBEN 345 to 96045 7MORGAN 345 CKT1	0	Replace transmission line structures to allow operation at 100C
03FA	WERE-WERE	57152 CIRCLVL3 115 to 57331 KING HL3 115 CKT 1	92	111.3	112.4	56765 HOYT 7 345 to 56772 STRANGR7 345 CKT1	0	Transmission Operating Directive 803
03FA	WERE-WERE	57165 HTI JCT3 115 to 57152 CIRCLVL3 115 CKT 1	97	119.1	120.2	56765 HOYT 7 345 to 56772 STRANGR7 345 CKT1	0	Replace 82 Structures
03FA	WERE-WERE	57165 HTI JCT3 115 to 57152 CIRCLVL3 115 CKT 1	97	100.2	101.0	57982 IATAN 7 345 to 59199 ST JOE 3 345 CKT1	0	"
03FA	AEPW-AEPW	53611 TATUM 4 138 to 53522 CHEROKE4 138 CKT 1	236	102.1	102.4	Multiple Outage Contingency 53454 SW SHV 7 345 to 53424 LONGWD 7 345 CKT1 53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT 1	0	Reconductor 6.25 miles of 666 ACSR with 1272 ACSR

Table 3a – continued - Model Data for SPP Facility Overloads caused by the WR to EES 50 MW Transfer

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	BC % Loading	TC % Loading	Outaged Branch Causing Overload	ATC (MW)	Comment
03FA	AEPW-AEPW	53522 CHEROKE4 138 to 53557 KNOXLEE4 138 CKT 1	236	106.9	107.2	Multiple Outage Contingency 53454 SW SHV 7 345 to 53424 LONGWD 7 345 CKT1 53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT 1	0	Reconductor 3.25 miles of 666 ACSR with 1272 ACSR
03FA	SWPA-EES	52660 BULL SH5 161 to 99825 5MIDWAY# 161 CKT 1	162	142.7	143.7	52661 BUFRDTP5 161 to 52660 BULL SH5 161 CKT1	0	Third Party Facility with SWPA Terminal Equip Limitations Replace disconnect switches, metering CTs and wave trap at Bull Shoals by SPA.
03FA	SWPA-EES	52660 BULL SH5 161 to 99825 5MIDWAY# 161 CKT 1	162	101.4	102.2	55224 MUSKOG7 345 to 55302 FTSMITH7 345 CKT1	0	"
03FA	SWPA-SWPA	52661 BUFRDTP5 161 to 52648 NORFORK5 161 CKT 1	189	115.0	115.9	52660 BULL SH5 161 to 99825 5MIDWAY# 161 CKT1	0	Resag conductor and replace structures as necessary
03FA	SWPA-SWPA	52661 BUFRDTP5 161 to 52648 NORFORK5 161 CKT 1	189	104.9	105.8	99825 5MIDWAY# 161 to 99827 5MT HOM 161 CKT1	0	"
03FA	AEPW-SWPA	54015 CRAIGJT4 138 to 52814 BRKN BW4 138 CKT 1	122	117.8	118.7	55823 BBDAMTP4 138 to 56004 MTRIVER4 138 CKT1	0	SWPA: Reconnect metering CTs to 800/5 ratio. AEPW: Rebuild 7.66 miles of 3/0 CW CU with 795 ACSR
03FA	AEPW-SWPA	54015 CRAIGJT4 138 to 52814 BRKN BW4 138 CKT 1	122	115.4	116.2	54015 CRAIGJT4 138 to 56004 MTRIVER4 138 CKT1	0	"
03FA	SWPA-AEPW	52680 BEAVER 5 161 to 53136 EUREKA 5 161 CKT 1	287	118.9	119.3	59481 MON383 7 345 to 59984 BRKLNE 7 345 CKT1	0	AEPW Reconductor 1.25 miles with 1590ACSR SWPA Reconnect CT's; Replace metering & reset relays
03FA	SWPA-AEPW	52680 BEAVER 5 161 to 53136 EUREKA 5 161 CKT 1	287	118.9	119.3	53140 FLINTCR7 345 to 59481 MON383 7 345 CKT1	0	"
03FA	SWPA-AEPW	52680 BEAVER 5 161 to 53136 EUREKA 5 161 CKT 1	287	112.2	113.0	55224 MUSKOG7 345 to 55302 FTSMITH7 345 CKT1	0	"
03FA	SWPA-AEPW	52680 BEAVER 5 161 to 53136 EUREKA 5 161 CKT 1	287	102.9	103.3	53929 DELWARE7 345 to 53955 N.E.S.-7 345 CKT1	0	"
03FA	SWPA-AEPW	52680 BEAVER 5 161 to 53136 EUREKA 5 161 CKT 1	287	101.7	102.3	54033 PITTSB-7 345 to 54037 VALIANT7 345 CKT1	0	"
03FA	AEPW-AEPW	53305 PATTERS3 115 to 53225 ASHDWNR3 115 CKT 1	149	103.4	103.8	53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1	0	Solution Undetermined
03FA	AEPW-AEPW	53305 PATTERS3 115 to 53225 ASHDWNR3 115 CKT 1	149	100.1	100.6	53233 MIDWAYR269.0 to 53292 NASHVIL269.0 CKT1	0	"
03FA	AEPW-AEPW	53225 ASHDWNR3 115 to 53303 OKAY 3 115 CKT 1	149	100.3	100.8	53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1	0	"
03FA	AEPW-AEPW	53245 ALUMXT 4 138 to 53300 NWTXARK4 138 CKT 1	294	108.7	108.9	53299 NWT-BNT4 138 to 53300 NWTXARK4 138 CKT1	0	Replace Switches Alumax Tap
03FA	AEPW-AEPW	53250 BANN 4 138 to 53245 ALUMXT 4 138 CKT 1	287	106.0	106.2	53299 NWT-BNT4 138 to 53300 NWTXARK4 138 CKT1	0	'Replace six (6) 138 kV switches, five at Bann & one at Alumax Tap.
03FA	OKGE-OKGE	55305 FTSMITH8 500 to 55302 FTSMITH7 345 CKT 1	720	99.7	100.8	53277 LYDIA 7 345 to 54037 VALIANT7 345 CKT1	15	Solution Undetermined
03FA	AEPW-AEPW	53305 PATTERS3 115 to 53225 ASHDWNR3 115 CKT 1	149	99.8	100.3	55224 MUSKOG7 345 to 55302 FTSMITH7 345 CKT1	17	"