



SPP *Southwest Power Pool*

*System Impact Study
For Transmission Service
Requested By
Constellation Power Source, Inc.*

*From Central and South West
Services To Entergy*

*For Reserved Amounts Of 250MW
From 12/1/02
To 12/1/04*

SPP Transmission Planning

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1. Executive Summary

Constellation Power Source, Inc. has requested a system impact study for long-term Firm Point-to-Point transmission service from Central and South West Services to Entergy. The period of the transaction is from 12/1/02 to 12/1/04. The request is for two reservations OASIS numbers 194656 and 194657, totaling 250 MW.

The principal objective of this study is to identify system problems and potential system modifications necessary to facilitate the additional 250 MW transfer while maintaining system reliability. The analysis in this document shows that to accommodate an additional 250 MW transfer, upgrades will be required on the SPP transmission systems.

Prior to conducting the study for the 250MW request, SPP studied a 290MW transfer, System Impact Study SPP-2000-011, with the same POR POD and with the Source in the North East Texas region. The customer's acceptance of the facilities identified in study SPP-2000-011 affects what facilities will be assigned to Constellation Power Source, Inc. and subsequently the System Impact Study of the 250MW transfer will need to be reevaluated. The facilities identified in study SPP-2000-011 and the associated costs are listed in Table 4.

The new overloads caused by the 250MW transfer are listed in Table 1, Table 2, and Table 3. Constellation Power Source, Inc. will be assigned the facilities listed in Table 1 and possibly the facilities listed in Table 5 with the assumption that the facilities listed in Table 4 are accepted.

The SPP and effected member companies shall use due diligence to coordinate the addition of necessary facilities or transmission system upgrades to provide the requested transmission service. Constellation Power Source, Inc. is to compensate SPP for such costs pursuant to the terms of section 27 of the SPP Open Access Transmission Tariff. Expedited procedures for new facilities are available to Central and South West Services per section 19.8 of the SPP Open Access Transmission Service Tariff.

Engineering and construction of any new facilities or modifications will not start until after a transmission service agreement and/or construction agreement is in place and effected member companies receives the appropriate authorization to proceed from the SPP after they receive authorization from the transmission customer.

2. Introduction

Constellation Power Source, Inc. has requested an impact study for transmission service from CSWS control area with a sink of EES.

The principal objective of this study is to identify the restraints on the SPP Regional Tariff System that may limit the transfer to less than 250 MW. This study includes two steady-state contingency analyses (PSS/E function ACCC) and Available Transfer Capability (ATC) analyses.

The steady-state analyses consider the impact of the 250 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.

ATC analyses shows the amount of First Contingency Incremental Transfer Capabilities (FCITC) between the given study systems and what the limitations are, if any, for transferring up to 250 MW.

3. Study Methodology

A. Description

Two analyses were conducted to determine the impact of the 250MW transfer on the system. The first analysis was conducted to identify any new overloads caused by the 250MW transfer. The second analysis was done to ensure that available capacity exists on previously identified circuits that have been assigned to higher priority customers.

The first analysis was done using two steps. The first step was to study the steady-state analysis impact of the 250MW 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 ATC study portion was done using the requirements specified in the current SPP Criteria related to determination of ATC.

The second analysis was done to ensure that capacity exists on previously identified facilities, such as the facilities found in study SPP-2000-011, between CSWS and EES, during the transaction period.

B. Model Updates

SPP used three seasonal models to study the 250MW request. The SPP 2000 Series Cases 2001 April (Spring Minimum), 2004 Summer Peak, and 2004/05 Winter Peak were used to study the impact of the 250MW transfer on the SPP system during the transaction period of 12/01/02 to 12/1/04.

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 2000 base case series models. The added future firm transfers include the 290MW transfer previously mentioned. The 2001 April minimum case was further modified to include planned 230KV lines and above listed in the SPP EIA-411. The Constellation Units, facilities, and 250MW transfer were then added to the three base case models to produce the 250MW transfer cases.

The Base and Transfer case Power Flow models developed are assumed a proxy of the system at the beginning of service 12/1/02.

