



SPP *Southwest Power Pool*

*System Impact Study
For Transmission Service
Requested By
Power Resource Group, Inc.*

From AEPW To Ameren

*For a Reserved Amount Of 670 MW
From 1/1/03
To 1/1/06*

SPP Coordinated Planning

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Revised February 15, 2002 to include revision of Tables 1, 2 and 3, and the addition of Tables 4a, 4b, 5, and 6

1. Executive Summary

Power Resource Group, Inc. has requested a system impact study for long-term Firm Point-to-Point transmission service from AEPW to Ameren in the amount of 670 MW. The period of the transaction is from 1/1/03 to 1/1/06. The request is for OASIS Reservation number 212203. The study assumes a deferred service period from 10/1/2004 to 10/1/2007.

SPP has completed System Impact Study SPP-2000-108e and Facility Study SPP-2000-108-3 for PRG's AEPW to Entergy 670 MW transfer. The Facility Study concluded that 35 Network Facility Upgrades were required to accommodate the request and that service could not be provided until 10/1/2004 due to the delay in construction of the Network Facility Upgrades. The Network Facility Upgrades assigned to PRG's AEPW to EES 670 MW transfer were included in the analysis in addition to any transmission owner mitigation plans.

The principal objective of this study is to identify system problems and potential system modifications necessary to facilitate the additional 670 MW transfer while maintaining system reliability. New overloads caused by the 670 MW transfer were monitored along with any previously assigned and identified facilities that were further overloaded by the transfer.

The AEPW to Ameren 670 MW transfer overloads new facilities as well as impacts facilities that have been identified as limiting constraints for previously studied transfers. Tables 1 and 2 list the new overloads caused by the 670 MW transfer. Table 3 lists the previously assigned and identified facilities impacted by the 670 MW transfer. Facilities identified in System Impact Study SPP-2000-108e are included in Table 3. Facilities found in Table 3 limit the ATC and require additional upgrades.

In addition to the transmission limitations identified, the SPP to AMRN interface is firm contract path limited to 1,287 MW. The tie lines that make up the 1,287 MW interface are listed in Table 6. Currently, SPP has reserved 1,236 MW of long-term firm transmission service during the deferred transmission service period. To accommodate the 670 MW transfer to Ameren, approximately \$10.2 million in transmission upgrades and additions will be required to increase the firm contract path capacity between SPP and Ameren by 619 MW.

2. Introduction

Power Resource Group, Inc. has requested an impact study for transmission service from AEPW to Ameren.

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 670 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 670 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.

The 670 MW transfer from AEPW to Ameren will require additional firm contract path capacity between SPP and Ameren. Currently, SPP has sold yearly firm point-to-point transmission service in the amount of 1,236 MW. The Firm Contract Path Capacity limit between SPP and Ameren is 1,287 MW. To provide the firm contract path capacity that is needed for the additional 670 MW request, new tie lines must be built or existing tie lines must be upgraded between SPP and Ameren. A 345kV transmission line that connects Ameren's Callaway Sub to Kansas City Power & Light's Montrose and La Cygne Subs was considered in the previous SPP-2000-109 System Impact Study to provide the necessary firm contract path capacity, but the cost of the line is not justified compared to upgrading the existing 161 kV tie lines and building a new 161 kV tie line.

3. Study Methodology

A. Description

Two analyses were conducted to determine the impact of the 670 MW transfer on the system. The first analysis was conducted to identify any new overloads caused by the 670 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 670 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. The previously assigned facilities include facilities identified in System Impact Study SPP-2000-108e. The facilities were included to determine what impact the assigned upgrades and transmission owners' transmission mitigation plans have on the loading of the previously identified facilities and whether additional incremental upgrades are required to accommodate the AEPW to Ameren 670 MW transfer.

B. Model Updates

SPP used five seasonal models to study the 670 MW request. The SPP 2001 Series Cases: 2003 Spring Peak, 2004 Summer Peak, 2004/05 Winter Peak, 2006 Summer Peak, and 2006/2007 Winter Peak were used to study the impact of the 670 MW transfer on the SPP system during a deferred transaction period from 10/1/04 to 10/1/07. The 2003 Spring Peak model is representative of the Spring Seasons throughout the length of the reservation.

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 request period that were not already included in the January 2001 base case series models. The Network Facility Upgrades assigned to the PRG AEPW to EES 670 MW transfer and mitigation plans submitted by the transmission owners are included.

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, 3, and contain the steady-state 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 previously received from the transmission owners.

Table 1 shows the new facility overloads caused by the 670 MW transfer. Upgrades associated with these new overloads can be directly assigned to the AEPW to AMRN 670 MW transfer. Available solutions are given in the table.

Table 2 documents overloads on Non SPP Regional Tariff participants' transmission systems caused by the 670 MW transfer.

Table 3 documents the 670 MW transfer impact on previously assigned and identified facilities. Available solutions are given in the table. Facilities identified in System Impact Study SPP-2000-108e are included.

B. SPP to AMRN Interface

The SPP to AMRN interface is contract path limited to 1,287 MW. SPP currently has 1,236 MW of higher priority yearly firm reservations over the AMRN interface for the reservation period (Table 5).

The confirmed yearly reservations over the interface total 434 MW for June 2005 (Table 4a). The other higher priority reservations on the interface are the reservations with the right to renew service (Table 4b). There are no higher priority long-term reservations currently in the study mode with a POD of AMRN.

Table 5 contains a summation of the higher priority SPP reservations with a POD of AMRN for the PRG deferred request period. The current available capacity over the interface for the deferred reservation period is 51 MW. Therefore, the SPP to Ameren Firm Contract Path Capacity needs to be increased by 619 MW.

SPP proposed a 345kV line from KCPL's La Cygne Substation to KCPL's Montrose Substation to Ameren's Callaway Substation to increase the Contract Path Limit and increase System Reliability in the first System Impact Study for the AEPW to Ameren 670MW request. SPP requested the assistance of Ameren Transmission Services in proposing possible tie capacity expansion to accommodate the additional 670MW transfer. SPP and Ameren agreed that the Callaway to Montrose to La Cygne 345kV line would be the most beneficial to the transmission system in providing the needed firm contract path capacity and maintaining system reliability. The addition of the 345kV

transmission line provided substantial relief on the La Cygne to Stillwell Flowgate, which was the most significant benefit of the line. The rough estimated cost of the line was determined to be \$95 million.

The other possible system upgrades to increase the capacity by 619 MW include upgrading the two existing 161 kV ties between SPP and Ameren and building a new 161 kV tie, which would add 619 MW at a rough estimated cost of \$10.2 million. The upgrades of the existing ties do not improve overall system reliability and are proposed only to increase the firm contract path capacity between SPP and Ameren. Table 6 lists the tie lines that make up the 1,287 MW interface and the contributions of each.

The KCPL and Ameren Salisbury to Moberly 161 kV line is 19.8 miles long and contributes 180 MW of capacity. The 180 MVA rating is based on the 556.5 MCM ACSR conductor. The percent ownership of the line is KCPL owns 39.65% and Ameren owns 60.35%. The estimated cost to reconductor the line with 556.5 MCM ACSS is \$4 million, the estimated cost to replace the terminal equipment at Salisbury and Moberly with 1200 Amp equipment is \$500,000. The increased capability of the line, normal rating, is 335 MVA with a 155 MW increase in the contract path capacity. If the terminal equipment at Salisbury and Moberly is replaced with 2000 Amp equipment (\$600,000), the increased capability of the line is raised to the normal rating of the 556.5 MCM ACSS conductor, which is 1282 Amps (357 MVA). The increase in the contract path capacity is 177 MW.

The SWPA and Ameren Sikeston to Miner 161kV line is 10 miles long and contributes 248 MW of capacity. The 248 MVA rating is based on the 954 MCM ACSR conductor. The percent ownership of the line is SWPA owns 0% and Ameren owns 100%. The substation equipment on both ends is rated 1200 Amps (335 MVA). The estimated cost to upgrade the equipment at the SWPA end to 2000 Amps (558 MVA) is \$300,000 (3-disconnect switches, 1-circuit breaker, 3-metering CTs, and jumpers). The estimated cost to upgrade the equipment at Ameren's end should be similar at \$300,000. The estimated cost to reconductor the transmission line to 558 MVA is \$3 million. The increase in the contract path capacity is 310 MW.

In order to get the remaining 132 MW, a new 161 kV tie line is proposed. The new tie would be accomplished by SWPA tapping the SWPA Sikeston to Idalia 161 kV line north of Stoddard, MO and build a short line (about a half mile) to Stoddard substation. The estimated cost of the new 161 kV tie line is \$2 million. The capacity of this tie would be the normal rating of the Stoddard-Oran 161 kV line, presently 132 MVA. The increase in the contract path capacity is 132 MW.

The rough estimated cost to increase the SPP to Ameren Firm Contract Capacity by 619 MW is \$10.2 million. Before planning the upgrades and line addition, Ameren, SWPA, and KCPL would want to study the effects on the surrounding system. These upgrades were not included in the System Impact Study Analysis as the upgrades only provide Firm Contract Path Capacity not improved transfer capability.

Table 1 - SPP Facility Overloads caused by the AEPW to AMRN 670 MW Transfer

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	ATC	Solution	Estimated Cost
03G	WERE-WERE	GREEN TO COFFEY COUNTY NO. 4 VERNON, 69KV 57636 GREEN 269.0 to 57631 CC4VERN269.0 CKT 1	55	99.8	102.7	WOLF CREEK TO LACYGNE, 345KV 56797 WOLFCCRK7 345 to 57981 LACYGNE7 345 CKT1	51	Undetermined Solution #1	
03G	AEPW-OKGE	PITTSBURG TO SEMINOLE, 345KV 54033 PITTSB-7 345 to 55045 SEMINOL7 345 CKT 1	717	87.8	125.5	PITTSBURG TO SUNNYSIDE, 345KV 54033 PITTSB-7 345 to 55136 SUNNYS7 345 CKT1	217	#1 Replace Wavetrap & CT @ Seminole by OKGE Modify relay settings by AEPW	52,000
03G	OKGE-OKGE	CHIKASKIA TAP TO BRAMAN, 69KV 54751 CHIKSTP269.0 to 54750 BRAMAN 269.0 CKT 1	38	95.8	107.3	KILDARE4 TO WHITE EAGLE, 138KV 54760 KILDARE4 138 to 54761 WHEAGLE4 138 CKT1	246	Undetermined Solution #2	
03G	WERE-WERE	COFFEY COUNTY NO. 4 TO ATHENS SWITCHING STAT., 69KV 57631 CC4VERN269.0 to 57623 ATHENS 269.0 CKT 1	55	98.7	101.6	WOLF CREEK TO LACYGNE, 345KV 56797 WOLFCCRK7 345 to 57981 LACYGNE7 345 CKT1	301	Undetermined Solution #3	
03G	WERE-WERE	CIRCLEVILLE TO KING HILL N.M. COOP, 115KV 57152 CIRCLVL3 115 to 57331 KING HL3 115 CKT 1	92	97.8	102.2	IATAN TO ST JOSEPH, 345KV 57982 IATAN 7 345 to 69702 ST JOE 3 345 CKT1	336	Undetermined Solution #4	
03G	OKGE-OKGE	TRIBES TO HANCOCK, 161KV 55228 STRIBES5 161 to 55250 HANCOCK5 161 CKT 1	223	91.5	102.9	AGENCY TO EUCLID, 161KV 55230 AGENCY 5 161 to 55251 EUCLID 5 161 CKT1	498	Undetermined Solution #5	
03G	AEPW-OKGE	PITTSBURG TO SEMINOLE, 345KV 54033 PITTSB-7 345 to 55045 SEMINOL7 345 CKT 1	717	75.6	106.3	SUNNYSIDE 345/138KV TRANSFORMER 55135 SUNNYS4 138 to 55136 SUNNYS7 345 CKT1	532	See Previous Upgrade #1	
03G	AEPW-OKGE	PITTSBURG TO SEMINOLE, 345KV 54033 PITTSB-7 345 to 55045 SEMINOL7 345 CKT 1	717	64.0	107.7	PITTSBURG TO MUSKOGEE, 345KV 54033 PITTSB-7 345 to 55224 MUSKOGEE7 345 CKT1	551	See Previous Upgrade #1	
03G	OKGE-OKGE	TRIBES TO HANCOCK, 161KV 55228 STRIBES5 161 to 55250 HANCOCK5 161 CKT 1	223	91.0	101.4	AGENCY TO PECAN CREEK, 161KV 55230 AGENCY 5 161 to 55234 PECANCK5 161 CKT1	582	See Previous	
03G	WERE-WERE	TECUMSEH HILL EAST BUS TO STULL SWITCHING STAT., 115KV 57182 TECHILE3 115 to 57270 STULL T3 115 CKT 1	92	97.5	102.3	HOYT TO STRANGER CREEK, 345KV 56765 HOYT 7 345 to 56772 STRANGR7 345 CKT1	670	WERE Transmission Op Directive 803	
04SP	WERE-WERE	EVANS ENERGY CENTER NORTH TO CHISHOLM, 138KV 57040 EVANS N4 138 to 57035 CHISHLM4 138 CKT 1	382	100.0	101.1	EVANS ENERGY CENTER SOUTH TO LAKERIDGE, 138KV 57041 EVANS S4 138 to 57053 LAKERDG4 138 CKT1	0	Undetermined Solution #6	
04SP	WERE-WERE	MACARTHUR TO HYDRAULIC NORTH, 69KV 57813 MACARTH269.0 to 57807 HYDRA N269.0 CKT 1	63	100.0	100.2	EL PASO 138/69KV TRANSFORMER 57039 ELPASO 4 138 to 57793 ELPASO 269.0 CKT1	0	Undetermined Solution #7	
04SP	WERE-WERE	CIRCLEVILLE TO KING HILL N.M. COOP, 115KV 57152 CIRCLVL3 115 to 57331 KING HL3 115 CKT 1	92	99.4	103.8	IATAN TO ST JOSEPH, 345KV 57982 IATAN 7 345 to 69702 ST JOE 3 345 CKT1	93	See Previous	
04SP	AEPW-AEPW	FLOURNOY TO OAK REC, 138KV 53405 FLOURNY4 138 to 53457 OAKPH 4 138 CKT 1	209	98.7	103.3	Multiple Outage Contingency SOUTHWEST SHREVEPORT TO LONGWOOD, 345KV 53454 SW SHV 7 345 to 53424 LONGWD 7 345 CKT 1 SOUTHWEST SHREVEPORT TO DIANA, 345KV 53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT 1	189	Undetermined Solution #8	
04SP	AEPW-AEPW	BARTLESVILLE SOUTHEAST TO NORTH BARTLESVILLE, 138KV 53940 BV-SE--4 138 to 53935 NBVILLE4 138 CKT 1	210	95.8	109.6	DELWARE TO NORTHEASTERN STATION, 345KV 53929 DELWARE7 345 to 53955 N.E.S.-7 345 CKT1	203	Undetermined Solution #9	
04SP	KACP-KACP	STILWELL 345/161KV TRANSFORMER #1 57968 STILWEL7 345 to 57969 STILWEL5 161 CKT 11	605	99.1	101.7	Multiple Outage Contingency STILWELL 345/161KV TRANSFORMER #2 57968 STILWEL7 345 to 57969 STILWEL5 161 CKT 22 LA CYGNE TO STILWELL, 345KV CKT 2 57968 STILWEL7 345 to 57981 LACYGNE7 345 CKT 2	232	#2 Add Third Stilwell 345/161 kV Transformer & Associated Equipment	4,000,000

Table 1 continued – SPP Facility Overloads caused by the AEPW to AMRN 670 MW Transfer

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	ATC	Solution	Estimated Cost
04SP	GRRD-GRRD	ZENA TAP TO JAY, 69KV 54467 ZENA TP269.0 to 54520 JAY GR 269.0 CKT 1	47	99.1	101.4	KANSAS TAP TO KANSAS, 161KV 54514 KANSATP5 161 to 54516 KANSAS 5 161 CKT1	268	Undetermined Solution #10	
04SP	AEPW-AEPW	GRANIS TO DEQUEEN, 69KV 53348 GRANIS 269.0 to 53257 DEQUEEN269.0 CKT 1	44	99.0	101.2	MENA TO CRAIG JUNCTION, 138KV 53340 MENA 4 138 to 54015 CRAIGJT4 138 CKT1	302	Undetermined Solution #11	
04SP	AEPW-AEPW	GRANIS TO DEQUEEN, 69KV 53348 GRANIS 269.0 to 53257 DEQUEEN269.0 CKT 1	44	98.8	101.0	MENA 138/69KV TRANSFORMER 53280 MENA 269.0 to 53340 MENA 4 138 CKT1	359	See Previous	
04SP	OKGE-OKGE	RUSSETT TO GLASSES, 138KV 55120 RUSSETT4 138 to 55147 GLASSES4 138 CKT 1	96	98.5	101.2	EXPLORER TAP TO BROWN, 138KV 55153 EXPLRTP4 138 to 55157 BROWN 4 138 CKT1	381	Undetermined Solution #12	
04SP	AEPW-AEPW	PATTERSON TO SOUTH NASHVILLE, 138KV 53306 PATTERS4 138 to 53321 SNASHVL4 138 CKT 1	118	91.4	106.4	LONGWOOD TO ELDORADO-EHV, 345KV 53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1	384	#3 Rebuild 17.72 miles of 4/0 CU with 795 ACSR	4,400,000
04SP	AEPW-OKGE	PITTSBURG TO SEMINOLE, 345KV 54033 PITTSB-7 345 to 55045 SEMINOL7 345 CKT 1	717	78.4	115.8	PITTSBURG TO SUNNYSIDE, 345KV 54033 PITTSB-7 345 to 55136 SUNNYSID7 345 CKT1	387	See Previous Upgrade #1	
04SP	AEPW-AEPW	PATTERSON TO SOUTH NASHVILLE, 138KV 53306 PATTERS4 138 to 53321 SNASHVL4 138 CKT 1	118	91.3	106.3	ELDORADO-EHV 500/345KV TRANSFORMER 99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT1	389	See Previous Upgrade #3	
04SP	OKGE-OKGE	SUNNYSIDE 345/138KV TRANSFORMER 55135 SUNNYSID4 138 to 55136 SUNNYSID7 345 CKT 1	330	89.6	104.9	PITTSBURG TO SEMINOLE, 345KV 54033 PITTSB-7 345 to 55045 SEMINOL7 345 CKT1	455	Solution Undetermined #13	
04SP	WERE-WERE	CIRCLEVILLE TO KING HILL N.M. COOP, 115KV 57152 CIRCLVL3 115 to 57331 KING HL3 115 CKT 1	92	97.7	100.5	EAST MANHATTAN TO CONCORDIA, 230KV 56861 EMANHAT6 230 to 58758 CONCORD6 230 CKT1	554	See Previous	
04SP	WERE-WERE	CIRCLEVILLE TO KING HILL N.M. COOP, 115KV 57152 CIRCLVL3 115 to 57331 KING HL3 115 CKT 1	92	97.7	100.5	CONCORDIA 230/115KV TRANSFORMER 58757 CONCORD3 115 to 58758 CONCORD6 230 CKT1	560	See Previous	
04SP	OKGE-OKGE	VBI TO HIGHWAY 59, 161KV 55339 VBI 5 161 to 55347 HWY59 5 161 CKT 1	167	90.2	101.8	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	567	#4 Rebuild and Reconductor 0.07mile to 477 ACSR	350,000
04SP	EES-EMDE	OMAHA SS TO POWERSITE, 161KV 99831 5OMAHA * 161 to 59474 OZD312 5 161 CKT 1	162	97.4	100.4	EUREKA SPRINGS TO OSAGE CREEK, 161KV 53136 EUREKA 5 161 to 99832 5OSAGE # 161 CKT1	586	#5 Replace 161 kV bus at Ozark Dam to get to 600 amps	100,000
04SP	WERE-WERE	KING HILL N.M. COOP TO KELLY, 115KV 57331 KING HL3 115 to 57217 KELLY 3 115 CKT 1	92	96.0	100.4	IATAN TO ST JOSEPH, 345KV 57982 IATAN 7 345 to 69702 ST JOE 3 345 CKT1	610	Solution Undetermined #14	
04SP	KACP-KACP	OLATHE EAST TO OLATHE WEST, 161KV 58036 OLATHEE5 161 to 58037 OLATHEW5 161 CKT 1	334	99.8	100.8	MURLEN TO MOONLIGHT, 161KV 58043 MURLEN 5 161 to 58044 MOONLT 5 161 CKT1	670	Zero Impedance Bus Tie No Upgrades Required	
04SP	KACP-KACP	OLATHE EAST TO OXFORD, 161KV 58036 OLATHEE5 161 to 58046 OXFORD 5 161 CKT 1	224	99.5	100.5	CRAIG TO COLLEGE, 161KV 57978 CRAIG 5 161 to 58048 COLLEGE5 161 CKT1	670	Change out of Wavetrap scheduled for 2003 by KACP New Rate A & B 293/335 MVA	
04WP	AEPW-OKGE	PITTSBURG TO SEMINOLE, 345KV 54033 PITTSB-7 345 to 55045 SEMINOL7 345 CKT 1	717	89.6	127.3	PITTSBURG TO SUNNYSIDE, 345KV 54033 PITTSB-7 345 to 55136 SUNNYSID7 345 CKT1	185	See Previous Upgrade #1	
04WP	OKGE-OKGE	SUNNYSIDE 345/138KV TRANSFORMER 55136 SUNNYSID7 345 to 55135 SUNNYSID4 138 CKT 1	330	94.7	109.3	PITTSBURG TO SEMINOLE, 345KV 54033 PITTSB-7 345 to 55045 SEMINOL7 345 CKT1	242	See Previous	
04WP	AEPW-AEPW	BARTLESVILLE SOUTHEAST TO NORTH BARTLESVILLE, 138KV 53940 BV-SE--4 138 to 53935 NBVILLE4 138 CKT 1	210	92.9	106.6	DELAWARE TO NORTHEASTERN STATION, 345KV 53929 DELWARE7 345 to 53955 N.E.S.-7 345 CKT1	347	See Previous	
04WP	AEPW-OKGE	PITTSBURG TO SEMINOLE, 345KV 54033 PITTSB-7 345 to 55045 SEMINOL7 345 CKT 1	717	78.2	108.9	SUNNYSIDE 345/138KV TRANSFORMER 55135 SUNNYSID4 138 to 55136 SUNNYSID7 345 CKT1	476	See Previous Upgrade #1	
04WP	AEPW-OKGE	PITTSBURG TO SEMINOLE, 345KV 54033 PITTSB-7 345 to 55045 SEMINOL7 345 CKT 1	717	67.6	111.2	PITTSBURG TO MUSKOGEE, 345KV 54033 PITTSB-7 345 to 55224 MUSKOGEE7 345 CKT1	498	See Previous Upgrade #1	

