

**SPP-2000-108**

**345/161 kV TRANSFORMER ADDITION**

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	Without 345/161kV Transformer		With 345/161kV Transformer		Outaged Branch That Caused Overload	Without 345/161kV Transformer	With 345/161kV Transformer	Solution	Estimated Cost Without 345/161kV Transformer	Estimated Cost With 345/161kV Transformer	New Rating	% Increase In Rating
				BC %Loading	TC %Loading	BC %Loading	TC %Loading		ATC (MW)	ATC (MW)					
03G	OKGE-OKGE	DRAPER 345/138KV TRANSFORMER 1 54934 DRAPER 7 345 to 54933 DRAPER 4 138 CKT 1	493	99.9	104.1	101.0	106.2	DRAPER 345/138KV TRANSFORMER 2 54933 DRAPER 4 138 to 54934 DRAPER 7 345 CKT2	12	0	#1 Add Third Transformer \$8 million Upgrade Excluded Per OKGE			N/A	N/A
* 03G	OKGE-OKGE	DRAPER 345/138KV TRANSFORMER 2 54934 DRAPER 7 345 to 54933 DRAPER 4 138 CKT 2	493	99.9	104.1	101.0	106.2	DRAPER 345/138KV TRANSFORMER 1 54933 DRAPER 4 138 to 54934 DRAPER 7 345 CKT1	12	0	See Previous Upgrade #1			N/A	N/A
* 03G	WERE-WERE	HOYT HTI SWITCHING JCT TO CIRCLEVILLE, 115KV 57165 HTI JCT3 115 to 57152 CIRCLVL3 115 CKT 1	92	99.4	102.5	99.0	102.0	IATAN TO ST JOE, 345KV 57982 IATAN 7 345 to 69702 ST JOE 3 345 CKT1	129	218	#2 Replace 82 Structures by WR	742,000	742,000	97	5.4%
03G	OKGE-OKGE	PECAN CREEK 345/161KV TRANSFORMER 55235 PECANCK7 345 to 55234 PECANCK5 161 CKT 1	369	90.1	102.8	90.2	103.0	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	525	513	#3 Add Second Transformer	3,000,000	3,000,000	N/A	N/A
* 03G	WERE-WERE	LAWRENCE HILL 230/115KV TRANSFORMER 56853 LAWHILL6 230 to 57250 LWRNCHL3 115 CKT 1	308	98.8	100.1	96.1	97.5	MIDLAND 230/115KV TRANSFORMER 56855 MIDLAND6 230 to 57252 MIDLAND3 115 CKT1	670	670	Taken Out by WERE			N/A	N/A
* 04SP	SWPA-AECI	CARTHAGE TO JASPER, 69KV 52690 CARTHG 269.0 to 96649 2JASPER 69.0 CKT 1	47	100.0	103.1	101.8	101.4	MARATON TO CENTERVILLE, 161KV 56934 MARMTNE5 161 to 58065 CNTRVIL5 161 CKT1	N/A	N/A	AECI third party line. No SPA upgrades required.			N/A	N/A
04SP	AEPW-WFEC	SOUTHWEST STATION TO ANADARKO, 138KV 54140 S.W.S.-4 138 to 55814 ANADARK4 138 CKT 1	203	99.9	102.0	99.9	101.9	CORNVILLE TO CORN TAP, 138KV 54112 CORNVIL4 138 to 55867 CORN TP4 138 CKT1	18	39	#4 WFEC: Replace bus, jumpers, switches, supports and foundations at Anadarko Switch Station.	450,000	450,000	210	3.4%
* 04SP	WERE-WERE	HOYT HTI SWITCHING JCT TO CIRCLEVILLE, 115KV 57165 HTI JCT3 115 to 57152 CIRCLVL3 115 CKT 1	92	99.9	102.2	92.6	95.0	MIDLAND 230/115KV TRANSFORMER 56915 MIDLAND5 161 to 57252 MIDLAND3 115 CKT1	18	670	See Previous Upgrade #2			97	5.4%
04SP	AEPW-EES	FULTON TO PATMOS, 115KV 53374 FULTON 3 115 to 99303 3PATMOS# 115 CKT 1	196	88.1	105.8	88.0	105.6	PATTERSON TO SOUTH NASHVILLE, 138KV 53306 PATTERS4 138 to 53321 SNASHVL4 138 CKT1	450	456	New Summer Emergency Rating 196MVA 12.6% Increase #5 Reconductor 7.1 miles of 666 ACSR with 1272 ACSR	2,100,000	2,100,000	235	19.9%
04SP	OKGE-OKGE	PECAN CREEK 345/161KV TRANSFORMER 55235 PECANCK7 345 to 55234 PECANCK5 161 CKT 1	369	98.7	111.3	98.7	111.3	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	68	68	See Previous Upgrade #3			N/A	N/A
04SP	EMDE-EMDE	MONETT TO AURORA HT, 161KV 59480 MON383 5 161 to 59468 AUR124 5 161 CKT 1	157	99.3	105.8	101.4	107.9	AURORA HT TO MONETT HT, 69KV 59537 AUR124 269.0 to 59540 MON152 269.0 CKT1	670	670	Reconductor project in progress by EMDE. To be completed by 12/31/2002.			N/A	N/A
* 04SP	WERE-WERE	COUNTY LINE 230/115/69KV TRANSFORMER 57201 COLINE3X1.00 to 57456 COLINE 269.0 CKT 1	66	99.7	101.7	95.3	97.3	HOYT TO STRANGER, 345KV 56765 HOYT 7 345 to 56772 STRANGR7 345 CKT1	670	670	Taken Out by WERE			N/A	N/A
04SP	AEPW-AEPW	LONE STAR SOUTH TO WILKES, 138KV 53276 LSSOUTH4 138 to 53619 WILKES 4 138 CKT 1	316	99.6	100.9	99.6	100.9	WILKES TO WELSH REC, 138KV 53619 WILKES 4 138 to 53622 WELSHRE4 138 CKT1	195	195	#6 Reset CTs	2,000	2,000	471	49.1%