Table 1 continued – SPP Facility Overloads caused by the AEPW to AMRN 670 MW Transfer

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	ATC	Solution	Estimated Cost
04WP	AEPW-EES	SOUTH NASHVILLE TO MURFREESBORO, 138KV 53321 SNASHVL4 138 to 99389 4MURFRE 138 CKT 1	105	87.6	104.2	LONGWOOD TO ELDORADO-EHV, 345KV 53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1	500	#6 Replace South Nashville Wavetrap	30,000
04WP	AEPW-EES	SOUTH NASHVILLE TO MURFREESBORO, 138KV 53321 SNASHVL4 138 to 99389 4MURFRE 138 CKT 1	105	87.6	104.1	ELDORADO-EHV 500/345KV TRANSFORMER 99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT1	505	See Previous Upgrade #6	
04WP	AEPW-AEPW	BANN TO ALUMAX TAP, 138KV 53250 BANN 4 138 to 53245 ALUMXT 4 138 CKT 1	287	98.0	100.4	NW TEXARKANA-BANN T TO NORTHWEST TEXARKANA, 138KV 53299 NWT-BNT4 138 to 53300 NWTXARK4 138 CKT1	561	Solution Undetermined #15	
04WP	WERE-WERE	STULL SS TO MOCKINGBIRD HILL SS, 115KV 57270 STULL T3 115 to 57253 MOCKBRD3 115 CKT 1	92	99.6	104.5	HOYT TO STRANGER CREEK, 345KV 56765 HOYT 7 345 to 56772 STRANGR7 345 CKT1	670	WERE Transmission Op Directive 803	
06SP	OKGE-OKGE	TARBY TO PANAMA, 69KV 55263 TARBY 269.0 to 55272 PANAMA 269.0 CKT 1	49	99.5	101.7	BONANZA TAP TO AES, 161KV 55261 BONANZT5 161 to 55262 AES 5 161 CKT1	158	Solution Undetermined #16	
06SP	OKGE-AEPW	BONANZA TAP TO BONANZA, 161KV 55261 BONANZT5 161 to 53126 BONANZA5 161 CKT 1	177	97.0	105.3	FORT SMITH TO ARKANSAS NUCLEAR ONE, 500KV 55305 FTSMITH8 500 to 99486 8ANO 500 CKT1	243	Undetermined Solution #17	
06SP	SWPA-SWPA	GLENCOE TO NORFORK, 161KV 52646 GLENCOE5 161 to 52648 NORFORK5 161 CKT 1	112	97.3	103.0	NEWPORT-INDUSTRIAL TO NEWPORT, 161KV 99763 5NEW-IN 161 to 99764 5NEWPO 161 CKT1	318	Undetermined Solution #18	
06SP	SWPA-SWPA	SPRINGFIELD 161/69KV TRANSFORMER #3 52692 SPRGFLD5 161 to 52694 SPRGFLD269.0 CKT 3	25	98.5	101.4	JUNCTION TO BROOLINE, 161KV 59955 JUNCTN 5 161 to 59969 BRKLN5 5 161 CKT1	343	Undetermined Solution #19	
06SP	OKGE-OKGE	VBI TO HIGHWAY 59, 161KV 55339 VBI 5 161 to 55347 HWY59 5 161 CKT 1	167	93.7	105.7	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	351	See Previous Upgrade #4	
06SP	OKGE-AEPW	BONANZA TAP TO BONANZA, 161KV 55261 BONANZT5 161 to 53126 BONANZA5 161 CKT 1	177	98.2	101.5	GRAND PRAIRIE TO VBI, 161KV 55314 GRANDPR5 161 to 55339 VBI 5 161 CKT1	366	See Previous	
06SP	OKGE-OKGE	SUNNYSIDE 345/138KV TRANSFORMER 55136 SUNNYS7 345 to 55135 SUNNYS4 138 CKT 1	330	91.2	105.8	PITTSBURG TO SEMINOLE, 345KV 54033 PITTSB-7 345 to 55045 SEMINOL7 345 CKT1	403	See Previous	
06SP	SWPA-SWPA	SPRINGFIELD 161/69KV TRANSFORMER #1 52692 SPRGFLD5 161 to 52694 SPRGFLD269.0 CKT 1	80	98.1	101.0	NICHOLS 161/69KV TRANSFORMER 59925 NICHOLS269.0 to 59956 NICHOLS5 161 CKT1	438	See Previous	
06SP	AEPW-AEPW	BARTLESVILLE SOUTHEAST TO NORTH BARTLESVILLE, 138KV 53940 BV-SE--4 138 to 53935 NBVILLE4 138 CKT 1	210	91.1	104.7	DELWARE TO NORTHEASTERN STATION, 345KV 53929 DELWARE7 345 to 53955 N.E.S.-7 345 CKT1	438	See Previous	
06SP	OKGE-OKGE	OSAGE TO CONTINENTAL BLACKS, 69KV 54742 OSAGE 269.0 to 54763 CONBLKS269.0 CKT 1	111	95.1	102.5	KILDARE4 TO WHITE EAGLE, 138KV 54760 KILDARE4 138 to 54761 WHEAGLE4 138 CKT1	444	#7 Rebuild & Reconductor 0.57 Miles & Replace Wavetrap	255,000
06SP	SWPA-SWPA	GLENCOE TO NORFORK, 161KV 52646 GLENCOE5 161 to 52648 NORFORK5 161 CKT 1	112	96.1	101.9	NEWPORT-AIR BASE TO NEWPORT-INDUSTRIAL, 161KV 99762 5NEW-AB 161 to 99763 5NEW-IN 161 CKT1	453	See Previous	
06SP	OKGE-OKGE	FORT SMITH 345/161KV TRANSFORMER 55302 FTSMITH7 345 to 55300 FTSMITH5 161 CKT 1	493	93.2	103.2	FORT SMITH 500/345KV TRANSFORMER 55302 FTSMITH7 345 to 55305 FTSMITH8 500 CKT1	457	#8 Convert To Breaker-and-one-half Scheme, And Add Third 493MVA Transformer	6,000,000
06SP	SWPA-OKGE	MUSKOGEE TAP TO MUSKOGEE, 161KV 52758 MUSKTAP5 161 to 55222 MUSKOGEE5 161 CKT 1	223	91.1	102.8	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	510	Undetermined Solution #20	
06SP	AEPW-OKGE	FIXICO TAP TO MAUD, 138KV 54002 FIXCT4 138 to 55055 MAUD 4 138 CKT 1	107	88.3	103.2	MAUD 138/69KV TRANSFORMER 55054 MAUD 269.0 to 55055 MAUD 4 138 CKT1	525	Undetermined Solution #21	
06SP	WERE-WERE	NORTHLAND TO GOODYEAR JUNCTION, 115KV 57169 NTHLAND3 115 to 57162 GOODYR 3 115 CKT 1	160	99.5	100.1	HOYT TO STRANGER CREEK, 345KV 56765 HOYT 7 345 to 56772 STRANGR7 345 CKT1	532	Undetermined Solution #22	
06SP	WERE-WERE	STULL SS TO TECUMSEH HILL EAST BUS, 115KV 57270 STULL T3 115 to 57182 TECHILE3 115 CKT 1	92	97.7	100.4	LAWRENCE HILL 230/115KV TRANSFORMER 56853 LAWHILL6 230 to 57250 LWRNCHL3 115 CKT1	566	Undetermined Solution #23	

Table 1 continued – SPP Facility Overloads caused by the AEPW to AMRN 670 MW Transfer

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	ATC	Solution	Estimated Cost
06SP	AEPW-AEPW	PATTERSON TO SOUTH NASHVILLE, 138KV 53306 PATTERS4 138 to 53321 SNASHVL4 138 CKT 1	118	87.2	102.3	LONGWOOD TO ELDORADO-EHV, 345KV 53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1	567	See Previous Upgrade #3	
06SP	AEPW-AEPW	PATTERSON TO SOUTH NASHVILLE, 138KV 53306 PATTERS4 138 to 53321 SNASHVL4 138 CKT 1	118	87.0	102.2	ELDORADO-EHV 500/345KV TRANSFORMER 99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT1	572	See Previous Upgrade #3	
06SP	AEPW-OKGE	PITTSBURG TO SEMINOLE, 345KV 54033 PITTSB-7 345 to 55045 SEMINOL7 345 CKT 1	717	67.6	105.4	PITTSBURG TO SUNNYSIDE, 345KV 54033 PITTSB-7 345 to 55136 SUNNYSID7 345 CKT1	574	See Previous Upgrade #1	
06SP	SWPA-SWPA	GLENCOE TO NORFORK, 161KV 52646 GLENCOE5 161 to 52648 NORFORK5 161 CKT 1	112	94.5	100.7	CASH TO NEWPORT-AIR BASE 99736 5CASH 1 161 to 99762 5NEW-AB 161 CKT1	591	See Previous	
06SP	EMDE-EMDE	MONETT TO MONETT H.T., 69KV 59591 MON383 269.0 to 59540 MON152 269.0 CKT 1	65	94.0	100.7	AURORA H.T. TO MONETT, 161KV 59468 AUR124 5 161 to 59480 MON383 5 161 CKT1	604	Undetermined Solution #24	
06SP	OKGE-AEPW	BONANZA TAP TO BONANZA, 161KV 55261 BONANZT5 161 to 53126 BONANZA5 161 CKT 1	177	96.9	100.2	GRAND PRAIRIE TOBRANCH, 161KV 55314 GRANDPR5 161 to 55316 BRANCH 5 161 CKT1	623	See Previous	
06SP	OKGE-OKGE	GLASSES TO RUSSETT, 138KV 55147 GLASSES4 138 to 55120 RUSSETT4 138 CKT 1	96	97.6	100.1	EXPLORER TAP TO BROWN, 138KV 55153 EXPLRTP4 138 to 55157 BROWN 4 138 CKT1	637	See Previous	
06SP	OKGE-AEPW	MAUD TO FIXICO TAP, 138KV 55055 MAUD 4 138 to 54002 FIXCT4 138 CKT 1	107	84.5	100.7	MAUD TO FOREST HILL, 138KV 55055 MAUD 4 138 to 55075 FRSTHIL4 138 CKT1	639	See Previous	
06SP	SWPA-SWPA	SALLISAW TO VAN BUREN, 161KV 52750 SALISAW5 161 to 52722 VAN BUR5 161 CKT 1	167	85.1	100.7	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	642	#9 Increase clearances of approximately 20 spans to allow operation of line at 100C.	
06SP	OKGE-AEPW	MAUD TO FIXICO TAP, 138KV 55055 MAUD 4 138 to 54002 FIXCT4 138 CKT 1	107	84.3	100.5	FRANKLIN TO FRANKLIN SW, 138KV 55913 FRANKLN4 138 to 55917 FRNKLNS4 138 CKT1	648	See Previous	
06SP	WERE-WERE	3RD & VAN BUREN 115/69 KV TRANSFORMER 57435 3 VANBU3 115 to 57436 3VANBU3X1.00 CKT 1	66	100.0	100.2	CIRCLE TO DAVIS, 115KV 57413 CIRCLE 3 115 to 57415 DAVIS 3 115 CKT1	670	WERE Transmission Op Directive 1205	
06SP	AECI-KACP	CLINTON TO MONTROSE, 161KV 96071 5CLINTN 161 to 57995 MONTROS5 161 CKT 1	370	97.8	102.5	ARCHIE TO ADRIAN, 161KV 59207 ARCHIE 5 161 to 59240 ADRIAN 5 161 CKT1	670	Incorrect Rating In Model New Summer Emergency Rating 446 MVA	
06SP	KACP-KACP	OLATHE EAST TO OXFORD, 161KV 58036 OLATHEE5 161 to 58046 OXFORD 5 161 CKT 1	224	97.8	100.6	WEST GARDNER TO CRAIG, 345KV 57965 W.GRDNR7 345 to 57977 CRAIG 7 345 CKT1	670	See Previous	
06SP	AECI-KACP	CLINTON TO MONTROSE, 161KV 96071 5CLINTN 161 to 57995 MONTROS5 161 CKT 1	370	96.1	100.8	BUTLER TO ADRIAN, 161KV 59216 BUTLER_5 161 to 59240 ADRIAN 5 161 CKT1	670	See Previous	
06WP	AEPW-AEPW	HUGO TAP TO VALLIANT, 138KV 54014 HUGOTAP4 138 to 54044 VALIANT4 138 CKT 1	210	99.3	107.2	IDABEL TO VALLENT, 138KV 55953 IDABEL 4 138 to 56079 VALLANT4 138 CKT1	62	Undetermined Solution #25	
06WP	AEPW-AEPW	ADORA T TO WEST MT. PLEASANT, 69KV 53244 ADRWTP269.0 to 53338 WMTPLES269.0 CKT 1	72	99.9	100.5	PETTY TO PILGRIM'S PRIDE, 69KV 53307 PETTY 269.0 to 53309 PILGPRD269.0 CKT1	85	Undetermined Solution #26	
06WP	WERE-WERE	KING HILL N.M. COOP TO KELLY, 115KV 57331 KING HL3 115 to 57217 KELLY 3 115 CKT 1	92	99.5	102.0	EAST MANHATTAN TO CONCORDIA, 230KV 56861 EMANHAT6 230 to 58758 CONCORD6 230 CKT1	144	See Previous	
06WP	WERE-WERE	KING HILL N.M. COOP TO KELLY, 115KV 57331 KING HL3 115 to 57217 KELLY 3 115 CKT 1	92	99.4	101.9	CONCORDIA 230/115KV TRANSFORMER 58757 CONCORD3 115 to 58758 CONCORD6 230 CKT1	155	See Previous	
06WP	AEPW-AEPW	IDABEL TO HUGO TAP, 138KV 54011 IDABEL-4 138 to 54014 HUGOTAP4 138 CKT 1	186	97.7	106.2	HUGO POWER PLANT TO VALLENT, 138KV 55948 HUGO PP4 138 to 56079 VALLANT4 138 CKT1	183	Undetermined Solution #27	
06WP	AEPW-OKGE	PITTSBURG TO SEMINOLE, 345KV 54033 PITTSB-7 345 to 55045 SEMINOL7 345 CKT 1	717	87.1	125.0	PITTSBURG TO SUNNYSIDE, 345KV 54033 PITTSB-7 345 to 55136 SUNNYSID7 345 CKT1	228	See Previous Upgrade #1	

Table 1 continued – SPP Facility Overloads caused by the AEPW to AMRN 670 MW Transfer