* 04SP	GRRD-GRRD	PENSACOLA TO GRAY TAP, 69KV 54428 PENZA 269.0 to 54465 GRAY TP269.0 CKT 1	47	99.4	101.5	99.0	101.1	MIAMI TO AFTON, 161KV 54431 MIAMI 5 161 to 54432 AFTON 5 161 CKT1	198	319	#7 Rebuild 4/0 to 795MCM	730,000	730,000	112	138.3%
04SP	AEPW-SWPA	EUREKA SPRINGS TO BEAVER DAM, 161KV 53136 EUREKA 5 161 to 52680 BEAVER 5 161 CKT 1	274	96.0	108.4	96.2	108.7	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	218	205	New AEPW Summer Emergency Rating 311MVA 13.5% Increase #8 SWPA: Reconductor 6 miles & Reset Equipment @ Beaver	1,822,500	1,822,500	305	11.3%
* 04SP	EMDE-AECI	NEOSHO 161/69KV TRANSFORMER 59471 NEO184 5 161 to 96748 2NEOSAC 69.0 CKT 1	56	98.4	102.0	98.6	102.2	BEAVER TO EUREKA SPRINGS, 161KV 52680 BEAVER 5 161 to 53136 EUREKA 5 161 CKT1	N/A	N/A	Third Party overload.			N/A	N/A

Table 1- Overloads with New ATC  
A-108-Transformer-Addition.xls

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	Without 345/161kV Transformer		With 345/161kV Transformer		Outaged Branch That Caused Overload	Without 345/161kV Transformer	With 345/161kV Transformer	Solution	Estimated Cost Without 345/161kV Transformer	Estimated Cost With 345/161kV Transformer	New Rating	% Increase In Rating
				BC %Loading	TC %Loading	BC %Loading	TC %Loading		ATC (MW)	ATC (MW)					
* 04SP	EES-SWPA	MIDWAY TO BULL SHOALS, 161KV 99825 5MIDWAY# 161 to 52660 BULL SH5 161 CKT 1	162	96.9	103.8	97.2	104.1	SWEET WATER TO FLETCHER, 161KV 31798 SWEETWTR 161 to 96077 5FLETCH 161 CKT1	299	274	#9 SWPA Replace Wavetrap & Reset CT's @ Bull Shoals	150,000	150,000	N/A	N/A
* 04SP	SWPA-AECI	CARTHAGE TO REEDS SPRING, 69KV 52690 CARTHG 269.0 to 96751 2REEDS 69.0 CKT 1	36	97.8	102.6	100.0	104.8	MIAMI TO AFTON, 161KV 54431 MIAMI 5 161 to 54432 AFTON 5 161 CKT1	N/A	N/A	AECI third party line. No SPA upgrades required.			N/A	N/A
04SP	AEPW-WERE	SOUTH COFFEYVILLE TO DEARING, 138 KV 53972 COFFEYT4 138 to 57002 DEARING4 138 CKT 1	210	96.4	104.0	96.3	103.9	DELAWARE TO NEOSHO, 345KV 53929 DELWARE7 345 to 56793 NEOSHO 7 345 CKT1	313	328	#10 Replace WR Wavetrap	20,000	20,000	232	10.5%
04SP	EMDE-EMDE	JOPLIN SOUTHWEST 161/69KV TRANSFORMER 59483 JOP389 5 161 to 59592 JOP389 269.0 CKT 1	75	99.7	100.3	100.5	100.8	TIPTON FORD TO JOPLIN SOUTHWEST, 161KV 59472 TIP292 5 161 to 59483 JOP389 5 161 CKT1	334	0	#11 Replace 161/69 KV Transformer with a 150 MVA Transformer.	1,565,000	1,565,000	150	100.0%
* 04SP	EMDE-EMDE	REINMILLER 161/69KV TRANSFORMER 59595 RNM393 269.0 to 59500 RNM393 5 161 CKT 1	75	99.4	100.5	100.1	101.0	TIPTON FORD TO JOPLIN SOUTHWEST, 161KV 59472 TIP292 5 161 to 59483 JOP389 5 161 CKT1	377	0	Upgrade excluded as upgrading Joplin SW 161/69 eliminates this constraint.			N/A	N/A
* 04SP	SWPA-SWPA	GORE TO SALLISAW, 161KV 52752 GORE 5 161 to 52750 SALLISAW5 161 CKT 1	167	88.9	108.1	88.8	107.9	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FSTMTH7 345 CKT1	388	392	#12 Increase clearances of approximately ten spans to allow operation of line at 100C.	500,000	500,000	223	33.5%
04SP	OKGE-OKGE	TINKER #4 TO TINKER #2, 138KV 54988 TINKER44 138 to 54990 TINKER24 138 CKT 1	100	97.7	101.7	97.8	101.8	NE 10TH TO MIDWAY, 138KV 54964 NE10TH 4 138 to 54966 MIDWAY 4 138 CKT1	670	670	Not a valid Overload.			N/A	N/A
04SP	OKGE-OKGE	MUSKOGEE 161/69KV TRANSFORMER 1 55222 MUSKOGEE5 161 to 55221 MUSKOGEE269.0 CKT 1	41	98.9	100.8	98.9	100.8	MUSKOGEE 161/69KV TRANSFORMER 3 55221 MUSKOGEE269.0 to 55222 MUSKOGEE5 161 CKT3	670	670	Transfer load to 161kV system in 2003 at OGE expense.			N/A	N/A
04SP	AEPW-AEPW	WALLACE LAKE TO SOUTH SHREVEPORT, 138KV 53461 WALLAKE4 138 to 53446 S SHV 4 138 CKT 1	209	91.7	105.3	91.6	105.2	DOLET HILLS 345/230KV TRANSFORMER 50045 DOLHILL7 345 to 50046 DOLHILL6 230 CKT1	670	670	Dolet Hills Operating Guide Monitor Line at 260MVA 24.4% Increase			N/A	N/A