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	ATC	Solution	Estimated Cost
06WP	AEPW-AEPW	BARTLESVILLE SOUTHEAST TO NORTH BARTLESVILLE, 138KV 53940 BV-SE--4 138 to 53935 NBVILLE4 138 CKT 1	210	95.1	108.6	DELAWARE TO NORTHEASTERN STATION, 345KV 53929 DELWARE7 345 to 53955 N.E.S.-7 345 CKT1	242	See Previous	
06WP	AEPW-AEPW	HUGO TAP TO VALLIANT, 138KV 54014 HUGOTAP4 138 to 54044 VALIANT4 138 CKT 1	210	97.1	105.1	HOLY CREEK TO IDABEL, 138KV 55946 HOLYCRK4 138 to 55953 IDABEL 4 138 CKT1	243	See Previous	
06WP	AEPW-AEPW	IDABEL TO HUGO TAP, 138KV 54011 IDABEL-4 138 to 54014 HUGOTAP4 138 CKT 1	186	96.1	104.5	IDABEL TO VALLENT, 138KV 55953 IDABEL 4 138 to 56079 VALLANT4 138 CKT1	311	See Previous	
06WP	AEPW-AEPW	HUGO TAP TO VALLIANT, 138KV 54014 HUGOTAP4 138 to 54044 VALIANT4 138 CKT 1	210	95.3	103.3	BROKEN BOW TO HOLY CREEK, 138KV 55834 BROKNBW4 138 to 55946 HOLYCRK4 138 CKT1	392	See Previous	
06WP	OKGE-OKGE	SUNNYSIDE 345/138KV TRANSFORMER 55136 SUNNYS7 345 to 55135 SUNNYS4 138 CKT 1	330	90.6	105.3	PITTSBURG TO SEMINOLE, 345KV 54033 PITTSB-7 345 to 55045 SEMINOL7 345 CKT1	427	See Previous	
06WP	AEPW-AEPW	IDABEL TO HUGO TAP, 138KV 54011 IDABEL-4 138 to 54014 HUGOTAP4 138 CKT 1	186	93.6	102.1	HOLY CREEK TO IDABEL, 138KV 55946 HOLYCRK4 138 to 55953 IDABEL 4 138 CKT1	505	See Previous	
06WP	AEPW-OKGE	PITTSBURG TO SEMINOLE, 345KV 54033 PITTSB-7 345 to 55045 SEMINOL7 345 CKT 1	717	63.3	107.1	PITTSBURG TO MUSKOGEE, 345KV 54033 PITTSB-7 345 to 55224 MUSKOGEE7 345 CKT1	561	See Previous Upgrade #1	
06WP	AEPW-OKGE	PITTSBURG TO SEMINOLE, 345KV 54033 PITTSB-7 345 to 55045 SEMINOL7 345 CKT 1	717	73.4	104.4	SUNNYSIDE 345/138KV TRANSFORMER 55135 SUNNYS4 138 to 55136 SUNNYS7 345 CKT1	574	See Previous Upgrade #1	
06WP	AEPW-EES	SOUTH NASHVILLE TO MURFREESBORO, 138KV 53321 SNASHVL4 138 to 99389 4MURFRE 138 CKT 1	105	85.5	101.7	LONGWOOD TO ELDORADO-EHV, 345KV 53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1	600	See Previous Upgrade #6	
06WP	AEPW-EES	SOUTH NASHVILLE TO MURFREESBORO, 138KV 53321 SNASHVL4 138 to 99389 4MURFRE 138 CKT 1	105	85.5	101.6	ELDORADO-EHV 500/345KV TRANSFORMER 99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT1	603	See Previous Upgrade #6	
06WP	WERE-WERE	AUBURN ROAD TO SOUTH GAGE (WEST), 115KV 57151 AUBURN 3 115 to 57179 S GAGEW3 115 CKT 2	119	100.0	102.7	HOYT TO JEFFREY ENERGY CENTER NORTH BUS, 345KV 56765 HOYT 7 345 to 56766 JEC N 7 345 CKT1	670	WERE Transmission Op Directive 400	
06WP	WERE-WERE	TECUMSEH HILL EAST BUS TO STULL SS 115 KV 57182 TECHILE3 115 to 57270 STULL T3 115 CKT 1	92	97.5	102.5	HOYT TO STRANGER CREEK, 345KV 56765 HOYT 7 345 to 56772 STRANGR7 345 CKT1	670	WERE Transmission Op Directive 803	
								Total Estimated Cost of Known Solutions	15,187,000

Table 2 – Non-SPP Facility Overloads caused by the AEPW to AMRN 670 MW Transfer

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload
03G	CELE-EES	50024 CARROLL4 138 to 99167 3RINGLD 115 CKT 1	125	96.0	104.4	50027 CLARN 6 230 to 50126 MESSICK6 230 CKT1
03G	CELE-EES	50024 CARROLL4 138 to 99167 3RINGLD 115 CKT 1	125	92.0	100.3	50027 CLARN 6 230 to 99116 6MONTGY 230 CKT1
03G	CELE-CELE	50045 DOLHILL7 345 to 50046 DOLHILL6 230 CKT 1	700	95.8	104.2	99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT1
03G	CELE-CELE	50045 DOLHILL7 345 to 50046 DOLHILL6 230 CKT 1	700	95.4	104.1	53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1
03G	CELE-CELE	50045 DOLHILL7 345 to 50046 DOLHILL6 230 CKT 1	700	94.6	100.8	53526 CROCKET7 345 to 97513 7GRIMES 345 CKT1
03G	EES-EES	97480 L558T485 138 to 97484 4HUNTSVL 138 CKT 1	206	100.0	106.3	97470 4LFOREST 138 to 97539 4WDHAVN 138 CKT1
03G	EES-EES	97480 L558T485 138 to 97484 4HUNTSVL 138 CKT 1	206	99.1	105.5	97459 4CONROE 138 to 97539 4WDHAVN 138 CKT1
03G	EES-EES	97480 L558T485 138 to 97484 4HUNTSVL 138 CKT 1	206	93.5	100.5	97514 4GRIMES 138 to 97526 4MAG AND 138 CKT1
03G	EES-EES	97487 4MT.ZION 138 to 97480 L558T485 138 CKT 1	206	97.2	104.2	97514 4GRIMES 138 to 97526 4MAG AND 138 CKT1
03G	EES-EES	97487 4MT.ZION 138 to 97480 L558T485 138 CKT 1	206	97.1	104.1	97510 4SOTA 1 138 to 97526 4MAG AND 138 CKT1
03G	EES-EES	97487 4MT.ZION 138 to 97480 L558T485 138 CKT 1	206	96.7	103.7	97508 4NAVSOA 138 to 97510 4SOTA 1 138 CKT1
03G	EES-EES	97514 4GRIMES 138 to 97454 4WALDEN 138 CKT 1	206	94.6	100.9	97487 4MT.ZION 138 to 97514 4GRIMES 138 CKT1
03G	EES-EES	97514 4GRIMES 138 to 97487 4MT.ZION 138 CKT 1	206	97.4	106.4	99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT1
03G	EES-EES	97514 4GRIMES 138 to 97487 4MT.ZION 138 CKT 1	206	97.5	106.4	53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1
03G	EES-EES	97686 4LEACH 138 to 97618 4NEWTONB 138 CKT 1	144.6	97.5	102.0	53526 CROCKET7 345 to 97513 7GRIMES 345 CKT1
03G	EES-EES	97686 4LEACH 138 to 97618 4NEWTONB 138 CKT 1	144.6	97.8	101.4	50037 COOPER 4 138 to 50098 LEESV 4 138 CKT1
03G	EES-EES	97708 4TOLEDO 138 to 97686 4LEACH 138 CKT 1	144.6	98.3	102.8	53526 CROCKET7 345 to 97513 7GRIMES 345 CKT1
03G	EES-EES	97708 4TOLEDO 138 to 97686 4LEACH 138 CKT 1	144.6	98.6	102.2	50037 COOPER 4 138 to 50098 LEESV 4 138 CKT1
03G	EES-EES	99167 3RINGLD 115 to 99168 3SAILES 115 CKT 1	115	99.1	109.2	50027 CLARN 6 230 to 50126 MESSICK6 230 CKT1
03G	EES-EES	99167 3RINGLD 115 to 99168 3SAILES 115 CKT 1	115	94.9	105.0	50027 CLARN 6 230 to 99116 6MONTGY 230 CKT1
03G	EES-EES	99389 4MURFRE 138 to 99387 3MURF-S 115 CKT 1	60	95.9	122.7	99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT1
03G	EES-EES	99389 4MURFRE 138 to 99387 3MURF-S 115 CKT 1	60	96.1	122.6	53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1
03G	EES-EES	99389 4MURFRE 138 to 99387 3MURF-S 115 CKT 1	60	89.0	111.9	53526 CROCKET7 345 to 97513 7GRIMES 345 CKT1
04SP	CELE-EES	50024 CARROLL4 138 to 99167 3RINGLD 115 CKT 1	125	99.0	105.2	99112 3WINFLD 115 to 99174 3DODSON 115 CKT1
04SP	CELE-EES	50024 CARROLL4 138 to 99167 3RINGLD 115 CKT 1	125	98.5	104.1	50031 COCODR 6 230 to 50203 VILPLT 6 230 CKT1
04SP	CELE-EES	50024 CARROLL4 138 to 99167 3RINGLD 115 CKT 1	125	96.2	103.7	50027 CLARN 6 230 to 99116 6MONTGY 230 CKT1
04SP	CELE-CELE	50039 COUGH 4 138 to 50031 COCODR 6 230 CKT 1	386	97.9	100.6	50303 BONIN 6 230 to 50310 PMOUTON6 230 CKT1
04SP	CELE-CELE	50045 DOLHILL7 345 to 50046 DOLHILL6 230 CKT 1	700	92.8	101.0	99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT1
04SP	CELE-CELE	50045 DOLHILL7 345 to 50046 DOLHILL6 230 CKT 1	700	92.5	100.7	53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1
04SP	SWPA-AECI	52690 CARTHG 269.0 to 96649 2JASPER 69.0 CKT 1	47	99.9	106.6	57968 STILWEL7 345 to 59200 PHILL 7 345 CKT1
04SP	SWPA-AECI	52690 CARTHG 269.0 to 96649 2JASPER 69.0 CKT 1	47	99.8	106.4	53929 DELWARE7 345 to 53955 N.E.S.-7 345 CKT1
04SP	SWPA-AECI	52690 CARTHG 269.0 to 96649 2JASPER 69.0 CKT 1	47	99.7	106.3	56934 MARMTNE5 161 to 58065 CNTRVIL5 161 CKT1
04SP	SWPA-AECI	52690 CARTHG 269.0 to 96751 2REEDS 69.0 CKT 1	36	98.5	106.1	59618 CPK446 269.0 to 96658 2BILLNG 69.0 CKT1
04SP	SWPA-AECI	52690 CARTHG 269.0 to 96751 2REEDS 69.0 CKT 1	36	98.5	105.8	54431 MIAMI 5 161 to 54432 AFTON 5 161 CKT1
04SP	SWPA-AECI	52690 CARTHG 269.0 to 96751 2REEDS 69.0 CKT 1	36	98.0	105.7	52688 CARTHAG5 161 to 59485 CAR395 5 161 CKT1
04SP	MIPU-AECI	59217 WINDSR 5 161 to 96071 5CLINTN 161 CKT 1	123	98.7	110.7	52702 TRUMAN 5 161 to 96555 5GRAVOI 161 CKT1
04SP	MIPU-AECI	59217 WINDSR 5 161 to 96071 5CLINTN 161 CKT 1	123	95.6	105.5	59242 CLINTON5 161 to 96071 5CLINTN 161 CKT1
04SP	MIPU-AECI	59217 WINDSR 5 161 to 96071 5CLINTN 161 CKT 1	123	94.0	104.0	31408 OVERTON 345 to 31409 OVERTON 161 CKT1
04SP	EMDE-AECI	59471 NEO184 5 161 to 96748 2NEOSAC 69.0 CKT 1	56	99.7	103.3	52680 BEAVER 5 161 to 53136 EUREKA 5 161 CKT1
04SP	EMDE-AECI	59471 NEO184 5 161 to 96748 2NEOSAC 69.0 CKT 1	56	99.6	102.6	54430 MIAMI 269.0 to 96830 2SENECA 69.0 CKT1
04SP	EMDE-AECI	59471 NEO184 5 161 to 96748 2NEOSAC 69.0 CKT 1	56	98.4	101.4	54520 JAY GR 269.0 to 96757 2SW CTY 69.0 CKT1
04SP	NPPD-NPPD	64181 MAXWELL7 115 to 64039 CALAWAY7 115 CKT 1	105	99.6	101.1	64102 GENTLMN3 345 to 64282 SWEET W3 345 CKT2
04SP	NPPD-NPPD	64181 MAXWELL7 115 to 64039 CALAWAY7 115 CKT 1	105	99.0	100.5	64037 C.CREEK4 230 to 64203 N.PLATT4 230 CKT1
04SP	SJLP-SJLP	69703 ST JOE 5 161 to 69701 MIDWAY 5 161 CKT 1	164	99.7	104.9	96039 7FAIRPT 345 to 96076 5FAIRPT 161 CKT3
04SP	AECI-AECI	96120 5THMHIL 161 to 96172 2TMHILL 69.0 CKT 2	84	99.5	101.1	96044 7MCCRED 345 to 96049 7THOMHL 345 CKT1
04SP	EES-EES	97487 4MT.ZION 138 to 97480 L558T485 138 CKT 1	206	95.7	101.8	97454 4WALDEN 138 to 97514 4GRIMES 138 CKT1
04SP	EES-EES	97514 4GRIMES 138 to 97487 4MT.ZION 138 CKT 1	206	99.1	105.2	97454 4WALDEN 138 to 97469 4APRIL 138 CKT1
04SP	EES-EES	97514 4GRIMES 138 to 97487 4MT.ZION 138 CKT 1	206	97.2	103.3	97469 4APRIL 138 to 97470 4LFOREST 138 CKT1
04SP	EES-EES	97514 4GRIMES 138 to 97487 4MT.ZION 138 CKT 1	206	93.6	100.5	97470 4LFOREST 138 to 97539 4WDHAVN 138 CKT1

Table 2 continued – Non - SPP Facility Overloads caused by the AEPW to AMRN 670 MW Transfer

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload
04SP	EES-EES	97686 4LEACH 138 to 97618 4NEWTONB 138 CKT 1	144.6	96.3	100.2	53526 CROCKET7 345 to 97513 7GRIMES 345 CKT1
04SP	EES-EES	97708 4TOLEDO 138 to 97686 4LEACH 138 CKT 1	144.6	97.8	101.8	53526 CROCKET7 345 to 97513 7GRIMES 345 CKT1
04SP	EES-EES	97768 4HLVSPG# 138 to 97698 4JASPER 138 CKT 1	112	98.9	101.1	53526 CROCKET7 345 to 53637 TENRUSK7 345 CKT1
04SP	EES-EES	98941 3VKSBRG 115 to 98938 3B.WLSN 115 CKT 1	199	99.4	101.0	98938 3B.WLSN 115 to 98943 3SPNPOT 115 CKT1
04SP	EES-CELE	99115 3FISHER 115 to 50057 FISHER 4 138 CKT 1	83	97.1	102.6	50023 CARROLL6 230 to 50046 DOLHILL6 230 CKT1
04SP	EES-EES	99146 3STERL 115 to 99232 3CROS-N 115 CKT 1	80	98.9	101.5	99286 3CROS-S* 115 to 99305 3MERIDN# 115 CKT1
04SP	EES-CELE	99167 3RINGLD 115 to 50024 CARROLL4 138 CKT 1	125	98.0	102.8	99172 3SAREPT 115 to 99173 3HAYNVL 115 CKT1
04SP	EES-EES	99167 3RINGLD 115 to 99168 3SAILES 115 CKT 1	115	98.3	105.2	53526 CROCKET7 345 to 53637 TENRUSK7 345 CKT1
04SP	EES-EES	99167 3RINGLD 115 to 99168 3SAILES 115 CKT 1	115	94.6	103.7	50027 CLARN 6 230 to 99116 6MONTGY 230 CKT1
04SP	EES-EES	99167 3RINGLD 115 to 99168 3SAILES 115 CKT 1	115	98.4	103.7	99309 8MCNEIL 500 to 99310 3MCNEIL 115 CKT1
04SP	EES-EES	99168 3SAILES 115 to 99179 3ADA 11 115 CKT 1	115	96.7	100.8	53374 FULTON 3 115 to 99303 3PATMOS# 115 CKT1
04SP	EES-EES	99168 3SAILES 115 to 99179 3ADA 11 115 CKT 1	115	95.4	100.5	99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT1
04SP	EES-EES	99168 3SAILES 115 to 99179 3ADA 11 115 CKT 1	115	96.4	100.5	99263 3LEWIS # 115 to 99303 3PATMOS# 115 CKT1
04SP	EES-EES	99171 3SPRINGH 115 to 99172 3SAREPT 115 CKT 1	120	94.6	101.5	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT1
04SP	EES-EES	99171 3SPRINGH 115 to 99280 3TAYLOR 115 CKT 1	120	99.9	100.8	99182 3DANVLL 115 to 99188 3JNSBRO 115 CKT1
04SP	EES-EES	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT 1	167	98.7	115.1	53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1
04SP	EES-EES	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT 1	167	93.3	109.7	55224 MUSKOG7 345 to 55302 FTSMITH7 345 CKT1
04SP	EES-EES	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT 1	167	93.4	109.4	50045 DOLHILL7 345 to 50046 DOLHILL6 230 CKT1
04SP	EES-EES	99264 3MAG-DW 115 to 99230 3COUCH 115 CKT 1	108	99.8	100.7	50023 CARROLL6 230 to 50024 CARROLL4 138 CKT1
04SP	EES-EES	99389 4MURFRE 138 to 99387 3MURF-S 115 CKT 1	60	98.2	121.4	54033 PITTSB-7 345 to 55045 SEMINOL7 345 CKT1
04SP	EES-EES	99389 4MURFRE 138 to 99387 3MURF-S 115 CKT 1	60	98.0	121.0	55305 FTSMITH8 500 to 99486 8ANO 500 CKT1
04SP	EES-EES	99389 4MURFRE 138 to 99387 3MURF-S 115 CKT 1	60	99.5	120.5	53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT1
04SP	EES-EES	99507 5MOR-E 161 to 99196 5P HILL 161 CKT 1	307	97.8	100.1	99197 8P HILL 500 to 99572 8MAYFL 500 CKT1
04SP	EES-EES	99542 3LR-FOU 115 to 99554 3LR-SPR* 115 CKT 1	159	99.7	101.2	99571 3MAYFL 115 to 99587 3SYLVN 115 CKT1
04SP	EES-EES	99546 3LR-MAN 115 to 99566 3MABEL 115 CKT 1	319	99.9	100.5	99544 3LR-HIN 115 to 99552 3LR-S 1 115 CKT1
04SP	EES-EES	99554 3LR-SPR* 115 to 99552 3LR-S 1 115 CKT 1	159	99.7	100.8	99612 3ENGLND# 115 to 99652 3SHERIL 115 CKT1
04SP	EES-EES	99554 3LR-SPR* 115 to 99552 3LR-S 1 115 CKT 1	159	99.3	100.7	99507 5MOR-E 161 to 99508 5GLEASN 161 CKT1
04SP	EES-EES	99554 3LR-SPR* 115 to 99552 3LR-S 1 115 CKT 1	159	99.3	100.5	99543 3LR-GNS 115 to 99557 3LR-WOD 115 CKT1
04SP	EES-EES	99573 3MCALMT 115 to 99562 3LYNCH 115 CKT 1	159	98.1	100.6	99534 3JAX_N 115 to 99587 3SYLVN 115 CKT1
04SP	EES-EES	99782 5TRUMAN 161 to 99750 5HRSBRG* 161 CKT 1	148	97.6	100.2	99736 5CASH 1 161 to 99762 5NEW-AB 161 CKT1
04SP	EES-SWPA	99825 5MIDWAY# 161 to 52660 BULL SH5 161 CKT 1	162	100.0	105.3	99784 5WALNUT 161 to 99796 5BLKCRK# 161 CKT1
04SP	EES-SWPA	99825 5MIDWAY# 161 to 52660 BULL SH5 161 CKT 1	162	99.2	105.0	99627 8KEO 50 500 to 99788 8WM-EHV 500 CKT1
04SP	EES-SWPA	99825 5MIDWAY# 161 to 52660 BULL SH5 161 CKT 1	162	97.6	104.3	55305 FTSMITH8 500 to 99486 8ANO 500 CKT1
04WP	AMRN-AECI	31221 MOBERLY 161 to 96120 5THMHIL 161 CKT 1	386	99.9	103.2	96044 7MCCRED 345 to 96049 7THOMHL 345 CKT1
04WP	CELE-EES	50024 CARROLL4 138 to 99167 3RINGLD 115 CKT 1	125	99.8	105.6	98235 8MCKNT 500 to 99027 8FRKLIN 500 CKT1
04WP	CELE-EES	50024 CARROLL4 138 to 99167 3RINGLD 115 CKT 1	125	99.0	105.2	99112 3WINFLD 115 to 99174 3DODSON 115 CKT1
04WP	CELE-EES	50024 CARROLL4 138 to 99167 3RINGLD 115 CKT 1	125	96.6	105.0	50027 CLARN 6 230 to 99116 6MONTGY 230 CKT1
04WP	SWPA-AECI	52690 CARTHG 269.0 to 96649 2JASPER 69.0 CKT 1	52	97.2	104.7	96042 7HUBEN 345 to 96045 7MORGAN 345 CKT1
04WP	SWPA-AECI	52690 CARTHG 269.0 to 96649 2JASPER 69.0 CKT 1	52	98.1	104.4	59468 AUR124 5 161 to 59480 MON383 5 161 CKT1
04WP	SWPA-AECI	52690 CARTHG 269.0 to 96649 2JASPER 69.0 CKT 1	52	97.6	104.3	52688 CARTHAG5 161 to 59479 LAR382 5 161 CKT1
04WP	SWPA-AECI	52690 CARTHG 269.0 to 96751 2REEDS 69.0 CKT 1	43	99.9	107.7	96042 7HUBEN 345 to 96045 7MORGAN 345 CKT1
04WP	SWPA-AECI	52690 CARTHG 269.0 to 96751 2REEDS 69.0 CKT 1	43	99.5	107.2	55224 MUSKOG7 345 to 55302 FTSMITH7 345 CKT1
04WP	SWPA-AECI	52690 CARTHG 269.0 to 96751 2REEDS 69.0 CKT 1	43	99.7	106.7	57995 MONTROSS5 161 to 96071 5CLINTN 161 CKT1
04WP	MIPU-MIPU	59239 HSNVL 5 161 to 59295 HSNVL 269.0 CKT 1	63	99.7	100.5	59225 PHILL 5 161 to 59280 PHILL 269.0 CKT1
04WP	SJLP-SJLP	69703 ST JOE 5 161 to 69701 MIDWAY 5 161 CKT 1	164	97.2	101.6	96076 5FAIRPT 161 to 96104 5NODWAY 161 CKT1
04WP	SJLP-SJLP	69703 ST JOE 5 161 to 69701 MIDWAY 5 161 CKT 1	164	97.2	101.5	96097 5MARYVL 161 to 96104 5NODWAY 161 CKT1
04WP	EES-EES	98911 3CLINTN 115 to 98909 3JX-NW* 115 CKT 1	161	100.0	105.8	98930 8R.BRAS 500 to 98935 8LAKEOV 500 CKT1
04WP	EES-EES	99146 3STERL 115 to 99232 3CROS-N 115 CKT 1	80	99.6	102.1	98930 8R.BRAS 500 to 98937 8B.WLSN 500 CKT1
04WP	EES-EES	99146 3STERL 115 to 99232 3CROS-N 115 CKT 1	80	99.3	101.7	99256 3HILO 1 115 to 99293 3ELDEHV 115 CKT1
04WP	EES-EES	99146 3STERL 115 to 99232 3CROS-N 115 CKT 1	80	99.2	101.6	99255 3HERMTG 115 to 99256 3HILO 1 115 CKT1