* 04SP	WERE-WERE	GILL ENERGY CENTER EAST TO MACARTHUR, 69KV 57795 GILL E 269.0 to 57813 MACARTH269.0 CKT 1	68	99.8	100.1	100.0	100.3	MACARTHUR TO OATVILLE, 69KV 57813 MACARTH269.0 to 57825 OATVILL269.0 CKT1	441	0	#13 Replace substation bus and jumpers at MacArthur 69 kV.	22,000	22,000	80	17.6%
04SP	EMDE-EMDE	DIAMOND JCT. TO SARCOXIE SOUTHWEST TAP, 69KV 59538 DIA131 269.0 to 59582 SAR362T269.0 CKT 1	38	97.5	101.3	98.5	102.1	MONETT 161/69KV TRANSFORMER 59480 MON383 5 161 to 59591 MON383 269.0 CKT1	447	281	#14 Reconductor 1/0 Copper with 336 ACSR.	1,230,000	1,230,000	65	71.1%
04SP	SWPA-SWPA	NORFORK 161/69KV TRANSFORMER 52648 NORFORK5 161 to 52650 NORFORK269.0 CKT 1	25	99.2	100.4	99.3	100.5	NORFORK TO WEST PLAINS, 161KV 52648 NORFORK5 161 to 96123 SWPLAIN 161 CKT1	469	391	#15 Replace Norfolk Transformer by SPA. Scheduled for 2005.	1,000,000	1,000,000	50	100.0%
04SP	OKGE-OKGE	CHESTNUT TO ENID, 69KV 54726 CHSTNUT269.0 to 54727 ENID 269.0 CKT 1	66	98.9	100.4	99.0	100.5	CHESTNUT TO SOUTH 4TH ST, 69KV 54726 CHSTNUT269.0 to 54730 SO4TH2 269.0 CKT1	670	670	Install 138-69KV transformer @ NE Enid by OKGE			N/A	N/A
* 04SP	WERE-WERE	SOUTH GAGE TO AUBURN, 115KV CKT 1 57179 S GAGEW3 115 to 57151 AUBURN 3 115 CKT 1	91	99.3	100.2	99.0	99.8	SOUTH GAGE TO AUBURN, 115KV CKT 2 57151 AUBURN 3 115 to 57179 S GAGEW3 115 CKT2	670	670	Invalid Contingency			N/A	N/A
04SP	AEPW-AEPW	WILBURTON TO LONE OAK, 69KV 54031 WILBURT269.0 to 54021 LONEOAK269.0 CKT 1	48	95.6	101.3	95.5	101.8	EUFALA TO STIGLER TAP, 138KV 52774 EUFAULA4 138 to 54050 STIGLRT4 138 CKT1	517	478	#16 Replace 400A line switch # 4839	60,000	60,000	72	50.0%
04SP	AEPW-CELE	WALLACE LAKE TO INTERNATIONAL PAPER, 138KV 53461 WALLAKE4 138 to 50090 IPAPER 4 138 CKT 1	209	84.4	100.1	84.3	100.0	DOLET HILLS 345/230KV TRANSFORMER 50045 DOLHILL7 345 to 50046 DOLHILL6 230 CKT1	670	670	Dolet Hills Operating Guide Monitor Line at 260MVA 24.4% Increase			N/A	N/A

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A-108-Transformer-Addition.xls

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	Without 345/161kV Transformer		With 345/161kV Transformer		Outaged Branch That Caused Overload	Without 345/161kV Transformer	With 345/161kV Transformer	Solution	Estimated Cost Without 345/161kV Transformer	Estimated Cost With 345/161kV Transformer	New Rating	% Increase In Rating
				BC %Loading	TC %Loading	BC %Loading	TC %Loading		ATC (MW)	ATC (MW)					
* 04WP	SWPA-AECI	CARTHAGE TO REEDS SPRING, 69KV 52690 CARTHG 269.0 to 96751 2REEDS 69.0 CKT 1	43	100.0	104.2	101.5	105.8	MONET 161/69KV TRANSFORMER 59480 MON383 5 161 to 59591 MON383 269.0 CKT1	N/A	N/A	AECI third party line. No SPA upgrades required.			N/A	N/A
04WP	AEPW-AEPW	FERNDAL LAKE TAP TO PITTSBURG, 69KV 53531 FERNDTP269.0 to 53310 PITTSB 269.0 CKT 1	79	91.1	91.9	91.1	91.9	PERDUE TO LAKE HAWKINS, 138KV 53590 PERDUE 4 138 to 53666 LHAWKIN4 138 CKT1	670	670	Incorrect Rating New Winter Emergency Rating 79MVA 9.7% Increase			N/A	N/A
04WP	AEPW-EES	FULTON TO PATMOS, 115KV 53374 FULTON 3 115 to 99303 3PATMOS# 115 CKT 1	229	85.3	100.4	85.2	100.3	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	653	656	New Winter Emergency Rating 229MVA 16.2% Increase See Previous Upgrade #5			235	2.6%
* 04WP	WERE-WERE	HOYT HTI SWITCHING JCT TO CIRCLEVILLE, 115KV 57165 HTI JCT3 115 to 57152 CIRCLV3 115 CKT 1	92	99.7	101.8	99.4	101.5	EAST MANHATTAN TO CONCORD, 230KV 56861 EMANHAT6 230 to 58758 CONCORD6 230 CKT1	97	192	See Previous Upgrade #2			97	5.4%
04WP	OKGE-OKGE	PECAN CREEK 345/161KV TRANSFORMER 55235 PECANCK7 345 to 55234 PECANCK5 161 CKT 1	369	93.7	106.0	93.7	106.0	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	343	343	See Previous Upgrade #3			N/A	N/A