Table 2 continued – Non - SPP Facility Overloads caused by the AEPW to AMRN 670 MW Transfer

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload
04WP	EES-CELE	99167 3RINGLD 115 to 50024 CARROLL4 138 CKT 1	125	99.3	104.3	99266 3MAG-ST 115 to 99288 3KERLIN* 115 CKT1
04WP	EES-CELE	99167 3RINGLD 115 to 50024 CARROLL4 138 CKT 1	125	98.1	102.8	99309 8MCNEIL 500 to 99310 3MCNEIL 115 CKT1
04WP	EES-CELE	99167 3RINGLD 115 to 50024 CARROLL4 138 CKT 1	125	95.9	100.3	99170 3MINDEN 115 to 99172 3SAREPT 115 CKT1
04WP	EES-EES	99167 3RINGLD 115 to 99168 3SAILES 115 CKT 1	115	98.3	107.8	50027 CLARN 6 230 to 99116 6MONTGY 230 CKT1
04WP	EES-EES	99167 3RINGLD 115 to 99168 3SAILES 115 CKT 1	115	99.7	106.8	99112 3WINFLD 115 to 99174 3DODSON 115 CKT1
04WP	EES-EES	99167 3RINGLD 115 to 99168 3SAILES 115 CKT 1	115	99.0	106.1	53526 CROCKET7 345 to 97513 7GRIMES 345 CKT1
04WP	EES-EES	99171 3SPRINGH 115 to 99280 3TAYLOR 115 CKT 1	120	96.2	100.4	99168 3SAILES 115 to 99179 3ADA 11 115 CKT1
04WP	EES-EES	99177 3TEXASE 115 to 99168 3SAILES 115 CKT 1	80	98.7	100.4	99182 3DANVLL 115 to 99188 3JNSBRO 115 CKT1
04WP	EES-EES	99179 3ADA 11 115 to 99168 3SAILES 115 CKT 1	115	99.8	101.5	99309 8MCNEIL 500 to 99310 3MCNEIL 115 CKT1
04WP	EES-EES	99179 3ADA 11 115 to 99170 3MINDEN 115 CKT 1	115	99.2	101.9	99171 3SPRINGH 115 to 99280 3TAYLOR 115 CKT1
04WP	EES-EES	99179 3ADA 11 115 to 99170 3MINDEN 115 CKT 1	115	99.2	101.2	99266 3MAG-ST 115 to 99308 3MAG-E 115 CKT1
04WP	EES-EES	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT 1	167	90.0	105.1	99230 3COUCH 115 to 99264 3MAG-DW 115 CKT1
04WP	EES-EES	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT 1	167	88.2	103.3	99264 3MAG-DW 115 to 99280 3TAYLOR 115 CKT1
04WP	EES-EES	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT 1	167	86.3	103.2	53526 CROCKET7 345 to 97513 7GRIMES 345 CKT1
04WP	EES-EES	99263 3LEWIS # 115 to 99230 3COUCH 115 CKT 1	159	98.9	109.6	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT1
04WP	EES-EES	99268 3MCLELN# 115 to 99276 3SMACKO 115 CKT 1	96	99.1	100.7	99278 3STEPHN 115 to 99310 3MCNEIL 115 CKT1
04WP	EES-EES	99387 3MURF-S 115 to 99388 3MURF-E# 115 CKT 1	98	89.5	106.6	53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1
04WP	EES-EES	99387 3MURF-S 115 to 99388 3MURF-E# 115 CKT 1	98	89.4	106.4	99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT1
04WP	EES-EES	99388 3MURF-E# 115 to 99347 3AMITY * 115 CKT 1	98	85.2	102.2	53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1
04WP	EES-EES	99388 3MURF-E# 115 to 99347 3AMITY * 115 CKT 1	98	85.2	102.1	99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT1
04WP	EES-EES	99389 4MURFRE 138 to 99387 3MURF-S 115 CKT 1	60	99.9	119.6	55946 HOLYCRK4 138 to 55953 IDABEL 4 138 CKT1
04WP	EES-EES	99389 4MURFRE 138 to 99387 3MURF-S 115 CKT 1	60	97.9	119.5	53277 LYDIA 7 345 to 53615 WELSH 7 345 CKT1
04WP	EES-EES	99389 4MURFRE 138 to 99387 3MURF-S 115 CKT 1	60	99.8	119.2	54011 IDABEL-4 138 to 54014 HUGOTAP4 138 CKT1
06SP	CELE-EES	50024 CARROLL4 138 to 99167 3RINGLD 115 CKT 1	125	98.0	105.8	50027 CLARN 6 230 to 50126 MESSICK6 230 CKT1
06SP	CELE-EES	50024 CARROLL4 138 to 99167 3RINGLD 115 CKT 1	125	96.9	103.3	53374 FULTON 3 115 to 99303 3PATMOS# 115 CKT1
06SP	CELE-EES	50024 CARROLL4 138 to 99167 3RINGLD 115 CKT 1	125	96.7	103.1	99263 3LEWIS # 115 to 99303 3PATMOS# 115 CKT1
06SP	CELE-CELE	50045 DOLHILL7 345 to 50046 DOLHILL6 230 CKT 1	700	92.7	100.9	53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1
06SP	CELE-CELE	50046 DOLHILL6 230 to 50045 DOLHILL7 345 CKT 1	700	93.0	101.4	99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT1
06SP	SWPA-AECI	52690 CARTHG 269.0 to 96649 2JASPER 69.0 CKT 1	47	99.9	106.1	57965 W.GRDNR7 345 to 57981 LACYGNE7 345 CKT1
06SP	SWPA-AECI	52690 CARTHG 269.0 to 96649 2JASPER 69.0 CKT 1	47	99.3	105.9	50858 FINNEY7 345 to 56449 HOLCOMB7 345 CKT1
06SP	SWPA-AECI	52690 CARTHG 269.0 to 96649 2JASPER 69.0 CKT 1	47	99.0	105.9	55305 FTSMITH8 500 to 99486 8ANO 500 CKT1
06SP	SWPA-AECI	52690 CARTHG 269.0 to 96751 2REEDS 69.0 CKT 1	36	98.9	106.6	56793 NEOSHO 7 345 to 56825 NEOSHO2X1.00 CKT1
06SP	SWPA-AECI	52690 CARTHG 269.0 to 96751 2REEDS 69.0 CKT 1	36	98.9	106.6	56937 NEOSHO 5 161 to 56825 NEOSHO2X1.00 CKT1
06SP	SWPA-AECI	52690 CARTHG 269.0 to 96751 2REEDS 69.0 CKT 1	36	97.9	105.5	59466 ATL109 5 161 to 59494 OAK432 5 161 CKT1
06SP	MIPU-MIPU	59206 PRALEE 5 161 to 59211 BLSPS 5 161 CKT 1	245	97.0	102.3	59224 LNGWV 5 161 to 59245 KCSOUTH5 161 CKT1
06SP	MIPU-AECI	59217 WINDSR 5 161 to 96071 5CLINTN 161 CKT 1	123	99.2	110.9	96042 7HUBEN 345 to 96045 7MORGAN 345 CKT1
06SP	MIPU-AECI	59217 WINDSR 5 161 to 96071 5CLINTN 161 CKT 1	123	97.5	110.3	59209 SEDALIA5 161 to 59234 WAFB 5 161 CKT1
06SP	MIPU-AECI	59217 WINDSR 5 161 to 96071 5CLINTN 161 CKT 1	123	98.1	110.0	96057 5BARNET 161 to 96555 5GRAVOI 161 CKT1
06SP	LES-NPPD	60338 20&PIO 7 115 to 64257 SHELDON7 115 CKT 1	145	99.5	100.4	60320 NW68HOL3 345 to 64194 MOORE 3 345 CKT1
06SP	LES-NPPD	60338 20&PIO 7 115 to 64257 SHELDON7 115 CKT 1	145	99.3	100.2	60320 NW68HOL3 345 to 60321 NW68HOLY 345 CKT1
06SP	LES-NPPD	60338 20&PIO 7 115 to 64257 SHELDON7 115 CKT 1	145	99.3	100.2	60314 NW68HOL7 115 to 60321 NW68HOLY 345 CKT1
06SP	NPPD-NPPD	64181 MAXWELL7 115 to 64039 CALAWAY7 115 CKT 1	105	100.0	101.8	64102 GENTLMN3 345 to 64282 SWEET W3 345 CKT2
06SP	NPPD-NPPD	64181 MAXWELL7 115 to 64039 CALAWAY7 115 CKT 1	105	99.3	101.0	64037 C.CREEK4 230 to 64203 N.PLATT4 230 CKT1
06SP	NPPD-NPPD	64181 MAXWELL7 115 to 64039 CALAWAY7 115 CKT 1	105	98.7	100.5	64181 MAXWELL7 115 to 64288 THEDFRD7 115 CKT1
06SP	AECI-AECI	96089 5JAMESV 161 to 96673 2JAMESV 69.0 CKT 2	56	97.6	100.1	96042 7HUBEN 345 to 96045 7MORGAN 345 CKT1
06SP	EES-EES	97487 4MT.ZION 138 to 97480 L558T485 138 CKT 1	206	99.7	106.8	97454 4WALDEN 138 to 97514 4GRIMES 138 CKT1
06SP	EES-EES	97487 4MT.ZION 138 to 97480 L558T485 138 CKT 1	206	96.5	103.5	97454 4WALDEN 138 to 97469 4APRIL 138 CKT1
06SP	EES-EES	97487 4MT.ZION 138 to 97480 L558T485 138 CKT 1	206	94.5	101.5	97469 4APRIL 138 to 97470 4LFOREST 138 CKT1
06SP	EES-EES	97513 7GRIMES 345 to 97514 4GRIMES 138 CKT 1	525	96.6	101.4	97513 7GRIMES 345 to 97514 4GRIMES 138 CKT2
06SP	EES-EES	97513 7GRIMES 345 to 97514 4GRIMES 138 CKT 2	525	96.6	101.4	97513 7GRIMES 345 to 97514 4GRIMES 138 CKT1

Table 2 continued – Non - SPP Facility Overloads caused by the AEPW to AMRN 670 MW Transfer

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload
06SP	EES-EES	97514 4GRIMES 138 to 97487 4MT.ZION 138 CKT 1	206	98.4	105.4	97470 4LFOREST 138 to 97539 4WDHAVN 138 CKT1
06SP	EES-EES	97514 4GRIMES 138 to 97487 4MT.ZION 138 CKT 1	206	98.7	105.1	97514 4GRIMES 138 to 97526 4MAG AND 138 CKT1
06SP	EES-EES	97514 4GRIMES 138 to 97487 4MT.ZION 138 CKT 1	206	98.5	104.9	97510 4SOTA 1 138 to 97526 4MAG AND 138 CKT1
06SP	EES-EES	97686 4LEACH 138 to 97618 4NEWTOMB 138 CKT 1	144.6	99.4	103.3	53526 CROCKET7 345 to 97513 7GRIMES 345 CKT1
06SP	EES-EES	99032 3LIBRTY 115 to 99060 3GILBR* 115 CKT 1	69	99.9	100.4	98482 3INDEPD 115 to 98484 3HAMMND 115 CKT1
06SP	EES-CELE	99167 3RINGLD 115 to 50024 CARROLL4 138 CKT 1	125	97.0	101.7	99249 3EMERSN 115 to 99288 3KERLIN* 115 CKT1
06SP	EES-EES	99167 3RINGLD 115 to 99168 3SAILES 115 CKT 1	115	97.5	106.9	50027 CLARN 6 230 to 50126 MESSICK6 230 CKT1
06SP	EES-EES	99167 3RINGLD 115 to 99168 3SAILES 115 CKT 1	115	98.4	105.2	99112 3WINFLD 115 to 99113 6WINFLD 230 CKT1
06SP	EES-EES	99167 3RINGLD 115 to 99168 3SAILES 115 CKT 1	115	98.3	105.2	99113 6WINFLD 230 to 99116 6MONTGY 230 CKT1
06SP	EES-EES	99179 3ADA 11 115 to 99168 3SAILES 115 CKT 1	115	98.0	100.3	99173 3HAYNVL 115 to 99249 3EMERSN 115 CKT1
06SP	EES-EES	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT 1	167	97.8	118.0	53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1
06SP	EES-EES	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT 1	167	97.7	117.8	99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT1
06SP	EES-EES	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT 1	167	96.0	109.3	99171 3SPRINGH 115 to 99172 3SAREPT 115 CKT1
06SP	EES-EES	99263 3LEWIS # 115 to 99230 3COUCH 115 CKT 1	159	88.9	100.9	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT1
06SP	EES-EES	99264 3MAG-DW 115 to 99230 3COUCH 115 CKT 1	108	99.5	101.5	99167 3RINGLD 115 to 99168 3SAILES 115 CKT1
06SP	EES-EES	99264 3MAG-DW 115 to 99230 3COUCH 115 CKT 1	108	98.9	101.0	50045 DOLHILL7 345 to 50046 DOLHILL6 230 CKT1
06SP	EES-EES	99303 3PATMOS# 115 to 99263 3LEWIS # 115 CKT 1	159	98.2	110.2	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT1
06SP	EES-EES	99389 4MURFRE 138 to 99387 3MURF-S 115 CKT 1	60	94.5	117.6	55305 FTSMITH8 500 to 99486 8ANO 500 CKT1
06SP	EES-EES	99389 4MURFRE 138 to 99387 3MURF-S 115 CKT 1	60	95.1	116.0	53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT1
06SP	EES-EES	99389 4MURFRE 138 to 99387 3MURF-S 115 CKT 1	60	92.2	115.6	54033 PITTSB-7 345 to 55045 SEMINOL7 345 CKT1
06SP	EES-EES	99540 3LR-CHI 115 to 99546 3LR-MAN 115 CKT 1	319	99.8	100.4	99539 3LR-ALX 115 to 99566 3MABEL 115 CKT1
06SP	EES-EES	99782 5TRUMAN 161 to 99750 5HRSBRG* 161 CKT 1	148	99.9	103.5	99736 5CASH 1 161 to 99762 5NEW-AB 161 CKT1
06SP	EES-EES	99782 5TRUMAN 161 to 99750 5HRSBRG* 161 CKT 1	148	98.8	101.3	99736 5CASH 1 161 to 99755 5JONES 161 CKT1
06SP	EES-EES	99782 5TRUMAN 161 to 99781 5TRUM-W# 161 CKT 1	148	97.8	100.3	99763 5NEW-IN 161 to 99764 5NEWPO 161 CKT1
06SP	EES-SWPA	99825 5MIDWAY# 161 to 52660 BULL SH5 161 CKT 1	162	99.3	106.4	96041 7FRANKS 345 to 96042 7HUBEN 345 CKT1
06SP	EES-SWPA	99825 5MIDWAY# 161 to 52660 BULL SH5 161 CKT 1	162	99.3	106.4	54033 PITTSB-7 345 to 54037 VALIANT7 345 CKT1
06SP	EES-SWPA	99825 5MIDWAY# 161 to 52660 BULL SH5 161 CKT 1	162	99.2	105.9	99627 8KEO 50 500 to 99818 8ISES 5 500 CKT1
06WP	AMRN-AECI	31221 MOBERLY 161 to 96120 5THMHIL 161 CKT 1	386	97.9	101.0	96044 7MCCRED 345 to 96049 7THOMHL 345 CKT1
06WP	CELE-EES	50024 CARROLL4 138 to 99167 3RINGLD 115 CKT 1	125	99.2	107.6	50023 CARROLL6 230 to 50126 MESSICK6 230 CKT1
06WP	CELE-EES	50024 CARROLL4 138 to 99167 3RINGLD 115 CKT 1	125	98.8	106.0	53374 FULTON 3 115 to 99303 3PATMOS# 115 CKT1
06WP	CELE-EES	50024 CARROLL4 138 to 99167 3RINGLD 115 CKT 1	125	98.5	105.7	99263 3LEWIS # 115 to 99303 3PATMOS# 115 CKT1
06WP	SWPA-AECI	52690 CARTHG 269.0 to 96649 2JASPER 69.0 CKT 1	52	98.8	105.0	59468 AUR124 5 161 to 59480 MON383 5 161 CKT1
06WP	SWPA-AECI	52690 CARTHG 269.0 to 96649 2JASPER 69.0 CKT 1	52	97.0	104.2	96042 7HUBEN 345 to 96045 7MORGAN 345 CKT1
06WP	SWPA-AECI	52690 CARTHG 269.0 to 96649 2JASPER 69.0 CKT 1	52	97.2	103.6	52688 CARTHAG5 161 to 59479 LAR382 5 161 CKT1
06WP	SWPA-AECI	52690 CARTHG 269.0 to 96751 2REEDS 69.0 CKT 1	43	99.8	107.4	55305 FTSMITH8 500 to 99486 8ANO 500 CKT1
06WP	SWPA-AECI	52690 CARTHG 269.0 to 96751 2REEDS 69.0 CKT 1	43	99.9	106.7	57968 STILWEL7 345 to 59200 PHILL 7 345 CKT1
06WP	SWPA-AECI	52690 CARTHG 269.0 to 96751 2REEDS 69.0 CKT 1	43	99.8	106.6	56797 WOLFCRK7 345 to 57981 LACYGNE7 345 CKT1
06WP	MIPU-AECI	59216 BUTLER_5 161 to 96689 2BUTLER 69.0 CKT 1	56	97.6	101.6	57995 MONTROS5 161 to 96071 5CLINTN 161 CKT1
06WP	MIPU-AECI	59217 WINDSR 5 161 to 96071 5CLINTN 161 CKT 1	131	88.9	100.1	59228 WBURGE 5 161 to 59229 ODESSA 5 161 CKT1
06WP	EMDE-AECI	59471 NEO184 5 161 to 96748 2NEOSAC 69.0 CKT 1	56	96.3	101.4	52680 BEAVER 5 161 to 53136 EUREKA 5 161 CKT1
06WP	EMDE-AECI	59471 NEO184 5 161 to 96748 2NEOSAC 69.0 CKT 1	56	98.7	101.3	59591 MON383 269.0 to 96680 2VERONA 69.0 CKT1
06WP	EMDE-AECI	59471 NEO184 5 161 to 96748 2NEOSAC 69.0 CKT 1	56	98.1	101.0	54430 MIAMI 269.0 to 96830 2SENECA 69.0 CKT1
06WP	AECI-AECI	96082 5GEORGE 161 to 96531 2GEORGE 69.0 CKT 1	56	98.9	104.3	59209 SEDALIA5 161 to 59241 SEDEAST5 161 CKT1
06WP	AECI-AECI	96082 5GEORGE 161 to 96531 2GEORGE 69.0 CKT 1	56	98.7	103.0	96057 5BARNET 161 to 96555 5GRAVOI 161 CKT1
06WP	AECI-AECI	96082 5GEORGE 161 to 96531 2GEORGE 69.0 CKT 1	56	99.7	102.9	96071 5CLINTN 161 to 96692 2CLINTN 69.0 CKT3
06WP	EES-EES	98480 3KENTWD 115 to 99069 3COLN.P 115 CKT 1	68	99.4	100.4	99040 3NORFLD 115 to 99041 3MCCOMB 115 CKT1
06WP	EES-EES	98481 3AMITE 115 to 98480 3KENTWD 115 CKT 1	80	99.0	100.2	98235 8MCKNT 500 to 99027 8FRKLIN 500 CKT1
06WP	EES-EES	98785 3ELLIOT 115 to 98784 3SAWYR* 115 CKT 1	85	99.9	100.3	98790 3TILTOB 115 to 98793 3GRNADA 115 CKT1
06WP	EES-EES	98891 3RANKIN 115 to 98881 3PELAHE 115 CKT 1	108	99.5	101.5	98809 6MCCADAM 230 to 98810 6ATTALA 230 CKT1
06WP	EES-EES	98891 3RANKIN 115 to 98881 3PELAHE 115 CKT 1	108	99.5	101.5	98810 6ATTALA 230 to 98811 3ATTALA 115 CKT1