04WP	AEPW-SWPA	EUREKA SPRINGS TO BEAVER DAM, 161KV 53136 EUREKA 5 161 to 52680 BEAVER 5 161 CKT 1	287	94.3	104.6	94.5	104.9	MONETT TO BROOKLINE, 345KV 59481 MON383 7 345 to 59984 BRKLINE 7 345 CKT1	370	355	New AEPW Winter Emergency Rating 335MVA 16.7% Increase See Previous Upgrade #8			320	11.5%
* 04WP	SWPA-AECI	CARTHAGE TO JASPER, 69KV 52690 CARTHG 269.0 to 96649 2JASPER 69.0 CKT 1	52	97.6	100.9	98.9	102.3	CARTHAGE TO LARUSSELL, 161KV 52688 CARTHAG5 161 to 59479 LAR382 5 161 CKT1	N/A	N/A	AECI third party line. No SPA upgrades required.			N/A	N/A
* 04WP	WERE-WERE	MIDLAND 230/115KV TRANSFORMER 56855 MIDLAND6 230 to 57252 MIDLAND3 115 CKT 1	308	98.8	100.1	96.1	97.5	LAWRENCE HILL 230/115KV TRANSFORMER 56853 LAWHILL6 230 to 57250 LWRNCHL3 115 CKT1	670	670	Taken Out by WERE			N/A	N/A
04WP	OKGE-OKGE	CHIKASKIA TAP TO BRAMAN, 69KV 54751 CHIKSTP269.0 to 54750 BRAMAN 269.0 CKT 1	54	65.2	70.8	66.2	71.8	KILDARE TO WHITE EAGLE, 138KV 54760 KILDARE4 138 to 54761 WHEAGLE4 138 CKT1	670	670	Incorrect Rating New Winter Emergency Rating 54MVA 42.1% Increase			N/A	N/A
* 06SP	AEPW-AEPW	LELMDALE TO DYESS, 161KV CKT 2 53175 LELMDAL5 161 to 53131 DYESS 5 161 CKT 2	354	100.0	101.6	100.0	101.6	LELMDALE TO DYESS, 161KV CKT 1 53131 DYESS 5 161 to 53175 LELMDAL5 161 CKT1	0	0	#17 Rebuild 4 miles of 2-397 ACSR with 2156 ACSR. IN 10 year plan scheduled for 2009.	1,600,000	1,600,000	424	19.8%
06SP	AEPW-EES	FULTON TO PATMOS, 115KV 53374 FULTON 3 115 to 99303 3PATMOS# 115 CKT 1	196	88.3	108.1	88.2	108.0	FORT SMITH TO ANO, 500KV 55305 FTSMITH8 500 to 99486 8ANO 500 CKT1	395	398	New Summer Emergency Rating 196MVA 12.6% Increase See Previous Upgrade #5			235	19.9%
* 06SP	AEPW-AEPW	S FAYETTEVILLE TO GREENLAND, 69KV 53156 SFAYTVL269.0 to 53141 GREENLD269.0 CKT 1	59	99.7	105.8	99.9	106.0	SILOAM SPRINGS, 161/69KV TRANSFORMER 53158 SILOAM 5 161 to 53204 SILOAM 269.0 CKT1	31	10	#18 Replace 4/0 CU jumpers @ Greenland	20,000	20,000	72	22.0%
* 06SP	SWPA-AECI	CARTHAGE TO REEDS SPRING, 69KV 52690 CARTHG 269.0 to 96751 2REEDS 69.0 CKT 1	36	99.7	106.3	102.0	108.7	CARTHAGE TO LARUSSELL, 161KV 52688 CARTHAG5 161 to 59479 LAR382 5 161 CKT1	N/A	N/A	AECI third party line. No SPA upgrades required.			N/A	N/A
06SP	AEPW-AEPW	EAST CENTERTON TO GENTRY REC, 161KV 53133 ECNTRTN5 161 to 53187 GENTRYR5 161 CKT 1	368	95.7	97.7	95.6	97.5	LOWELL TO LELMDAL, 161KV 53144 LOWELL 5 161 to 53175 LELMDAL5 161 CKT1	670	670	New Summer Emergency Rating 368MVA 4.2% Increase			N/A	N/A
06SP	GRRD-GRRD	KERR TO KANSAS TAP, 161KV 54435 KERR GR5 161 to 54514 KANSATP5 161 CKT 1	338	96.7	99.7	96.4	99.4	FLINT CREEK TO GRDA ONE, 345KV 53140 FLINTR7 345 to 54450 GRDA1 7 345 CKT1	670	670	Incorrect Rating New Summer Emergency Rating 338MVA 3% Increase			N/A	N/A
* 06SP	EES-SWPA	MIDWAY TO BULL SHOALS, 161KV 99825 5MIDWAY# 161 to 52660 BULL SH5 161 CKT 1	162	98.8	107.1	99.0	107.3	HUBEN TO MORGAN, 345KV 96042 7HUBEN 345 to 96045 7MORGAN 345 CKT1	100	81	See Previous Upgrade #9			N/A	N/A

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	Without 345/161kV Transformer		With 345/161kV Transformer		Outaged Branch That Caused Overload	Without 345/161kV Transformer ATC (MW)	With 345/161kV Transformer ATC (MW)	Solution	Estimated Cost Without 345/161kV Transformer	Estimated Cost With 345/161kV Transformer	New Rating	% Increase In Rating
				BC %Loading	TC %Loading	BC %Loading	TC %Loading								
06SP	AEPW-AEPW	FARMINGTON AECC TO CHAMBER SPRINGS RD, 161KV 53195 FARMGTN5 161 to 53154 CHAMSPR5 161 CKT 1	335	99.6	102.0	99.5	101.9	CHAMBER SPRINGS RD TO LELMDAL, 345KV 53155 CHAMSPR7 345 to 53176 LELMDAL7 345 CKT1	105	136	#20 Replace Farmington switch	60,000	60,000	368	9.9%
* 06SP	WFEC-SWPA	PHAROA TO WELEETKA, 138KV 56026 PHAROA4 138 to 52792 WELEETK4 138 CKT 1	191	99.6	101.1	99.5	101.0	FRANKLIN TO FRANKLIN SWITCH, 138KV 55913 FRANKLN4 138 to 55917 FRNKLNS4 138 CKT1	183	215	#21 WFEC: Replace wavetrapp at Weleetka and replace jumpers.	75,000	75,000	287	50.3%
06SP	WERE-WERE	COUNTY LINE 115/69 KV TRANSFORMER 57456 COLINE 269.0 to 57201 COLINE3X1.00 CKT 1	66	99.8	100.5	99.6	100.2	ARNOLD TO STRANGER CREEK, 115KV 57211 ARNOLD 3 115 to 57288 STRANGR3 115 CKT1	670	670	Taken Out by WERE			N/A	N/A
* 06SP	AEPW-AEPW	FERNDALE LAKE TAP TO PITTSBURG, 69KV 53531 FERNDTP269.0 to 53310 PITTSB_269.0 CKT 1	79	90.8	91.9	90.8	91.9	MOBIL-TEXOMA T TO NEW HOPE, 69KV 53282 MOBTLTX269.0 to 53296 NEWHOPE269.0 CKT1	670	670	Incorrect Rating New Summer Emergency Rating 79MVA 9.7% Increase			N/A	N/A
06SP	AEPW-AEPW	GENTRY REC TO FLINT CREEK, 161KV 53187 GENTRYR5 161 to 53139 FLINTCR5 161 CKT 1	368	95.3	97.2	95.2	97.1	ROGERS TO LOWELL REC, 161KV 53152 ROGERS 5 161 to 53200 LOWELLR5 161 CKT1	670	670	New Summer Emergency Rating 368MVA 4.2% Increase			N/A	N/A
06SP	AEPW-SWPA	EUREKA SPRINGS TO BEAVER DAM, 161KV 53136 EUREKA 5 161 to 52680 BEAVER 5 161 CKT 1	274	96.1	107.0	96.3	107.2	FLINT CREEK TO MONETT, 345KV 53140 FLINTCR7 345 to 59481 MON383 7 345 CKT1	238	230	New AEPW Summer Emergency Rating 311MVA 13.5% Increase See Previous Upgrade #8			305	11.3%
06SP	AEPW-AEPW	SNYDER TO FREDERICK JCT, 69KV 54138 SNYDER-269.0 to 54123 FREDJC-269.0 CKT 1	26	99.7	100.5	99.7	100.5	ANADARKO TO PARADISE, 138KV 55814 ANADARK4 138 to 56024 PARADSE4 138 CKT1	271	272	#23 Reset Frederick Jct. CTs.	2,000	2,000	39	50.0%
* 06SP	SWPA-SWPA	GORE TO SALLISAW, 161KV 52752 GORE 5 161 to 52750 SALLISAW5 161 CKT 1	167	91.9	111.0	91.8	110.9	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	285	288	See Previous Upgrade #12			223	33.5%
06SP	AEPW-AEPW	LELMDAL TO CHAMBER SPRINGS RD, 161KV 53175 LELMDAL5 161 to 53154 CHAMSPR5 161 CKT 1	275	87.4	90.2	87.2	90.1	CHAMBER SPRINGS RD TO LELMDAL, 345KV 53155 CHAMSPR7 345 to 53176 LELMDAL7 345 CKT1	670	670	New Summer Emergency Rating 275MVA 12.7% Increase			N/A	N/A
* 06SP	AEPW-AEPW	WALLACE LAKE TO SOUTH SHREVEPORT, 138KV 53461 WALLAKE4 138 to 53465 S SHV 4 138 CKT 1	209	92.4	106.4	92.4	106.4	DOLET HILLS 345/230KV TRANSFORMER 50045 DOLHILL7 345 to 50046 DOLHILL6 230 CKT1	670	670	Dolet Hills Operating Guide Monitor Line at 260MVA 24.4% Increase			N/A	N/A
06SP	AEPW-AEPW	SCROGNS TO FERDALE LAKE TAP, 69KV 53316 SCROGNS269.0 to 53531 FERNDTP269.0 CKT 1	96	87.9	89.0	87.9	89.0	NORTH MINEOLA TO LAKE HAWKINS, 138KV 53581 NMINEOL4 138 to 53666 LHAWKIN4 138 CKT1	670	670	New Summer Emergency Rating 96MVA 12.9% Increase			N/A	N/A
06SP	EMDE-SWPA	LARUSSEL TO SPRINGFIELD, 161KV 59479 LAR382 5 161 to 52692 SPRGFLD5 161 CKT 1	167	97.3	101.9	98.9	103.6	LARUSSELL TO MONETT, 161KV 59479 LAR382 5 161 to 59480 MON383 5 161 CKT1	397	155	#26 SWPA: Replace 3 600A disconnect switches with 1200A at Springfield. Planned to upgrade in 2007 by SWPA.	60,000	60,000	189	13.2%
* 06SP	GRRD-GRRD	PENSACOLA TO GRAY TAP, 69KV 54428 PENZA 269.0 to 54465 GRAY TP269.0 CKT 1	47	99.2	100.5	99.2	100.5	COWSKIN 138/69KV TRANSFORMER 54517 COWSKIN 69.0 to 54519 COWSKIN 138 CKT1	399	401	See Previous Upgrade #7			112	138.3%
06SP	EMDE-EMDE	MONETT TO AURORA HT, 161KV 59480 MON383 5 161 to 59468 AUR124 5 161 CKT 1	157	96.1	102.1	96.4	102.3	LARUSSELL TO MONETT, 161KV 59479 LAR382 5 161 to 59480 MON383 5 161 CKT1	670	670	Reconductor project in progress by EMDE. To be completed by 12/31/2002.			N/A	N/A
* 06SP	OKGE-OKGE	TINKER #4 TO TINKER #2, 138KV 54990 TINKER24 138 to 54988 TINKER44 138 CKT 1	100	95.9	102.1	95.9	102.1	OAK CREEK TO GM, 138KV 54960 OAKCRK 4 138 to 54961 GM 4 138 CKT1	670	670	Not a valid Overload.			N/A	N/A
* 06SP	OKGE-OKGE	HELBURG 161/69KV TRANSFORMER 55325 HELBERG269.0 to 55327 HELBERG5 161 CKT 1	134	96.1	101.8	96.1	101.8	CLARKSVILLE TO OZARK, 161KV 52714 CLARKSV5 161 to 52716 OZARK H5 161 CKT1	670	670	Construct 69kV line from Short Mountain to Prairie View in 2005 at OGE's expense.			N/A	N/A

Table 1- Overloads with New ATC  