Table 2 continued – Non - SPP Facility Overloads caused by the AEPW to AMRN 670 MW Transfer

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload
06WP	EES-EES	98909 3JX-NW* 115 to 98919 3RX BRN 115 CKT 1	161	99.4	106.0	98930 8R.BRAS 500 to 98935 8LAKEOV 500 CKT1
06WP	EES-EES	98930 8R.BRAS 500 to 98932 3R.BRAS 115 CKT 1	560	99.4	100.4	98930 8R.BRAS 500 to 98931 6R.BRAS 230 CKT1
06WP	EES-EES	98942 3VKS-B-W 115 to 98941 3VKSBRG 115 CKT 1	161	99.9	101.5	98930 8R.BRAS 500 to 98937 8B.WLSN 500 CKT1
06WP	EES-EES	98942 3VKS-B-W 115 to 98941 3VKSBRG 115 CKT 1	161	99.2	100.5	98941 3VKSBRG 115 to 98946 3WATERWY 115 CKT1
06WP	EES-EES	98942 3VKS-B-W 115 to 98941 3VKSBRG 115 CKT 1	161	99.5	100.5	98808 8MCADAM 500 to 98809 6MCADAM 230 CKT1
06WP	EES-EES	99167 3RINGLD 115 to 99168 3SAILES 115 CKT 1	115	99.2	107.3	99230 3COUCH 115 to 99263 3LEWIS # 115 CKT1
06WP	EES-EES	99167 3RINGLD 115 to 99168 3SAILES 115 CKT 1	115	98.6	105.1	98235 8MCKNT 500 to 99027 8FRKLIN 500 CKT1
06WP	EES-EES	99167 3RINGLD 115 to 99168 3SAILES 115 CKT 1	115	95.7	105.0	50027 CLARN 6 230 to 50126 MESSICK6 230 CKT1
06WP	EES-EES	99168 3SAILES 115 to 99179 3ADA 11 115 CKT 1	115	98.5	100.9	99264 3MAG-DW 115 to 99280 3TAYLOR 115 CKT1
06WP	EES-EES	99179 3ADA 11 115 to 99170 3MINDEN 115 CKT 1	115	99.2	101.6	99230 3COUCH 115 to 99264 3MAG-DW 115 CKT1
06WP	EES-EES	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT 1	167	88.2	107.6	53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1
06WP	EES-EES	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT 1	167	88.2	107.6	99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT1
06WP	EES-EES	99263 3LEWIS # 115 to 99230 3COUCH 115 CKT 1	159	97.7	109.5	99230 3COUCH 115 to 99310 3MCNEIL 115 CKT1
06WP	EES-EES	99387 3MURF-S 115 to 99388 3MURF-E# 115 CKT 1	98	87.3	103.9	53424 LONGWD 7 345 to 99294 7ELDEHV 345 CKT1
06WP	EES-EES	99387 3MURF-S 115 to 99388 3MURF-E# 115 CKT 1	98	87.3	103.9	99294 7ELDEHV 345 to 99295 8ELDEHV 500 CKT1
06WP	EES-EES	99389 4MURFRE 138 to 99387 3MURF-S 115 CKT 1	60	99.4	119.4	53239 SFOREMN4 138 to 53298 NNBOSTN4 138 CKT1
06WP	EES-EES	99389 4MURFRE 138 to 99387 3MURF-S 115 CKT 1	60	99.5	119.4	53286 MUNZCTY4 138 to 53619 WILKES 4 138 CKT1
06WP	EES-EES	99389 4MURFRE 138 to 99387 3MURF-S 115 CKT 1	60	97.5	118.7	53277 LYDIA 7 345 to 53615 WELSH 7 345 CKT1
06WP	EES-SWPA	99825 5MIDWAY# 161 to 52660 BULL SH5 161 CKT 1	162	95.2	100.1	99798 5BATEVL 161 to 99808 5CUSHMN 161 CKT1

Table 3 – Previously Assigned and Identified SPP Facilities Impacted by the AEPW to AMRN 670 MW Transfer

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	ATC	Assignment	Solution	Estimated Cost
03G	OKGE-OKGE	DRAPER 345/138KV TRANSFORMER 1 54934 DRAPER 7 345 to 54933 DRAPER 4 138 CKT 1	493	66.0	69.4	DRAPER 345/138KV TRANSFORMER 2 54933 DRAPER 4 138 to 54934 DRAPER 7 345 CKT2	670	Upgrade Modeled Assigned to SPP-2000-108		
03G	OKGE-OKGE	DRAPER 345/138KV TRANSFORMER 2 54934 DRAPER 7 345 to 54933 DRAPER 4 138 CKT 2	493	66.0	69.4	DRAPER 345/138KV TRANSFORMER 1 54934 DRAPER 7 345 to 54933 DRAPER 4 138 CKT1	670	"		
03G	WERE-WERE	HOYT HTI SWITCHING JCT TO CIRCLEVILLE, 115KV 57165 HTI JCT3 115 to 57152 CIRCLVL3 115 CKT 1	97	108.9	113.2	IATAN TO ST JOE, 345KV 57982 IATAN 7 345 to 69702 ST JOE 3 345 CKT1	0	Upgrade Modeled Assigned to SPP-2000-108	Topology Update Increase Loading	
03G	WERE-WERE	HOYT HTI SWITCHING JCT TO CIRCLEVILLE, 115KV 57165 HTI JCT3 115 to 57152 CIRCLVL3 115 CKT 1	97	99.8	102.2	JEC TO EAST MANHATTAN, 230KV 56852 JEC 6 230 to 56861 EMANHAT6 230 CKT1	48	"	Undetermined Solution #1	
03G	WERE-WERE	HOYT HTI SWITCHING JCT TO CIRCLEVILLE, 115KV 57165 HTI JCT3 115 to 57152 CIRCLVL3 115 CKT 1	97	97.8	100.9	CLIFTON TO CONCORDIA, 115KV 58756 CLIFTON3 115 to 58757 CONCORD3 115 CKT1	477	"	"	
03G	OKGE-OKGE	PECAN CREEK 345/161KV TRANSFORMER 55235 PECANCK7 345 to 55234 PECANCK5 161 CKT 1	369	60.5	69.6	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	670	Upgrade Modeled Assigned to SPP-2000-108		
03G	OKGE-OKGE	PECAN CREEK 345/161KV TRANSFORMER #1 55235 PECANCK7 345 to 55234 PECANCK5 161 CKT 1	369	81.1	86.9	PECAN CREEK 345/161KV TRANSFORMER #2 55235 PECANCK7 345 to 55234 PECANCK5 161 CKT 2	670	"		
03G	WERE-WERE	LAWRENCE HILL 230/115KV TRANSFORMER 56853 LAWHILL6 230 to 57250 LWRNCHL3 115 CKT 1	308	96.2	98.2	MIDLAND 230/115KV TRANSFORMER 56855 MIDLAND6 230 to 57252 MIDLAND3 115 CKT1	670	SPP-2000-108 Excluded Per WERE		
03G	AEPW-AEPW	IPC JEFFERSON TO LIEBERMAN, 138KV 53548 IPCJEFF4 138 to 53420 LIEBERM4 138 CKT 1	163	84.1	94.7	LONGWOOD TO WILKES, 345KV 53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1	670	Upgrade Modeled Assigned to SPP-2000-108		
03G	WERE-WERE	COUNTY LINE 115/69 KV TRANSFORMER MIDPOINT 57153 COLINE 3 115 to 57201 COLINE3X1.00 CKT 1	66	98.4	101.5	HOYT TO STRANGER CREEK, 345KV 56765 HOYT 7 345 to 56772 STRANGR7 345 CKT1	670	SPP-2000-108 Excluded Per WERE	WERE Transmission Op Directive 803	
03G	AEPW-AEPW	WALLACE LAKE TO SOUTH SHREVEPORT, 138KV 53461 WALLAKE4 138 to 53446 S SHV 4 138 CKT 1	236	97.0	105.4	DOLET HILLS 345/230KV TRANSFORMER 50045 DOLHILL7 345 to 50046 DOLHILL6 230 CKT1	670	Dolet Hills Operating Guide Monitor Line at 260 MVA		
03G	AEPW-CELE	WALLACE LAKE TO INTERNATIONAL PAPER, 138KV 53461 WALLAKE4 138 to 50090 IPAPER 4 138 CKT 1	236	96.4	105.9	DOLET HILLS 345/230KV TRANSFORMER 50045 DOLHILL7 345 to 50046 DOLHILL6 230 CKT1	670	"		
04SP	SWPA-AECI	CARTHAGE TO JASPER, 69KV 52690 CARTHG 269.0 to 96649 2JASPER 69.0 CKT 1	47	99.7	106.3	MARATON TO CENTERVILLE, 161KV 56934 MARMTNE5 161 to 58065 CNTRVIL5 161 CKT1	N/A	SPP-2000-108 Tie Line & Third Party Facility		
04SP	AEPW-WFEC	SOUTHWEST STATION TO ANADARKO, 138KV 54140 S.W.S.-4 138 to 55814 ANADARK4 138 CKT 1	210	96.5	97.7	CORNVILLE TO CORN TAP, 138KV 54112 CORNVIL4 138 to 55867 CORN TP4 138 CKT1	670	Upgrade Modeled Assigned to SPP-2000-108		

Table 3 continued – Previously Assigned and Identified SPP Facilities Impacted by the AEPW to AMRN 670 MW Transfer

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	ATC	Assignment	Solution	Estimated Cost
04SP	WERE-WERE	HOYT HTI SWITCHING JCT TO CIRCLEVILLE, 115KV 57165 HTI JCT3 115 to 57152 CIRCLVL3 115 CKT 1	97	99.3	102.8	CLIFTON TO CONCORDIA, 115KV 58756 CLIFTON3 115 to 58757 CONCORD3 115 CKT1	131	Upgrade Modeled Assigned to SPP-2000-108	See Previous	
04SP	WERE-WERE	HOYT HTI SWITCHING JCT TO CIRCLEVILLE, 115KV 57165 HTI JCT3 115 to 57152 CIRCLVL3 115 CKT 1	97	98.7	103.5	MIDIAN 161/138KV TRANSFORMER 56936 MIDIAN 5 161 to 56990 MIDIAN 4 138 CKT1	179	"		
04SP	WERE-WERE	HOYT HTI SWITCHING JCT. TO CIRCLEVILLE, 115KV 57165 HTI JCT3 115 to 57152 CIRCLVL3 115 CKT 1	97	98.2	102.7	WILLIAMS BROTHERS PIPELINE TO MIDIAN, 161KV 56921 WM BROS5 161 to 56936 MIDIAN 5 161 CKT1	270	"		
04SP	AEPW-EES	FULTON TO PATMOS, 115KV 53374 FULTON 3 115 to 99303 3PATMOS# 115 CKT 1	235	94.4	107.6	PATTERSON TO SOUTH NASHVILLE, 138KV 53306 PATTERS4 138 to 53321 SNASHVL4 138 CKT1	285	Upgrade Modeled Assigned to SPP-2000-108	Undetermined Solution #2	
04SP	AEPW-EES	FULTON TO PATMOS, 115KV 53374 FULTON 3 115 to 99303 3PATMOS# 115 CKT 1	235	97.9	112.1	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	99	"	"	
04SP	AEPW-EES	FULTON TO PATMOS, 115KV 53374 FULTON 3 115 to 99303 3PATMOS# 115 CKT 1	235	98.1	108.0	MCNEIL 500/115KV TRANSFORMER 99309 8MCNEIL 500 to 99310 3MCNEIL 115 CKT1	127	"	"	
04SP	OKGE-OKGE	PECAN CREEK 345/161KV TRANSFORMER #1 55235 PECANCK7 345 to 55234 PECANCK5 161 CKT 1	369	63.5	69.6	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	670	Upgrade Modeled Assigned to SPP-2000-108		
04SP	OKGE-OKGE	PECAN CREEK 345/161KV TRANSFORMER #1 55235 PECANCK7 345 to 55234 PECANCK5 161 CKT 1	369	77.1	82.7	PECAN CREEK 345/161KV TRANSFORMER #2 55235 PECANCK7 345 to 55234 PECANCK5 161 CKT 2	670	"		
04SP	EMDE-EMDE	MONETT TO AURORA HT, 161KV 59480 MON383 5 161 to 59468 AUR124 5 161 CKT 1	267	60.9	65.6	AURORA HT TO MONETT HT, 69KV 59537 AUR124 269.0 to 59540 MON152 269.0 CKT1	670	Upgrade Modeled to be completed by EMDE 12/1/02		
04SP	WERE-WERE	COUNTY LINE 230/115/69KV TRANSFORMER 57456 COLINE 269.0 to 57201 COLINE3X1.00 CKT 1	66	99.5	102.6	HOYT TO STRANGER, 345KV 56765 HOYT 7 345 to 56772 STRANGR7 345 CKT1	670	SPP-2000-108 Excluded Per WERE	WERE Transmission Op Directive 803	
04SP	AEPW-AEPW	LONE STAR SOUTH TO WILKES, 138KV 53276 LSSOUTH4 138 to 53619 WILKES 4 138 CKT 1	471	64.1	65.4	WILKES TO WELSH REC, 138KV 53619 WILKES 4 138 to 53622 WELSHRE4 138 CKT1	670	Upgrade Modeled Assigned to SPP-2000-108		
04SP	GRRD-GRRD	PENSACOLA TO GRAY TAP, 69KV 54428 PENZA 269.0 to 54465 GRAY TP269.0 CKT 1	112	39.7	40.8	MIAMI TO AFTON, 161KV 54431 MIAMI 5 161 to 54432 AFTON 5 161 CKT1	670	Upgrade Modeled Assigned to SPP-2000-108		
04SP	AEPW-SWPA	EUREKA SPRINGS TO BEAVER, 161KV 53136 EUREKA 5 161 to 52680 BEAVER 5 161 CKT 1	305	93.3	103.7	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	430	Upgrade Modeled Assigned to SPP-2000-108	Undetermined Solution #3	
04SP	AEPW-SWPA	EUREKA SPRINGS TO BEAVER, 161KV 53136 EUREKA 5 161 to 52680 BEAVER 5 161 CKT 1	305	97.3	108.7	MONETT TO BROOKLINE, 345KV 59481 MON383 7 345 to 59984 BRKLINE 7 345 CKT1	160	"	"	

Table 3 continued – Previously Assigned and Identified SPP Facilities Impacted by the AEPW to AMRN 670 MW Transfer