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Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	Without 345/161kV Transformer		With 345/161kV Transformer		Outaged Branch That Caused Overload	Without 345/161kV Transformer	With 345/161kV Transformer	Solution	Estimated Cost Without 345/161kV Transformer	Estimated Cost With 345/161kV Transformer	New Rating	% Increase In Rating
				BC %Loading	TC %Loading	BC %Loading	TC %Loading		ATC (MW)	ATC (MW)					
* 06SP	WERE-WERE	GILL ENERGY CENTER EAST TO OATVILLE, 69KV 57795 GILL E 269.0 to 57825 OATVILL269.0 CKT 1	72	99.7	100.1	99.9	100.3	CANAL TO RUTAN, 69KV 57784 CANAL. 269.0 to 57838 RUTAN 269.0 CKT1	460	206	#27 Replace disconnect switches at Gill 69 kV (use 800 A.). Replace line switch at Oatville 69 kV (use 800 A.).	45,000	45,000	80	11.1%
06SP	AEPW-AEPW	WINNSBORO TO SCROGNS, 69KV 53336 WINNSBO269.0 to 53316 SCROGNS269.0 CKT 1	72	98.3	100.5	98.3	100.4	PERDUE TO LAKE HAWKINS, 138KV 53590 PERDUE 4 138 to 53666 LHAWKIN4 138 CKT1	526	543	#28 Replace switches, 350 CU jumpers, & reset relays @ Winnsboro	80,000	80,000	96	33.3%
* 06SP	WFEC-OKGE	FRANKLIN SWITCH TO MIDWEST TAP, 138KV 55917 FRNKLNS4 138 to 54946 MIDWEST4 138 CKT 1	215	96.9	100.8	96.8	100.7	WELEETKA TO PHAROAH, 138KV 52792 WELEETK4 138 to 56026 PHAROAH4 138 CKT1	530	557	#29 WFEC: Replace 600A metering CTs with 1200A.	55,000	55,000	287	33.5%
06SP	OKGE-OKGE	PECAN CREEK 345/161KV TRANSFORMER 55235 PECANCK7 345 to 55234 PECANCK5 161 CKT 1	369	94.3	101.3	94.3	101.3	CLARKSVILLE TO MUSKOGEE, 345KV 53756 CLARKSV7 345 to 55224 MUSKOGEE7 345 CKT1	544	544	See Previous Upgrade #3			N/A	N/A
* 06SP	OKGE-OKGE	PARK LANE TO SEMINOLE, 138KV 55178 PARKLN 4 138 to 55044 SEMINOL4 138 CKT 1	287	97.5	100.5	97.5	100.5	SUNNYSIDE 345/138KV TRANSFORMER 55135 SUNNYSID4 138 to 55136 SUNNYSID7 345 CKT1	552	559	#30 Replace 1200Ct and 1600 Amp switch with 2000Amp equipment	100,000	100,000	478	66.6%
* 06SP	SWPA-SWPA	MUSKOGEE TAP TO GORE, 161KV 52758 MUSKTAP5 161 to 52752 GORE 5 161 CKT 1	206	87.0	100.9	87.1	101.0	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	627	622	#31 Reconnector 16 miles of 477 ACSR line with 795 ACSR	4,000,000	4,000,000	223	8.3%
* 06SP	AEPW-AEPW	S TEXARKANA REC TO TEXARKANA PLANT,69KV 53189 STXREC269.0 to 53329 TEXARK 269.0 CKT 1	72	78.2	82.2	78.1	82.1	ATLANTA TO WEST ATLANTA, 69KV 53248 ATLANTA269.0 to 53333 WATLANT269.0 CKT1	670	670	New Summer Emergency Rating 72MVA 22% Increase			N/A	N/A
06SP	AEPW-CELE	WALLACE LAKE TO INTERNATIONAL PAPER, 138KV 53461 WALLAKE4 138 to 50090 IPAPER 4 138 CKT 1	209	84.5	100.7	84.5	100.7	DOLET HILLS 345/230KV TRANSFORMER 50045 DOLHILL7 345 to 50046 DOLHILL6 230 CKT1	670	670	Dolet Hills Operating Guide Monitor Line at 260MVA 24.4% Increase			N/A	N/A
06SP	GRRD-OKGE	TAHLEQUAH TO HIGHWAY 59, 161KV 54455 TAHLOH 5 161 to 55347 HWY59 5 161 CKT 1	167	80.7	100.6	80.7	100.6	MUSKOGEE TO FORT SMITH, 345KV 55224 MUSKOGEE7 345 to 55302 FTSMITH7 345 CKT1	650	648	#33 OKGE: Remove switches #130 and #132 to increase rating from 600A to conductor limit of 662 Amps for Rate B and replace structures.	30,000	30,000	184	10.2%
Total Estimated Cost of Known Solutions												19,520,500	19,520,500		

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	Without 345/161kV Transformer		With 345/161kV Transformer		Outaged Branch That Caused Overload	Without 345/161kV Transformer	With 345/161kV Transformer	Assignment	Solution	Estimated Cost Without 345/161kV Transformer	Estimated Cost With 345/161kV Transformer	New Rating	% Increase In Rating
				BC %Loading	TC %Loading	BC %Loading	TC %Loading		ATC (MW)	ATC (MW)						
03G	AEPW-AEPW	IPC JEFFERSON TO LIEBERMAN, 138KV 53548 IPCJEFF4 138 to 53420 LIEBERM4 138 CKT 1	143	87.4	101.9	87.4	101.9	LONGWOOD TO WILKES, 345KV 53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1	581	581	Upgrade Modeled was Assigned to SPP-2000-086 150680 Upgrades Required By PRG Due To Rating Updates	#1 Reconductor 26.35 miles of 336 ACSR with 795 ACSR & Replace Switches @ Lieberman	7,232,000	7,232,000	163	14.0%
04SP	KACP-KACP	LA CYGNE TO STILWELL, 345KV 57981 LACYGNE7 to 57968 STILWEL7 CKT 1	1251	110.2	113.8	93.7	96.9	WEST GARDNER TO LA CYGNE, 345KV 57965 W.GRDNR7 345 to 57981 LACYGNE7 345 CKT1	0	670	SPP Flowgate	#2 Add Second LaCygne-Stilwell 345KV line and add LaCygne and Stilwell Terminals	17,000,000	6,000,000	N/A	N/A
04SP	AEPW-AEPW	LONGWOOD TO NORAM, 138KV 53423 LONGWD 4 to 53473 NORAM 4	265	89.3	93.6	89.3	93.6	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	670		New Summer Emergency Rating 265MVA 13.2% Increase			N/A	N/A
* 04SP	SWPA-SWPA	BUFORD TAP TO BULL SHOALS, 161KV 52661 BUFDRTP5 161 to 52660 BULL SH5 161 CKT 1	167	103.3	114.7	103.7	115.1	BULL SHOALS TO MIDWAY, 161KV 52660 BULL SH5 161 to 99825 SMIDWAY# 161 CKT 1	0	0		#3 Replace three 600A switches @ Bull Shoals w/ 1200 A switches. Resag conductor and replace structures as necessary.	150,000	150,000	223	33.5%
04SP	AEPW-AEPW	NORAM TO RAINES, 138KV 53473 NORAM 4 to 53439 RAINES 4 1	265	87.9	92.2	87.9	92.2	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	670		New Summer Emergency Rating 265MVA 13.2% Increase			N/A	N/A
04SP	AEPW-AEPW	IPC JEFFERSON TO LIEBERMAN, 138KV 53548 IPCJEFF4 138 to 53420 LIEBERM4 138 CKT 1	143	92.9	106.1	92.8	106.0	LONGWOOD TO WILKES, 345KV 53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1	360	365	Upgrade Modeled was Assigned to SPP-2000-086 150680 Upgrades Required By PRG Due To Rating Updates	See Previous Upgrade #1			163	14.0%
* 04SP	KACP-KACP	WEST GARDNER TO LA CYGNE, 345KV 57965 W.GRDNR7 345 to 57981 LACYGNE7 345 CKT1	1251	98.3	101.5	82.3	85.0	LA CYGNE TO STILWELL, 345KV 57981 LACYGNE7 to 57968 STILWEL7 CKT 1	361	670		See Previous Upgrade #2			N/A	N/A
* 04SP	SWPA-SWPA	NORFORK TO BUFORD TAP, 161KV 52648 NORFORK5 161 to 52661 BUFDRTP5 161 CKT 1	189	90.2	100.3	90.6	100.6	BULL SHOALS TO MIDWAY, 161KV 52660 BULL SH5 161 to 99825 SMIDWAY# 161 CKT 1	652	630		#4 Resag conductor and replace structures as necessary.	250,000	250,000	223	18.0%
04SP	AEPW-AEPW	TATUM TO ROCKHILL, 138KV 53611 TATUM 4 138 to 53598 ROKHILL4 138 CKT 1	235	92.7	99.1	92.7	99.0	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	670	Upgrade Modeled was Assigned to SPP-2000-086 150680 Upgrades Required By PRG Due To Rating Updates				N/A	N/A
04SP	AEPW-AEPW	CHEROKEE REC TO KNOX LEE, 138KV 53522 CHEROKE4 138 to 53557 KNOXLEE4 138 CKT 1	235	99.5	105.9	99.5	105.9	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	48	48	Upgrade Modeled was Assigned to SPP-2000-086 150680 Upgrades Required By PRG Due To Rating Updates	#5 Reconductor 3.25 miles of 666 ACSR with 1272 ACSR.	981,000	981,000	287	18.0%
04SP	AEPW-AEPW	CHEROKEE REC TO TATUM, 138KV 53522 CHEROKE4 138 to 53611 TATUM 4 138 CKT 1	235	94.3	100.7	94.3	100.7	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	600	600	Upgrade Modeled was Assigned to SPP-2000-086 150680 Upgrades Required By PRG Due To Rating Updates	#6 Reconductor 6.25 miles of 666 ACSR with 1272 ACSR.	1,641,000	1,641,000	287	18.0%
04WP	KACP-KACP	LA CYGNE TO STILWELL, 345KV 57981 LACYGNE7 to 57968 STILWEL7 CKT 1	1315	98.9	102.3	85.2	88.3	WEST GARDNER TO LA CYGNE, 345KV 57965 W.GRDNR7 345 to 57981 LACYGNE7 345 CKT1	216	670	SPP Flowgate	See Previous Upgrade #2			N/A	N/A
06SP	KACP-KACP	LA CYGNE TO STILWELL, 345KV 57981 LACYGNE7 to 57968 STILWEL7 CKT 1	1251	105.5	109.0	92.1	95.2	WEST GARDNER TO LA CYGNE, 345KV 57965 W.GRDNR7 345 to 57981 LACYGNE7 345 CKT1	0	670	SPP Flowgate	See Previous Upgrade #2			N/A	N/A
06SP	AEPW-AEPW	LONGWOOD TO NORAM, 138KV 53423 LONGWD 4 to 53473 NORAM 4	265	93.0	97.4	93.0	97.4	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	670		New Summer Emergency Rating 265MVA 13.2% Increase			N/A	N/A