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	ATC	Assignment	Solution	Estimated Cost
04SP	AEPW-SWPA	EUREKA SPRINGS TO BEAVER, 161KV 53136 EUREKA 5 161 to 52680 BEAVER 5 161 CKT 1	305	97.0	108.6	FLINT CREEK TO BROOKLINE, 345KV 53140 FLINTCR7 345 to 59481 MON383 7 345 CKT1	172	Upgrade Modeled Assigned to SPP-2000-108	See Previous	
04SP	EMDE-AECI	NEOSHO 161/69KV TRANSFORMER 59471 NEO184 5 161 to 96748 2NEOSAC 69.0 CKT 1	56	99.7	103.3	BEAVER TO EUREKA SPRINGS, 161KV 52680 BEAVER 5 161 to 53136 EUREKA 5 161 CKT1	N/A	SPP-2000-108 Excluded Third Party Facility		
04SP	EES-SWPA	MIDWAY TO BULL SHOALS, 161KV 99825 5MIDWAY# 161 to 52660 BULL SH5 161 CKT 1	162	102.2	106.5	SWEET WATER TO FLETCHER, 161KV 31798 SWEETWTR 161 to 96077 5FLETCH 161 CKT1	N/A	SPP-2000-108 Tie Line & Third Party Facility		
04SP	EMDE-EMDE	REINMILLER 161/69KV TRANSFORMER 59595 RNM393 269.0 to 59500 RNM393 5 161 CKT 1	75	98.2	99.5	TIPTON FORD TO JOPLIN SOUTHWEST, 161KV 59472 TIP292 5 161 to 59483 JOP389 5 161 CKT1	670	SPP-2000-108 Excluded As Upgrading Joplin SW 161/69 Eliminated Constraint		
04SP	SWPA-AECI	CARTHAGE TO REEDS SPRING, 69KV 52690 CARTHG 269.0 to 96751 2REEDS 69.0 CKT 1	36	98.5	105.8	MIAMI TO AFTON, 161KV 54431 MIAMI 5 161 to 54432 AFTON 5 161 CKT1	N/A	SPP-2000-108 Tie Line & Third Party Facility		
04SP	AEPW-WERE	SOUTH COFFEYVILLE TO DEARING, 138 KV 53972 COFFEYT4 138 to 57002 DEARING4 138 CKT 1	232	95.3	108.3	DELAWARE TO NEOSHO, 345KV 53929 DELWARE7 345 to 56793 NEOSHO 7 345 CKT1	243	Upgrade Modeled Assigned to SPP-2000-108	Undetermined Solution #4	
04SP	EMDE-EMDE	JOPLIN SOUTHWEST 161/69KV TRANSFORMER 59483 JOP389 5 161 to 59592 JOP389 269.0 CKT 1	150	55.5	55.8	TIPTON FORD TO JOPLIN SOUTHWEST, 161KV 59472 TIP292 5 161 to 59483 JOP389 5 161 CKT1	670	Upgrade Modeled Assigned to SPP-2000-108		
04SP	SWPA-SWPA	GORE TO SALLISAW, 161KV 52752 GORE 5 161 to 52750 SALLISAW5 161 CKT 1	223	80.0	89.8	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	670	Upgrade Modeled Assigned to SPP-2000-108		
04SP	OKGE-OKGE	TINKER #4 TO TINKER #2, 138KV 54988 TINKER44 138 to 54990 TINKER24 138 CKT 1	100	110.3	115.9	NE 10TH TO MIDWAY, 138KV 54964 NE10TH 4 138 to 54966 MIDWAY 4 138 CKT1	670	SPP-2000-108 Excluded Per OKGE		
04SP	OKGE-OKGE	MUSKOGEE 161/69KV TRANSFORMER 1 55222 MUSKOGEE5 161 to 55221 MUSKOGEE269.0 CKT 1	41	96.9	98.1	MUSKOGEE 161/69KV TRANSFORMER 3 55221 MUSKOGEE269.0 to 55222 MUSKOGEE5 161 CKT3	670	SPP-2000-108 Mitigation Plan Transfer load to 161kV system By OKGE Modeled		
04SP	AEPW-AEPW	WALLACE LAKE TO SOUTH SHREVEPORT, 138KV 53461 WALLAKE4 138 to 53446 S SHV 4 138 CKT 1	209	105.9	115.0	DOLET HILLS 345/230KV TRANSFORMER 50045 DOLHILL7 345 to 50046 DOLHILL6 230 CKT1	670	Dolet Hills Operating Guide Monitor Line at 260 MVA		
04SP	WERE-WERE	GILL ENERGY CENTER EAST TO MACARTHUR, 69KV 57795 GILL E 269.0 to 57813 MACARTH269.0 CKT 1	80	72.6	72.9	MACARTHUR TO OATVILLE, 69KV 57813 MACARTH269.0 to 57825 OATVILL269.0 CKT1	670	Upgrade Modeled Assigned to SPP-2000-108		
04SP	EMDE-EMDE	DIAMOND JCT. TO SARCOXIE SOUTHWEST TAP, 69KV 59538 DIA131 269.0 to 59582 SAR362T269.0 CKT 1	65	58.8	61.4	MONETT 161/69KV TRANSFORMER 59480 MON383 5 161 to 59591 MON383 269.0 CKT1	670	Upgrade Modeled Assigned to SPP-2000-108		
04SP	SWPA-SWPA	NORFORK 161/69KV TRANSFORMER 52648 NORFORK5 161 to 52650 NORFORK269.0 CKT 1	50	68.5	71.6	NORFORK TO WEST PLAINS, 161KV 52648 NORFORK5 161 to 96123 5WPLAIN 161 CKT1	670	Upgrade Modeled Assigned to SPP-2000-108		

Table 3 continued – Previously Assigned and Identified SPP Facilities Impacted by the AEPW to AMRN 670 MW Transfer

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	ATC	Assignment	Solution	Estimated Cost
04SP	OKGE-OKGE	CHESTNUT TO ENID, 69KV 54726 CHSTNUT269.0 to 54727 ENID 269.0 CKT 1	66	48.0	49.9	CHESTNUT TO SOUTH 4TH ST, 69KV 54726 CHSTNUT269.0 to 54730 SO4TH2 269.0 CKT1	670	SPP-2000-108 Mitigation Plan To Install 138-69KV transformer @NE Enid By OKGE Modeled		
04SP	AEPW-AEPW	WILBURTON TO LONE OAK, 69KV 54031 WILBURT269.0 to 54021 LONEOAK269.0 CKT 1	72	67.3	71.0	EUFAULA TO STIGLER TAP, 138KV 52774 EUFAULA4 138 to 54050 STIGLRT4 138 CKT1	670	Upgrade Modeled Assigned to SPP-2000-108		
04SP	AEPW-CELE	WALLACE LAKE TO INTERNATIONAL PAPER, 138KV 53461 WALLAKE4 138 to 50090 IPAPER 4 138 CKT 1	209	100.8	111.3	DOLET HILLS 345/230KV TRANSFORMER 50045 DOLHILL7 345 to 50046 DOLHILL6 230 CKT1	670	Dolet Hills Operating Guide Monitor Line at 260 MVA		
04SP	KACP-KACP	LA CYGNE TO STILWELL, 345KV CKT 1 57968 STILWEL7 345 to 57981 LACYGNE7 345 CKT 1	1251	63.1	66.8	WEST GARDNER TO LA CYGNE, 345KV 57965 W.GRDNR7 345 to 57981 LACYGNE7 345 CKT1	670	Upgrade Modeled Assigned to SPP-2000-108		
04SP	KACP-KACP	LA CYGNE TO STILWELL, 345KV CKT 1 57968 STILWEL7 345 to 57981 LACYGNE7 345 CKT 1	1251	73.1	77.6	LA CYGNE TO STILWELL, 345KV CKT 2 57968 STILWEL7 345 to 57981 LACYGNE7 345 CKT 2	670	Upgrade Modeled Assigned to SPP-2000-108		
04SP	KACP-KACP	STILWELL 345/161KV TRANSFORMER #1 57968 STILWEL7 345 to 57969 STILWEL5 161 CKT 11	605	111.0	114.2	STILWELL 345/161KV TRANSFORMER #2 57968 STILWEL7 345 to 57969 STILWEL5 161 CKT 22	0	Unassigned	Potential Transmission Operating Guide	
04SP	KACP-KACP	STILWELL 345/161KV TRANSFORMER #2 57968 STILWEL7 345 to 57969 STILWEL5 161 CKT 22	605	108.4	111.6	STILWELL 345/161KV TRANSFORMER #1 57968 STILWEL7 345 to 57969 STILWEL5 161 CKT 11	0	"	"	
04SP	AEPW-AEPW	LONGWOOD TO NORAM, 138KV 53423 LONGWD 4 to 53473 NORAM 4	265	93.4	96.4	Multiple Outage Contingency SOUTHWEST SHREVEPORT TO LONGWOOD, 345KV 53454 SW SHV 7 345 to 53424 LONGWD 7 345 CKT 1 SOUTHWEST SHREVEPORT TO DIANA, 345KV 53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT 1	670	SPP-2000-108 New Rating By AEPW Modeled		
04SP	SWPA-SWPA	BUFORD TAP TO BULL SHOALS, 161KV 52661 BUFDRTP5 161 to 52660 BULL SH5 161 CKT 1	223	83.7	89.9	BULL SHOALS TO MIDWAY, 161KV 52660 BULL SH5 161 to 99825 5MIDWAY# 161 CKT1	670	SPP-2000-108 New Rating By SWPA Modeled		
04SP	AEPW-AEPW	NORAM TO RAINES, 138KV 53473 NORAM 4 to 53439 RAINES 4 1	265	92.0	95.0	Multiple Outage Contingency SOUTHWEST SHREVEPORT TO LONGWOOD, 345KV 53454 SW SHV 7 345 to 53424 LONGWD 7 345 CKT 1 SOUTHWEST SHREVEPORT TO DIANA, 345KV 53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT 1	670	SPP-2000-108 New Rating By AEPW Modeled		
04SP	AEPW-AEPW	IPC JEFFERSON TO LIEBERMAN, 138KV 53548 IPCJEFF4 138 to 53420 LIEBERM4 138 CKT 1	163	90.7	100.7	LONGWOOD TO WILKES, 345KV 53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1	626	Upgrade Modeled Assigned to SPP-2000-108	Undetermined Solution #5	

Table 3 continued – Previously Assigned and Identified SPP Facilities Impacted by the AEPW to AMRN 670 MW Transfer

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	ATC	Assignment	Solution	Estimated Cost
04SP	KACP-KACP	WEST GARDNER TO LA CYGNE, 345KV 57965 W.GRDNR7 345 to 57981 LACYGNE7 345 CKT1	1251	58.5	61.4	LA CYGNE TO STILWELL, 345KV CKT 1 57968 STILWEL7 345 to 57981 LACYGNE7 345 CKT 1	670	Upgrade Modeled Assigned to SPP-2000-108		
04SP	SWPA-SWPA	NORFORK TO BUFORD TAP, 161KV 52648 NORFORK5 161 to 52661 BUFRDTP5 161 CKT 1	223	82.8	89.0	BULL SHOALS TO MIDWAY, 161KV 52660 BULL SH5 161 to 99825 5MIDWAY# 161 CKT1	670	Upgrade Modeled Assigned to SPP-2000-108		
04SP	AEPW-AEPW	TATUM TO ROCKHILL, 138KV 53611 TATUM 4 138 to 53598 ROKHILL4 138 CKT 1	267	89.5	94.3	Multiple Outage Contingency SOUTHWEST SHREVEPORT TO LONGWOOD, 345KV 53454 SW SHV 7 345 to 53424 LONGWD 7 345 CKT 1 SOUTHWEST SHREVEPORT TO DIANA, 345KV 53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT 1	670	Upgrade Modeled Assigned to SPP-2000-108		
04SP	AEPW-AEPW	CHEROKEE REC TO KNOX LEE, 138KV 53522 CHEROKE4 138 to 53557 KNOXLEE4 138 CKT 1	287	88.8	93.4	Multiple Outage Contingency SOUTHWEST SHREVEPORT TO LONGWOOD, 345KV 53454 SW SHV 7 345 to 53424 LONGWD 7 345 CKT 1 SOUTHWEST SHREVEPORT TO DIANA, 345KV 53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT 1	670	Upgrade Modeled Assigned to SPP-2000-108		
04SP	AEPW-AEPW	CHEROKEE REC TO TATUM, 138KV 53522 CHEROKE4 138 to 53611 TATUM 4 138 CKT 1	287	84.5	89.1	Multiple Outage Contingency SOUTHWEST SHREVEPORT TO LONGWOOD, 345KV 53454 SW SHV 7 345 to 53424 LONGWD 7 345 CKT 1 SOUTHWEST SHREVEPORT TO DIANA, 345KV 53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT 1	670	Upgrade Modeled Assigned to SPP-2000-108		
04SP	GRRD-OKGE	TAHLEQUAH TO HIGHWAY 59, 161KV 54455 TAHLQH 5 161 to 55347 HWY59 5 161 CKT 1	167	94.1	105.7	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	342	Upgrade Assigned to SPP-2000-108 06SP		
04SP	SWPA-SWPA	MUSKOGEE TAP TO GORE, 161KV 52758 MUSKTAP5 161 to 52752 GORE 5 161 CKT 1	206	99.1	107.0	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	76	Upgrade Assigned to SPP-2000-108 06SP		
04WP	SWPA-AECI	CARTHAGE TO REEDS SPRING, 69KV 52690 CARTHG 269.0 to 96751 2REEDS 69.0 CKT 1	43	101.0	107.8	MONET 161/69KV TRANSFORMER 59480 MON383 5 161 to 59591 MON383 269.0 CKT1	N/A	SPP-2000-108 Tie Line & Third Party Facility		
04WP	AEPW-AEPW	FERNDAL LAKE TAP TO PITTSBURG, 69KV 53531 FERNDTP269.0 to 53310 PITTSB 269.0 CKT 1	79	90.8	91.6	PERDUE TO LAKE HAWKINS, 138KV 53590 PERDUE 4 138 to 53666 LHAWKIN4 138 CKT1	670	SPP-2000-108 New Rating By AEPW Modeled		

Table 3 continued – Previously Assigned and Identified SPP Facilities Impacted by the AEPW to AMRN 670 MW Transfer

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	ATC	Assignment	Solution	Estimated Cost
04WP	AEPW-EES	FULTON TO PATMOS, 115KV 99303 3PATMOS# 115 to 53374 FULTON 3 115 CKT 1	235	102.5	116.4	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	0	Upgrade Modeled Assigned to SPP-2000-108	See Previous	
04WP	AEPW-EES	FULTON TO PATMOS, 115KV 53374 FULTON 3 115 to 99303 3PATMOS# 115 CKT 1	235	99.9	112.4	MCKNIGHT TO FRANKLIN, 500KV 98235 8MCKNT 500 to 99027 8FRKLIN 500 CKT1	5	"	"	
04WP	AEPW-EES	FULTON TO PATMOS, 115KV 53374 FULTON 3 115 to 99303 3PATMOS# 115 CKT 1	235	99.2	113.5	FORT SMITH TO ARKANSAS NUCLEAR ONE, 500KV 55305 FTSMITH8 500 to 99486 8ANO 500 CKT1	37	"	"	
04WP	WERE-WERE	HOYT HTI SWITCHING JCT TO CIRCLEVILLE, 115KV 57165 HTI JCT3 115 to 57152 CIRCLVL3 115 CKT 1	97	105.3	107.9	EAST MANHATTAN TO CONCORD, 230KV 56861 EMANHAT6 230 to 58758 CONCORD6 230 CKT1	0	Upgrade Modeled Assigned to SPP-2000-108	Topology Update Increase Loading	
04WP	WERE-WERE	HOYT HTI SWITCHING JCT TO CIRCLEVILLE, 115KV 57165 HTI JCT3 115 to 57152 CIRCLVL3 115 CKT 1	97	98.5	100.9	JEFFREY ENERGY CENTER TO EAST MANHATTAN, 230KV 56852 JEC 6 230 to 56861 EMANHAT6 230 CKT1	414	"	See Previous	
04WP	WERE-WERE	HOYT HTI SWITCHING JCT TO CIRCLEVILLE, 115KV 57165 HTI JCT3 115 to 57152 CIRCLVL3 115 CKT 1	97	97.7	101.0	CLIFTON TO CONCORDIA, 115KV 58756 CLIFTON3 115 to 58757 CONCORD3 115 CKT1	460	"	"	
04WP	OKGE-OKGE	PECAN CREEK 345/161KV TRANSFORMER #1 55235 PECANCK7 345 to 55234 PECANCK5 161 CKT 1	369	61.9	67.9	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	670	Upgrade Modeled Assigned to SPP-2000-108		
04WP	OKGE-OKGE	PECAN CREEK 345/161KV TRANSFORMER #1 55235 PECANCK7 345 to 55234 PECANCK5 161 CKT 1	369	78.5	84.0	PECAN CREEK 345/161KV TRANSFORMER #2 55235 PECANCK7 345 to 55234 PECANCK5 161 CKT 2	670	Upgrade Modeled Assigned to SPP-2000-108		
04WP	AEPW-SWPA	EUREKA SPRINGS TO BEAVER, 161KV 53136 EUREKA 5 161 to 52680 BEAVER 5 161 CKT 1	320	92.0	103.2	MONETT TO BROOKLINE, 345KV 59481 MON383 7 345 to 59984 BRKLINE 7 345 CKT1	478	Upgrade Modeled Assigned to SPP-2000-108	See Previous	
04WP	AEPW-SWPA	EUREKA SPRINGS TO BEAVER, 161KV 53136 EUREKA 5 161 to 52680 BEAVER 5 161 CKT 1	320	91.9	103.2	FLINT CREEK TO BROOKLINE, 345KV 53140 FLINTCR7 345 to 59481 MON383 7 345 CKT1	481	"	"	
04WP	SWPA-AECI	CARTHAGE TO JASPER, 69KV 52690 CARTHG 269.0 to 96649 2JASPER 69.0 CKT 1	52	97.6	104.3	CARTHAGE TO LARUSSELL, 161KV 52688 CARTHAG5 161 to 59479 LAR382 5 161 CKT1	N/A	SPP-2000-108 Tie Line & Third Party Facility		
04WP	WERE-WERE	MIDLAND 230/115KV TRANSFORMER 56855 MIDLAND6 230 to 57252 MIDLAND3 115 CKT 1	308	83.9	86.0	LAWRENCE HILL 230/115KV TRANSFORMER 56853 LAWHILL6 230 to 57250 LWRNCHL3 115 CKT1	670	SPP-2000-108 Excluded Per WERE		
04WP	OKGE-OKGE	CHIKASKIA TAP TO BRAMAN, 69KV 54751 CHIKSTP269.0 to 54750 BRAMAN 269.0 CKT 1	54	72.4	80.7	KILDARE TO WHITE EAGLE, 138KV 54760 KILDARE4 138 to 54761 WHEAGLE4 138 CKT1	670	SPP-2000-108 New Rating By OKGE Modeled		
04WP	KACP-KACP	LA CYGNE TO STILWELL, 345KV CKT 1 57968 STILWEL7 345 to 57981 LACYGNE7 345 CKT 1	1315	56.6	60.1	WEST GARDNER TO LA CYGNE, 345KV 57965 W.GRDNR7 345 to 57981 LACYGNE7 345 CKT1	670	Upgrade Modeled Assigned to SPP-2000-108		

Table 3 continued – Previously Assigned and Identified SPP Facilities Impacted by the AEPW to AMRN 670 MW Transfer