06SP	AEPW-AEPW	NORAM TO RAINES, 138KV 53473 NORAM 4 to 53439 RAINES 4 1	265	91.6	96.0	91.6	96.0	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	670		New Summer Emergency Rating 265MVA 13.2% Increase			N/A	N/A
* 06SP	SWPA-SWPA	BUFORD TAP TO BULL SHOALS, 161KV 52661 BUFDRTP5 161 to 52660 BULL SH5 161 CKT 1	167	110.9	122.4	111.2	122.7	BULL SHOALS TO MIDWAY, 161KV 52660 BULL SH5 161 to 99825 SMIDWAY# 161 CKT 1	0	0		See Previous Upgrade #3			223	33.5%
* 06SP	SWPA-SWPA	NORFORK TO BUFORD TAP, 161KV 52648 NORFORK5 161 to 52661 BUFDRTP5 161 CKT 1	189	96.9	107.0	97.2	107.3	BULL SHOALS TO MIDWAY, 161KV 52660 BULL SH5 161 to 99825 SMIDWAY# 161 CKT 1	205	186		See Previous Upgrade #4			223	18.0%
06SP	AEPW-AEPW	IPC JEFFERSON TO LIEBERMAN, 138KV 53548 IPCJEFF4 138 to 53420 LIEBERM4 138 CKT 1	143	95.6	108.9	95.5	108.8	LONGWOOD TO WILKES, 345KV 53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1	222	226	Upgrade Modeled was Assigned to SPP-2000-086 150680 Upgrades Required By PRG Due To Rating Updates	See Previous Upgrade #1			163	14.0%
06SP	AEPW-AEPW	TATUM TO ROCKHILL, 138KV 53611 TATUM 4 138 to 53598 ROKHILL4 138 CKT 1	235	94.3	101.0	94.3	100.9	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	571	575	Upgrade Modeled was Assigned to SPP-2000-086 150680 Upgrades Required By PRG Due To Rating Updates	#7 Reconductor 0.81 miles of 666 ACSR with 1272 ACSR & Reset CTs @ Rock Hill	344,970	344,970	267	18.0%

Table 3 -Overloads with New ATC  
B-108-Transformer-Addition.xls

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	Without 345/161kV Transformer		With 345/161kV Transformer		Outaged Branch That Caused Overload	Without 345/161kV Transformer		Assignment	Solution	Estimated Cost Without 345/161kV Transformer	Estimated Cost With 345/161kV Transformer	New Rating	% Increase In Rating
				BC %Loading	TC %Loading	BC %Loading	TC %Loading		ATC (MW)	ATC (MW)						
06SP	AEPW-AEPW	CHEROKEE REC TO KNOX LEE, 138KV 53522 CHEROKEE4 138 to 53557 KNOXLEE4 138 CKT 1	235	101.4	108.0	101.4	108.0	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	0	0	Upgrade Modeled was Assigned to SPP-2000-086 150680 Upgrades Required By PRG Due To Rating Updates	See Previous Upgrade #5			287	18.0%
06SP	AEPW-AEPW	CHEROKEE REC TO TATUM, 138KV 53522 CHEROKEE4 138 to 53611 TATUM 4 138 CKT 1	235	96.0	102.6	96.0	102.6	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	404	404	Upgrade Modeled was Assigned to SPP-2000-086 150680 Upgrades Required By PRG Due To Rating Updates	See Previous Upgrade #6			287	18.0%
Total Estimated Costs of Known Solutions													27,598,970	16,598,970		



Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC % Loading (Without 345/161kV Transformer)	TC % Loading (Without 345/161kV Transformer)	BC % Loading (With 345/161kV Transformer)	TC % Loading (With 345/161kV Transformer)	Outaged Branch Causing Overload	ATC (MW)	Solution	Estimated Cost
04SP	KCPL-KCPL	NEW TRANSFORMER TO PAOLA 58200 TRANS1 161 58069 PAOLA 5 161 1	335	N/A	N/A	102.5	106.3	STILWELL TO LA CYGNE, 345KV 57968 STILWEL7345 TO 57981 LACYGNE7345 CKT 1	0	Reconductor 11.75 miles	3,172,500.00
04SP	KCPL-KCPL	CENTENNIAL TO PAOLA, 161KV 58067 CENTENL5 161 58069 PAOLA 5 161 1	174	40.6	44.2	138.6	144.5	STILWELL TO LA CYGNE, 345KV 57968 STILWEL7345 TO 57981 LACYGNE7345 CKT 1	0	Reconductor 2.8 miles	756,000.00
04SP	KCPL-KCPL	NEW TRANSFORMER 345/161KV 58200 TRANS1 161 58201 TRANS2 345 1	400	N/A	N/A	103.1	105.5	STILWELL TO LA CYGNE, 345KV 57968 STILWEL7345 TO 57981 LACYGNE7345 CKT 1	0		
06SP	KCPL-KCPL	BUCYRUS5 TO STILWELL, 161KV 57 BUCYRUS5 161 to 57969 STILWEL5 161 CKT 1	224	42.3	43.9	98.9	102.2	STILWELL TO LA CYGNE, 345KV 57968 STILWEL7 345 to 57981 LACYGNE7 345 CKT1	223	Reconductor 3.9 miles	1,053,000.00