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	ATC	Assignment	Solution	Estimated Cost
06SP	AEPW-AEPW	LELMDALE TO DYESS, 161KV CKT 2 53175 LELMDAL5 161 to 53131 DYESS 5 161 CKT 2	424	85.3	86.7	LELMDALE TO DYESS, 161KV CKT 1 53131 DYESS 5 161 to 53175 LELMDAL5 161 CKT1	670	Upgrade Modeled Accelerated In-Service Assigned to SPP-2000-108		
06SP	AEPW-EES	FULTON TO PATMOS, 115KV 53374 FULTON 3 115 to 99303 3PATMOS# 115 CKT 1	235	95.9	110.6	FORT SMITH TO ANO, 500KV 55305 FTSMITH8 500 to 99486 8ANO 500 CKT1	187	Upgrade Modeled Assigned to SPP-2000-108	See Previous	
06SP	AEPW-EES	FULTON TO PATMOS, 115KV 53374 FULTON 3 115 to 99303 3PATMOS# 115 CKT 1	235	98.3	111.5	WELSH TO WILKES, 345KV 53615 WELSH 7 345 to 53620 WILKES 7 345 CKT1	88	"	"	
06SP	AEPW-EES	FULTON TO PATMOS, 115KV 53374 FULTON 3 115 to 99303 3PATMOS# 115 CKT 1	235	98.1	111.6	SOUTHWEST SHREVEPORT TO DIANA, 345KV 53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT1	95	"	"	
06SP	AEPW-AEPW	S FAYETTEVILLE TO GREENLAND, 69KV 53156 SFAYTVL269.0 to 53141 GREENLD269.0 CKT 1	72	84.4	85.4	SILOAM SPRINGS, 161/69KV TRANSFORMER 53158 SILOAM 5 161 to 53204 SILOAM 269.0 CKT1	670	Upgrade Modeled Assigned to SPP-2000-108		
06SP	SWPA-AECI	CARTHAGE TO REEDS SPRING, 69KV 52690 CARTHG 269.0 to 96751 2REEDS 69.0 CKT 1	36	103.1	112.8	CARTHAGE TO LARUSSELL, 161KV 52688 CARTHAG5 161 to 59479 LAR382 5 161 CKT1	N/A	SPP-2000-108 Tie Line & Third Party Facility		
06SP	AEPW-AEPW	EAST CENTERTON TO GENTRY REC, 161KV 53133 ECNTRTN5 161 to 53187 GENTRYR5 161 CKT 1	368	98.4	100.6	LOWELL TO LELMDAL, 161KV 53144 LOWELL 5 161 to 53175 LELMDAL5 161 CKT1	489	SPP-2000-108 New Rating By AEPW Modeled	#1 Replace Wavetrap @ East Centerton	30,000
06SP	GRRD-GRRD	KERR TO KANSAS TAP, 161KV 54435 KERR GR5 161 to 54514 KANSATP5 161 CKT 1	338	100.0	104.6	FLINT CREEK TO GRDA ONE, 345KV 53140 FLINTCR7 345 to 54450 GRDA1 7 345 CKT1	0	SPP-2000-108 New Rating By GRDA Modeled	Chouteau Operating Guide Reduces Loading to 103.5% Undetermined Solution #6	
06SP	EES-SWPA	MIDWAY TO BULL SHOALS, 161KV 99825 5MIDWAY# 161 to 52660 BULL SH5 161 CKT 1	162	104.3	111.6	HUBEN TO MORGAN, 345KV 96042 7HUBEN 345 to 96045 7MORGAN 345 CKT1	N/A	SPP-2000-108 Tie Line & Third Party Facility		
06SP	AEPW-AEPW	FARMINGTON AECC TO CHAMBER SPRINGS RD, 161KV 53195 FARMGTN5 161 to 53154 CHAMSPR5 161 CKT 1	368	92.1	94.7	CHAMBER SPRINGS RD TO LELMDAL, 345KV 53155 CHAMSPR7 345 to 53176 LELMDAL7 345 CKT1	670	SPP-2000-108 New Rating By AEPW Modeled		
06SP	WFEC-SWPA	PHAROAH TO WELEETKA, 138KV 56026 PHAROAH4 138 to 52792 WELEETK4 138 CKT 1	287	67.8	69.3	FRANKLIN TO FRANKLIN SWITCH, 138KV 55913 FRANKLN4 138 to 55917 FRNKLS4 138 CKT1	670	Upgrade Modeled Assigned to SPP-2000-108		
06SP	WERE-WERE	COUNTY LINE 230/115/69KV TRANSFORMER 57456 COLINE 269.0 to 57201 COLINE3X1.00 CKT 1	66	100.3	101.2	ARNOLD TO STRANGER CREEK, 115KV 57211 ARNOLD 3 115 to 57268 STRANGR3 115 CKT1	670	SPP-2000-108 Excluded Per WERE		
06SP	AEPW-AEPW	FERNDALE LAKE TAP TO PITTSBURG, 69KV 53531 FERNDTP269.0 to 53310 PITTSB_269.0 CKT 1	79	90.5	91.3	MOBIL-TEXOMA T TO NEW HOPE, 69KV 53282 MOBLTXT269.0 to 53296 NEWHOPE269.0 CKT1	670	SPP-2000-108 New Rating By AEPW Modeled		
06SP	AEPW-AEPW	GENTRY REC TO FLINT CREEK, 161KV 53187 GENTRYR5 161 to 53139 FLINTCR5 161 CKT 1	368	98.0	100.1	ROGERS TO LOWELL REC, 161KV 53152 ROGERS 5 161 to 53200 LOWELLR5 161 CKT1	630	SPP-2000-108 New Rating By AEPW Modeled	#2 Replace Wavetrap @ Flint Creek	30,000

Table 3 continued – Previously Assigned and Identified SPP Facilities Impacted by the AEPW to AMRN 670 MW Transfer

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	ATC	Assignment	Solution	Estimated Cost
06SP	AEPW-AEPW	GENTRY REC TO FLINT CREEK, 161KV 53187 GENTRYR5 161 to 53139 FLINTCR5 161 CKT 1	368	98.0	100.1	LOWELL TO LOWELL REC, 161KV 53144 LOWELL 5 161 to 53200 LOWELLR5 161 CKT1	632	SPP-2000-108 New Rating By AEPW Modeled	See Previous Upgrade #2	
06SP	AEPW-SWPA	EUREKA SPRINGS TO BEAVER, 161KV 53136 EUREKA 5 161 to 52680 BEAVER 5 161 CKT 1	305	93.3	104.6	MONETT TO BROOKLINE, 345KV 59481 MON383 7 345 to 59984 BRKLINE 7 345 CKT1	396	Upgrade Modeled Assigned to SPP-2000-108	See Previous	
06SP	AEPW-SWPA	EUREKA SPRINGS TO BEAVER, 161KV 53136 EUREKA 5 161 to 52680 BEAVER 5 161 CKT 1	305	93.1	104.5	FLINT CREEK TO MONETT, 345KV 53140 FLINTCR7 345 to 59481 MON383 7 345 CKT1	406	"	"	
06SP	AEPW-SWPA	EUREKA SPRINGS TO BEAVER, 161KV 53136 EUREKA 5 161 to 52680 BEAVER 5 161 CKT 1	305	90.7	101.0	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE 7 345 to 55302 FTSMITH7 345 CKT1	603	"	"	
06SP	AEPW-AEPW	SNYDER TO FREDERICK JCT, 69KV 54138 SNYDER-269.0 to 54123 FREDJJC-269.0 CKT 1	39	66.7	67.4	ANADARKO TO PARADISE, 138KV 55814 ANADARK4 138 to 56024 PARADSE4 138 CKT1	670	Upgrade Modeled Assigned to SPP-2000-108		
06SP	SWPA-SWPA	GORE TO SALLISAW, 161KV 52752 GORE 5 161 to 52750 SALLISAW5 161 CKT 1	223	82.7	92.7	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE 7 345 to 55302 FTSMITH7 345 CKT1	670	Upgrade Modeled Assigned to SPP-2000-108		
06SP	AEPW-AEPW	LELMDAL TO CHAMBER SPRINGS RD, 161KV 53175 LELMDAL5 161 to 53154 CHAMSPR5 161 CKT 1	275	89.8	93.7	CHAMBER SPRINGS RD TO LELMDAL, 345KV 53155 CHAMSPR7 345 to 53176 LELMDAL7 345 CKT1	670	SPP-2000-108 New Rating By AEPW Modeled		
06SP	AEPW-AEPW	WALLACE LAKE TO SOUTH SHREVEPORT, 138KV 53461 WALLAKE4 138 to 53446 S SHV 4 138 CKT 1	209	106.9	116.2	DOLET HILLS 345/230KV TRANSFORMER 50045 DOLHILL7 345 to 50046 DOLHILL6 230 CKT1	670	Dolet Hills Operating Guide Monitor Line at 260 MVA		
06SP	AEPW-AEPW	SCROGNS TO FERNDAL LAKE TAP, 69KV 53316 SCROGNS269.0 to 53531 FERNDTP269.0 CKT 1	96	88.3	89.3	NORTH MINEOLA TO LAKE HAWKINS, 138KV 53581 NMINEOL4 138 to 53666 LHAWKIN4 138 CKT1	670	SPP-2000-108 New Rating By AEPW Modeled		
06SP	EMDE-SWPA	LARUSSEL TO SPRINGFIELD, 161KV 59479 LAR382 5 161 to 52692 SPRGFLD5 161 CKT 1	189	83.5	88.7	LARUSSELL TO MONETT, 161KV 59479 LAR382 5 161 to 59480 MON383 5 161 CKT1	670	Upgrade Modeled Accelerated In-Service Assigned to SPP-2000-108		
06SP	GRRD-GRRD	PENSACOLA TO GRAY TAP, 69KV 54428 PENZA 269.0 to 54465 GRAY TP269.0 CKT 1	112	53.3	54.3	COWSKIN 138/69KV TRANSFORMER 54517 COWSKIN 69.0 to 54519 COWSKIN 138 CKT1	670	Upgrade Modeled Assigned to SPP-2000-108		
06SP	EMDE-EMDE	MONETT TO AURORA HT, 161KV 59480 MON383 5 161 to 59468 AUR124 5 161 CKT 1	267	38.8	42.7	LARUSSELL TO MONETT, 161KV 59479 LAR382 5 161 to 59480 MON383 5 161 CKT1	670	Upgrade Modeled to be completed by EMDE 12/1/02		
06SP	OKGE-OKGE	TINKER #4 TO TINKER #2, 138KV 54990 TINKER24 138 to 54988 TINKER44 138 CKT 1	100	111.9	120.0	OAK CREEK TO GM, 138KV 54960 OAKCRK 4 138 to 54961 GM 4 138 CKT1	670	SPP-2000-108 Excluded Per OKGE		
06SP	WERE-WERE	GILL ENERGY CENTER EAST TO OATVILLE, 69KV 57795 GILL E 269.0 to 57825 OATVILL269.0 CKT 1	80	71.6	72.1	CANAL TO RUTAN, 69KV 57784 CANAL 269.0 to 57838 RUTAN 269.0 CKT1	670	Upgrade Modeled Assigned to SPP-2000-108		

Table 3 continued – Previously Assigned and Identified SPP Facilities Impacted by the AEPW to AMRN 670 MW Transfer

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	ATC	Assignment	Solution	Estimated Cost
06SP	AEPW-AEPW	WINNSBORO TO SCROGNS, 69KV 53336 WINNSBO269.0 to 53316 SCROGNS269.0 CKT 1	96	74.8	75.9	PERDUE TO LAKE HAWKINS, 138KV 53590 PERDUE 4 138 to 53666 LHAWKIN4 138 CKT1	670	Upgrade Modeled Assigned to SPP-2000-108		
06SP	WFEC-OKGE	FRANKLIN SWITCH TO MIDWEST TAP, 138KV 55917 FRNKLNS4 138 to 54946 MIDWEST4 138 CKT 1	287	79.5	82.3	WELEETKA TO PHAROAH, 138KV 52792 WELEETK4 138 to 56026 PHAROAH4 138 CKT1	670	Upgrade Modeled Assigned to SPP-2000-108		
06SP	OKGE-OKGE	PECAN CREEK 345/161KV TRANSFORMER #1 55235 PECANCK7 345 to 55234 PECANCK5 161 CKT 1	369	59.5	64.4	CLARKSVILLE TO MUSKOGEE, 345KV 53756 CLARKSV7 345 to 55224 MUSKOGEE7 345 CKT1	670	Upgrade Modeled Assigned to SPP-2000-108		
06SP	OKGE-OKGE	PECAN CREEK 345/161KV TRANSFORMER #1 55235 PECANCK7 345 to 55234 PECANCK5 161 CKT 1	369	67.7	73.8	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	670	Upgrade Modeled Assigned to SPP-2000-108		
04SP	OKGE-OKGE	PECAN CREEK 345/161KV TRANSFORMER #1 55235 PECANCK7 345 to 55234 PECANCK5 161 CKT 1	369	82.0	87.7	PECAN CREEK 345/161KV TRANSFORMER #2 55235 PECANCK7 345 to 55234 PECANCK5 161 CKT 2	670	Upgrade Modeled Assigned to SPP-2000-108		
06SP	OKGE-OKGE	PARK LANE TO SEMINOLE, 138KV 55178 PARKLN 4 138 to 55044 SEMINOL4 138 CKT 1	478	59.1	60.6	SUNNYSIDE 345/138KV TRANSFORMER 55135 SUNNYSID4 138 to 55136 SUNNYSID7 345 CKT1	670	Upgrade Modeled Assigned to SPP-2000-108		
06SP	SWPA-SWPA	MUSKOGEE TAP TO GORE, 161KV 52758 MUSKTAP5 161 to 52752 GORE 5 161 CKT 1	223	98.3	106.0	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	148	Upgrade Modeled Assigned to SPP-2000-108	Undetermined Solution #8	
06SP	AEPW-AEPW	S TEXARKANA REC TO TEXARKANA PLANT, 69KV 53189 STEXREC269.0 to 53329 TEXARK 269.0 CKT 1	72	80.7	83.5	ATLANTA TO WEST ATLANTA, 69KV 53248 ATLANTA269.0 to 53333 WATLANT269.0 CKT1	670	SPP-2000-108 New Rating By AEPW Modeled		
06SP	AEPW-CELE	WALLACE LAKE TO INTERNATIONAL PAPER, 138KV 53461 WALLAKE4 138 to 50090 IPAPER 4 138 CKT 1	209	101.3	112.0	DOLET HILLS 345/230KV TRANSFORMER 50045 DOLHILL7 345 to 50046 DOLHILL6 230 CKT1	670	Dolet Hills Operating Guide Monitor Line at 260 MVA		
06SP	GRRD-OKGE	TAHLEQUAH TO HIGHWAY 59, 161KV 54455 TAHLQH 5 161 to 55347 HWY59 5 161 CKT 1	184	88.8	99.7	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	670	Upgrade Modeled Assigned to SPP-2000-108		
06SP	KACP-KACP	LA CYGNE TO STILWELL, 345KV CKT 1 57968 STILWEL7 345 to 57981 LACYGNE7 345 CKT 1	1251	60.9	64.5	WEST GARDNER TO LA CYGNE, 345KV 57965 W.GRDNR7 345 to 57981 LACYGNE7 345 CKT1	670	Upgrade Modeled Assigned to SPP-2000-108		
06SP	KACP-KACP	LA CYGNE TO STILWELL, 345KV CKT 1 57968 STILWEL7 345 to 57981 LACYGNE7 345 CKT 1	1251	70.6	74.9	LA CYGNE TO STILWELL, 345KV CKT 2 57968 STILWEL7 345 to 57981 LACYGNE7 345 CKT 2	670	Upgrade Modeled Assigned to SPP-2000-108		
06SP	KACP-KACP	STILWELL 345/161KV TRANSFORMER #1 57968 STILWEL7 345 to 57969 STILWEL5 161 CKT 11	605	105.9	109.2	STILWELL 345/161KV TRANSFORMER #2 57968 STILWEL7 345 to 57969 STILWEL5 161 CKT 22	0	Unassigned	Potential Transmission Operating Guide	
06SP	KACP-KACP	STILWELL 345/161KV TRANSFORMER #2 57968 STILWEL7 345 to 57969 STILWEL5 161 CKT 22	605	103.3	106.5	STILWELL 345/161KV TRANSFORMER #1 57968 STILWEL7 345 to 57969 STILWEL5 161 CKT 11	0	"	"	

Table 3 continued – Previously Assigned and Identified SPP Facilities Impacted by the AEPW to AMRN 670 MW Transfer

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	ATC	Assignment	Solution	Estimated Cost
06SP	AEPW-AEPW	LONGWOOD TO NORAM, 138KV 53423 LONGWD 4 to 53473 NORAM 4	265	97.2	100.2	Multiple Outage Contingency SOUTHWEST SHREVEPORT TO LONGWOOD, 345KV 53454 SW SHV 7 345 to 53424 LONGWD 7 345 CKT 1 SOUTHWEST SHREVEPORT TO DIANA, 345KV 53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT 1	617	SPP-2000-108 New Rating By AEPW Modeled	#3 Reconductor 4.66 miles of bundled 266 ACSR with 1590 ACSR	1,400,000
06SP	SWPA-SWPA	BUFORD TAP TO BULL SHOALS, 161KV 52661 BUFRDTP5 161 to 52660 BULL SH5 161 CKT 1	223	89.1	95.3	BULL SHOALS TO MIDWAY, 161KV 52660 BULL SH5 161 to 99825 5MIDWAY# 161 CKT1	670	SPP-2000-108 New Rating By SWPA Modeled		
06SP	AEPW-AEPW	NORAM TO RAINES, 138KV 53473 NORAM 4 to 53439 RAINES 4 1	265	95.8	98.8	Multiple Outage Contingency SOUTHWEST SHREVEPORT TO LONGWOOD, 345KV 53454 SW SHV 7 345 to 53424 LONGWD 7 345 CKT 1 SOUTHWEST SHREVEPORT TO DIANA, 345KV 53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT 1	670	Upgrade Modeled Assigned to SPP-2000-108		
06SP	AEPW-AEPW	IPC JEFFERSON TO LIEBERMAN, 138KV 53548 IPCJEFF4 138 to 53420 LIEBERM4 138 CKT 1	163	93.2	103.3	LONGWOOD TO WILKES, 345KV 53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1	451	Upgrade Modeled Assigned to SPP-2000-108	See Previous	
06SP	KACP-KACP	WEST GARDNER TO LA CYGNE, 345KV 57965 W.GRDNR7 345 to 57981 LACYGNE7 345 CKT1	1251	56.6	59.5	LA CYGNE TO STILWELL, 345KV CKT 1 57968 STILWEL7 345 to 57981 LACYGNE7 345 CKT 1	670	Upgrade Modeled Assigned to SPP-2000-108		
06SP	SWPA-SWPA	NORFORK TO BUFORD TAP, 161KV 52648 NORFORK5 161 to 52661 BUFRDTP5 161 CKT 1	223	88.2	94.3	BULL SHOALS TO MIDWAY, 161KV 52660 BULL SH5 161 to 99825 5MIDWAY# 161 CKT1	670	Upgrade Modeled Assigned to SPP-2000-108		
06SP	AEPW-AEPW	TATUM TO ROCKHILL, 138KV 53611 TATUM 4 138 to 53598 ROKHILL4 138 CKT 1	267	91.1	96.1	Multiple Outage Contingency SOUTHWEST SHREVEPORT TO LONGWOOD, 345KV 53454 SW SHV 7 345 to 53424 LONGWD 7 345 CKT 1 SOUTHWEST SHREVEPORT TO DIANA, 345KV 53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT 1	670	Upgrade Modeled Assigned to SPP-2000-108		
06SP	AEPW-AEPW	CHEROKEE REC TO KNOX LEE, 138KV 53522 CHEROKE4 138 to 53557 KNOXLEE4 138 CKT 1	287	90.5	95.2	Multiple Outage Contingency SOUTHWEST SHREVEPORT TO LONGWOOD, 345KV 53454 SW SHV 7 345 to 53424 LONGWD 7 345 CKT 1 SOUTHWEST SHREVEPORT TO DIANA, 345KV 53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT 1	670	Upgrade Modeled Assigned to SPP-2000-108		

Table 3 continued – Previously Assigned and Identified SPP Facilities Impacted by the AEPW to AMRN 670 MW Transfer

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	ATC	Assignment	Solution	Estimated Cost
06SP	AEPW-AEPW	CHEROKEE REC TO TATUM, 138KV 53522 CHEROKE4 138 to 53611 TATUM 4 138 CKT 1	287	86.1	90.8	Multiple Outage Contingency SOUTHWEST SHREVEPORT TO LONGWOOD, 345KV 53454 SW SHV 7 345 to 53424 LONGWD 7 345 CKT 1 SOUTHWEST SHREVEPORT TO DIANA, 345KV 53454 SW SHV 7 345 to 53528 DIANA 7 345 CKT 1	670	Upgrade Modeled Assigned to SPP-2000-108		
06SP	AEPW-WERE	SOUTH COFFEYVILLE TO DEARING, 138 KV 53972 COFFEYT4 138 to 57002 DEARING4 138 CKT 1	232	91.4	104.1	DELAWARE TO NEOSHO, 345KV 53929 DELWARE7 345 to 56793 NEOSHO 7 345 CKT1	454	Upgrade Modeled Assigned to SPP-2000-108	See Previous	
06WP	SWPA-AECI	CARTHAGE TO REEDS SPRING, 69KV 52690 CARTHG 269.0 to 96751 2REEDS 69.0 CKT 1	43	103.4	110.1	MONET 161/69KV TRANSFORMER 59480 MON383 5 161 to 59591 MON383 269.0 CKT1	N/A	SPP-2000-108 Tie Line & Third Party Facility		
06WP	AEPW-AEPW	FERNDALKE LAKE TAP TO PITTSBURG, 69KV 53531 FERNDTP269.0 to 53310 PITTSB_269.0 CKT 1	79	97.0	97.5	PERDUE TO LAKE HAWKINS, 138KV 53590 PERDUE 4 138 to 53666 LHAWKIN4 138 CKT1	670	SPP-2000-108 New Rating By AEPW Modeled		
06WP	AEPW-EES	FULTON TO PATMOS, 115KV 53374 FULTON 3 115 to 99303 3PATMOS# 115 CKT 1	235	101.1	114.9	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	0	Upgrade Modeled Assigned to SPP-2000-108	See Previous	
06WP	AEPW-EES	FULTON TO PATMOS, 115KV 53374 FULTON 3 115 to 99303 3PATMOS# 115 CKT 1	235	99.6	112.0	SAILES TO ADA, 115KV 99168 3SAILES 115 to 99179 3ADA 11 115 CKT1	23	"	"	
06WP	AEPW-EES	FULTON TO PATMOS, 115KV 53374 FULTON 3 115 to 99303 3PATMOS# 115 CKT 1	235	98.8	112.1	PATTERSON TO SOUTH NASHVILLE, 138KV 53306 PATTERS4 138 to 53321 SNASHVL4 138 CKT1	62	"	"	
06WP	WERE-WERE	HOYT HTI SWITCHING JCT TO CIRCLEVILLE, 115KV 57165 HTI JCT3 115 to 57152 CIRCLVL3 115 CKT 1	97	112.7	115.2	EAST MANHATTAN TO CONCORD, 230KV 56861 EMANHAT6 230 to 58758 CONCORD6 230 CKT1	0	Upgrade Modeled Assigned to SPP-2000-108	Topology Update Increase Loading	
06WP	WERE-WERE	HOYT HTI SWITCHING JCT TO CIRCLEVILLE, 115KV 57165 HTI JCT3 115 to 57152 CIRCLVL3 115 CKT 1	97	99.3	101.5	JEC NORTH BUS TO SUMMIT, 345KV 56766 JEC N 7 345 to 56773 SUMMIT 7 345 CKT1	670	"	WERE Transmission Op Directive 402	
06WP	WERE-WERE	HOYT HTI SWITCHING JCT TO CIRCLEVILLE, 115KV 57165 HTI JCT3 115 to 57152 CIRCLVL3 115 CKT 1	97	99.2	101.4	SUMMIT 345/230 KV TRANSFORMER 56773 SUMMIT 7 345 to 56813 SUMMIT7X1.00 CKT1	670	"	WERE Transmission Op Directive 402	
06WP	OKGE-OKGE	PECAN CREEK 345/161KV TRANSFORMER #1 55235 PECANCK7 345 to 55234 PECANCK5 161 CKT 1	369	62.4	68.3	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	670	Upgrade Modeled Assigned to SPP-2000-108		
04WP	OKGE-OKGE	PECAN CREEK 345/161KV TRANSFORMER #1 55235 PECANCK7 345 to 55234 PECANCK5 161 CKT 1	369	78.9	84.3	PECAN CREEK 345/161KV TRANSFORMER #2 55235 PECANCK7 345 to 55234 PECANCK5 161 CKT 2	670	"		

Table 3 continued – Previously Assigned and Identified SPP Facilities Impacted by the AEPW to AMRN 670 MW Transfer

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	ATC	Assignment	Solution	Estimated Cost
06WP	SWPA-AEPW	EUREKA SPRINGS TO BEAVER, 161KV 52680 BEAVER 5 161 to 53136 EUREKA 5 161 CKT 1	320	96.2	107.1	MONETT TO BROOKLINE, 345KV 59481 MON383 7 345 to 59984 BRKLINE 7 345 CKT1	233	Upgrade Modeled Assigned to SPP-2000-108	See Previous	
06WP	SWPA-AEPW	EUREKA SPRINGS TO BEAVER, 161KV 52680 BEAVER 5 161 to 53136 EUREKA 5 161 CKT 1	320	96.1	107.0	FLINT CREEK TO MONETT, 345KV 53140 FLINTCR7 345 to 59481 MON383 7 345 CKT1	238	"	"	
06WP	SWPA-AECI	CARTHAGE TO JASPER, 69KV 52690 CARTHG 269.0 to 96649 2JASPER 69.0 CKT 1	52	97.2	103.6	CARTHAGE TO LARUSSELL, 161KV 52688 CARTHAG5 161 to 59479 LAR382 5 161 CKT1	N/A	SPP-2000-108 Tie Line & Third Party Facility		
06WP	OKGE-OKGE	CHIKASKIA TAP TO BRAMAN, 69KV 54751 CHIKSTP269.0 to 54750 BRAMAN 269.0 CKT 1	54	76.1	84.1	KILDARE TO WHITE EAGLE, 138KV 54760 KILDARE4 138 to 54761 WHEAGLE4 138 CKT1	670	SPP-2000-108 New Rating By OKGE Modeled		
									Total Estimated Cost of Known Solutions	1,460,000

Table 4a – SPP Confirmed Long-term Reservations with POD of AMRN from 10/1/04 to 10/1/07

Study	Request	Status	From	To	POR	POD	Amnt	Customer	Oct-04	Nov-04	Dec-04	Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05	Jul-05	Aug-05	Sep-05
	171	CONFIRMED	5/1/1983	1/1/2014	KACY	AMRN	20	KCPL	20	20	20	20	20	20	20	20	20	20	20	20
	119224	CONFIRMED	6/1/1999	6/1/2020	SPA	AMRN	11	SPA	11	11	11	11	11	11	11	11	11	11	11	11
	119231	CONFIRMED	6/1/1999	6/1/2011	SPA	AMRN	125	SPA	125	125	125	125	125	125	125	125	125	125	125	125
	314301	CONFIRMED	11/7/2001	6/1/2012	SPA	AMRN	78	SPA	78	78	78	78	78	78	78	78	78	78	78	78
1999-010	234943	CONFIRMED	1/1/2002	1/1/2012	SPS	AMRN	50	SPSM	50	50	50	50	50	50	50	50	50	50	50	50
1999-010	234945	CONFIRMED	1/1/2002	1/1/2012	SPS	AMRN	50	SPSM	50	50	50	50	50	50	50	50	50	50	50	50
1999-010	234956	CONFIRMED	1/1/2002	1/1/2012	SPS	AMRN	50	SPSM	50	50	50	50	50	50	50	50	50	50	50	50
1999-010	234957	CONFIRMED	1/1/2002	1/1/2012	SPS	AMRN	50	SPSM	50	50	50	50	50	50	50	50	50	50	50	50
1999-016	133602	CONFIRMED	1/1/2002	1/1/2005	SPS	AMRN	50	SPSM	50	50	50									
1999-016	133608	CONFIRMED	1/1/2002	1/1/2005	SPS	AMRN	50	SPSM	50	50	50									
Total Confirmed									534	534	534	434	434	434	434	434	434	434	434	434
Study	Request	Status	From	To	POR	POD	Amnt	Customer	Oct-05	Nov-05	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06	Aug-06	Sep-06
	171	CONFIRMED	5/1/1983	1/1/2014	KACY	AMRN	20	KCPL	20	20	20	20	20	20	20	20	20	20	20	20
	119224	CONFIRMED	6/1/1999	6/1/2020	SPA	AMRN	11	SPA	11	11	11	11	11	11	11	11	11	11	11	11
	119231	CONFIRMED	6/1/1999	6/1/2011	SPA	AMRN	125	SPA	125	125	125	125	125	125	125	125	125	125	125	125
	314301	CONFIRMED	11/7/2001	6/1/2012	SPA	AMRN	78	SPA	78	78	78	78	78	78	78	78	78	78	78	78
1999-010	234943	CONFIRMED	1/1/2002	1/1/2012	SPS	AMRN	50	SPSM	50	50	50	50	50	50	50	50	50	50	50	50
1999-010	234945	CONFIRMED	1/1/2002	1/1/2012	SPS	AMRN	50	SPSM	50	50	50	50	50	50	50	50	50	50	50	50
1999-010	234956	CONFIRMED	1/1/2002	1/1/2012	SPS	AMRN	50	SPSM	50	50	50	50	50	50	50	50	50	50	50	50
1999-010	234957	CONFIRMED	1/1/2002	1/1/2012	SPS	AMRN	50	SPSM	50	50	50	50	50	50	50	50	50	50	50	50
1999-016	133602	CONFIRMED	1/1/2002	1/1/2005	SPS	AMRN	50	SPSM												
1999-016	133608	CONFIRMED	1/1/2002	1/1/2005	SPS	AMRN	50	SPSM												
Total Confirmed									434	434	434	434	434	434	434	434	434	434	434	434
Study	Request	Status	From	To	POR	POD	Amnt	Customer	Oct-06	Nov-06	Dec-06	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07
	171	CONFIRMED	5/1/1983	1/1/2014	KACY	AMRN	20	KCPL	20	20	20	20	20	20	20	20	20	20	20	20
	119224	CONFIRMED	6/1/1999	6/1/2020	SPA	AMRN	11	SPA	11	11	11	11	11	11	11	11	11	11	11	11
	119231	CONFIRMED	6/1/1999	6/1/2011	SPA	AMRN	125	SPA	125	125	125	125	125	125	125	125	125	125	125	125
	314301	CONFIRMED	11/7/2001	6/1/2012	SPA	AMRN	78	SPA	78	78	78	78	78	78	78	78	78	78	78	78
1999-010	234943	CONFIRMED	1/1/2002	1/1/2012	SPS	AMRN	50	SPSM	50	50	50	50	50	50	50	50	50	50	50	50
1999-010	234945	CONFIRMED	1/1/2002	1/1/2012	SPS	AMRN	50	SPSM	50	50	50	50	50	50	50	50	50	50	50	50
1999-010	234956	CONFIRMED	1/1/2002	1/1/2012	SPS	AMRN	50	SPSM	50	50	50	50	50	50	50	50	50	50	50	50
1999-010	234957	CONFIRMED	1/1/2002	1/1/2012	SPS	AMRN	50	SPSM	50	50	50	50	50	50	50	50	50	50	50	50
1999-016	133602	CONFIRMED	1/1/2002	1/1/2005	SPS	AMRN	50	SPSM												
1999-016	133608	CONFIRMED	1/1/2002	1/1/2005	SPS	AMRN	50	SPSM												
Total Confirmed									434	434	434	434	434	434	434	434	434	434	434	434

Table 4b – SPP Long-term Reservations with the right to renew service from 10/1/04 to 10/1/07 per section 2.2 of Tariff

Study	Request	Status	From	To	POR	POD	Amnt	Customer	Oct-04	Nov-04	Dec-04	Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05	Jul-05	Aug-05	Sep-05
	109431	CONFIRMED	4/1/1999	4/1/2004	KCPL	AMRN	200	KCPS	200	200	200	200	200	200	200	200	200	200	200	200
2000-007	230098	CONFIRMED	1/1/2002	1/1/2003	CSWS	AMRN	400	PECO	400	400	400	400	400	400	400	400	400	400	400	400
1999-016	133602	CONFIRMED	1/1/2002	1/1/2005	SPS	AMRN	50	SPSM				50	50	50	50	50	50	50	50	50
1999-016	133608	CONFIRMED	1/1/2002	1/1/2005	SPS	AMRN	50	SPSM				50	50	50	50	50	50	50	50	50
2001-227	318882	CONFIRMED	1/1/2002	1/1/2003	WR	AMRN	50	WRGS	50	50	50	50	50	50	50	50	50	50	50	50
2001-227	318883	CONFIRMED	1/1/2002	1/1/2003	WR	AMRN	50	WRGS	50	50	50	50	50	50	50	50	50	50	50	50
2001-235	265434	CONFIRMED	6/1/2002	6/1/2003	SPA	AMRN	2	SPA	2	2	2	2	2	2	2	2	2	2	2	2
Total Right to Renew									702	702	702	802	802	802	802	802	802	802	802	802
Study	Request	Status	From	To	POR	POD	Amnt	Customer	Oct-05	Nov-05	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06	Aug-06	Sep-06
	109431	CONFIRMED	4/1/1999	4/1/2004	KCPL	AMRN	200	KCPS	200	200	200	200	200	200	200	200	200	200	200	200
2000-007	230098	CONFIRMED	1/1/2002	1/1/2003	CSWS	AMRN	400	PECO	400	400	400	400	400	400	400	400	400	400	400	400
1999-016	133602	CONFIRMED	1/1/2002	1/1/2005	SPS	AMRN	50	SPSM	50	50	50	50	50	50	50	50	50	50	50	50
1999-016	133608	CONFIRMED	1/1/2002	1/1/2005	SPS	AMRN	50	SPSM	50	50	50	50	50	50	50	50	50	50	50	50
2001-227	318882	CONFIRMED	1/1/2002	1/1/2003	WR	AMRN	50	WRGS	50	50	50	50	50	50	50	50	50	50	50	50
2001-227	318883	CONFIRMED	1/1/2002	1/1/2003	WR	AMRN	50	WRGS	50	50	50	50	50	50	50	50	50	50	50	50
2001-235	265434	CONFIRMED	6/1/2002	6/1/2003	SPA	AMRN	2	SPA	2	2	2	2	2	2	2	2	2	2	2	2
Total Right to Renew									802	802	802	802	802	802	802	802	802	802	802	802
Study	Request	Status	From	To	POR	POD	Amnt	Customer	Oct-06	Nov-06	Dec-06	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07
	109431	CONFIRMED	4/1/1999	4/1/2004	KCPL	AMRN	200	KCPS	200	200	200	200	200	200	200	200	200	200	200	200
2000-007	230098	CONFIRMED	1/1/2002	1/1/2003	CSWS	AMRN	400	PECO	400	400	400	400	400	400	400	400	400	400	400	400
1999-016	133602	CONFIRMED	1/1/2002	1/1/2005	SPS	AMRN	50	SPSM	50	50	50	50	50	50	50	50	50	50	50	50
1999-016	133608	CONFIRMED	1/1/2002	1/1/2005	SPS	AMRN	50	SPSM	50	50	50	50	50	50	50	50	50	50	50	50
2001-227	318882	CONFIRMED	1/1/2002	1/1/2003	WR	AMRN	50	WRGS	50	50	50	50	50	50	50	50	50	50	50	50
2001-227	318883	CONFIRMED	1/1/2002	1/1/2003	WR	AMRN	50	WRGS	50	50	50	50	50	50	50	50	50	50	50	50
2001-235	265434	CONFIRMED	6/1/2002	6/1/2003	SPA	AMRN	2	SPA	2	2	2	2	2	2	2	2	2	2	2	2
Total Right to Renew									802	802	802	802	802	802	802	802	802	802	802	802

Table 5 – Summation of Long-term Reservations with POD of AMRN from 10/1/04 to 10/1/07 and Available Firm Contract Path Capacity

Reservation Status	Oct-04	Nov-04	Dec-04	Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05	Jul-05	Aug-05	Sep-05	
Confirmed	534	534	534	434	434	434	434	434	434	434	434	434	
Possible Renewal	702	702	702	802	802	802	802	802	802	802	802	802	
Study	0	0	0	0	0	0	0	0	0	0	0	0	
	1287	1287	1287	1287	1287	1287	1287	1287	1287	1287	1287	1287	Contract Path Limit
	51	51	51	51	51	51	51	51	51	51	51	51	Total Available (2-1-2002) Including Reservations With Right of First Refusal and being Studied
	753	753	753	853	853	853	853	853	853	853	853	853	Total Available (2-1-2002) Excluding Reservations With Right of First Refusal and being Studied
	670	670	670	670	670	670	670	670	670	670	670	670	Request #212203
Reservation Status	Oct-05	Nov-05	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06	Aug-06	Sep-06	
Confirmed	434	434	434	434	434	434	434	434	434	434	434	434	
Possible Renewal	802	802	802	802	802	802	802	802	802	802	802	802	
Study	0	0	0	0	0	0	0	0	0	0	0	0	
	1287	1287	1287	1287	1287	1287	1287	1287	1287	1287	1287	1287	Contract Path Limit
	51	51	51	51	51	51	51	51	51	51	51	51	Total Available (2-1-2002) Including Reservations With Right of First Refusal and being Studied
	853	853	853	853	853	853	853	853	853	853	853	853	Total Available (2-1-2002) Including Reservations With Right of First Refusal and being Studied
	670	670	670	670	670	670	670	670	670	670	670	670	Request #212203
Reservation Status	Oct-06	Nov-06	Dec-06	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	
Confirmed	434	434	434	434	434	434	434	434	434	434	434	434	
Possible Renewal	802	802	802	802	802	802	802	802	802	802	802	802	
Study	0	0	0	0	0	0	0	0	0	0	0	0	
	1287	1287	1287	1287	1287	1287	1287	1287	1287	1287	1287	1287	Contract Path Limit
	51	51	51	51	51	51	51	51	51	51	51	51	Total Available (2-1-2002) Including Reservations With Right of First Refusal and being Studied
	853	853	853	853	853	853	853	853	853	853	853	853	Total Available (2-1-2002) Including Reservations With Right of First Refusal and being Studied
	670	670	670	670	670	670	670	670	670	670	670	670	Request #212203

Table 6 – SPP To Ameren Firm Contract Path Interface Capacity (Ties Lines and Contributions)

SPP To AMRN Firm Contract Path Capacity				
POR	Transmission Tie Lines	Rate A <MVA>	Percent Ownership	Firm Contract Path Capacity
KCPL	MIPU - AMRN / Sibley to Overton, 345 kV 59201 SIBLEY 7 345 to 31408 OVERTON 345 1	956	58.3%	557
"	KACP - AMRN / Salisbury to Moberly, 161 kV 58062 SALSBR5 161 to 31221 MOBERLY 161 1	180	100.0%	180
SPA	SWPA - AMRN / Sikeston to Miner, 161 kV 52628 SIKESTN5 161 to 31203 MINER 161 1	248	100.0%	248
CSWS (PSO)	Mokanok Agreement: Neosho - Morgan - Franks, 345 kV 450MW of Firm Capacity	N/A	25%	113
WR (KGE)	"	N/A	20%	90
MOKANOK/AMRN	"	N/A	22%	99
			Total	1287

5. Conclusion

The results of the study show that before the AEPW to Ameren 670 MW transfer can take place system improvements will need to be completed.

1. The upgrades associated with the facility overloads identified in Table 1 will be required before the start of service.
2. Any previously assigned upgrades and additional upgrades associated with the facilities in Table 3 will be required before the start of service.
3. The SPP to Ameren Firm Contract Path Capacity Interface will require a 619 MW increase in Firm Contract Path Capacity before the start of service.

The final cost assignment of facilities and ATC to Power Resource Group, Inc. will be determined upon the completion of a facility study.

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 – 1 MW
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