C. Transfer Analysis

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

4. Study Results

A. Study Analysis Results

Tables 1, 2, and 3 contain the analysis results of the System Impact Study. The tables identify the seasonal case in which the event occurred; the emergency rating of the overloaded circuit (Rate B), the loading percentage of circuit, the determined ATC value if calculated, any SPP identification or assignment of the event, and any solutions received from the transmission owners.

Table 1 shows the new overload events caused by the 250MW transfer. These new valid overloads can be directly assigned to the Constellation CSWS to EES 250MW transfer.

Table 2 contains overloads caused initially by higher priority reservations and are overloaded by subsequent contingencies with the addition of the 250MW transfer. Possible assignment of the overloads to the Constellation Requests (#194656,194657) depends on the future acceptance of facility upgrade costs by Transmission Customers of higher priority reservations. The facilities in question are the Cherokee to Knox Lee 138KV line and the Cherokee to Tatum 138KV line. The reconductoring of both lines was assigned to the SPP-2000-011 study (Table 4). The assignment of these upgrade costs to Request #194656,194657 will be determined by the existence of future service agreements and reevaluation of the Constellation Requests.

Table 3 documents overloads on Non SPP Regional Tariff participants' transmission systems caused by the 250MW transfer. The table reports the worst contingency overload. No ATC values were calculated for the events.

B. Existing Overload's Available Capacity

Table 4 lists the facilities assigned to study SPP-2000-011. Again, the assignment of these upgrade costs to the CPS Request will be determined by the existence of future service agreements and the completion of a facility study. The table includes the facility, the required facility upgrade, the estimated cost, and the date the facility is needed for the SPP-2000-011 290MW study.

If the facilities listed in Table 4 are accepted by the customer, the previously identified facilities need to be monitored with the upgraded rating to ensure the new rating is not exceeded. SPP has identified three facilities that may need additional capacity to provide the CSWS to EES 250MW transfer. The three facilities are listed in Table 5. The table includes the facility, the contingency, the existing rating, the upgraded rating, , and the transfer case MVA loading.

Table 1 – Overloads caused by the 250MW transfer that have not been previously assigned.

Study Year	Load flow case description / (opened branch(es))	OVERLOADED BRANCH(ES)	From - To	Rate B <MVA>	%LOADING	ATC	ASSIGNMENT
01AP	DOLET HILLS 345/230KV XFRM 50045 [DOLHILL7] TO 50046 [DOLHILL6] CKT 1	INTERNATIONAL PAPER to WALLACE LAKE 138KV 50090 IPAPER 4 138 53461 WALLAKE4 138 1	CELE-CESW	236	107.8	63	New Overload
04SP	DOLET HILLS 345/230KV XFRM 50045 [DOLHILL7] TO 50046 [DOLHILL6] CKT 1	INTERNATIONAL PAPER to WALLACE LAKE 138KV 50090 IPAPER 4 138 53461 WALLAKE4 138 1	CELE-CESW	209	101.6	215	New Overload
04SP	ARKANSAS NUCLEAR ONE to MABELVALE EHV 500KV 17632 [8ANO] TO 17701 [8MABEL] CKT 1	BULL SHOALS to MIDWAY AEC 161KV 52660 BULL SH5 161 17875 5MIDWAY# 161 1	SWPA-EES	162	100.2	215	New Overload
04SP	MAYFLOWER to P HILL 500KV 17707 [8MAYFL] TO 17935 [8P HILL] CKT 1	BULL SHOALS to MIDWAY AEC 161KV 52660 BULL SH5 161 17875 5MIDWAY# 161 1	SWPA-EES	162	100.5	170	New Overload
04SP	KEO to WEST MEMPHIS EHV 500KV 17758 [8KEO] TO 17842 [8WM-EHV] CKT 1	BULL SHOALS to MIDWAY AEC 161KV 52660 BULL SH5 161 17875 5MIDWAY# 161 1	SWPA-EES	162	101.1	33	New Overload
04SP	WALNUT RIDGE to BLACK ROCK 161KV 17839 [5WALNUT] TO 17848 [5BLKRK#] CKT 1	BULL SHOALS to MIDWAY AEC 161KV 52660 BULL SH5 161 17875 5MIDWAY# 161 1	SWPA-EES	162	100.6	131	New Overload
04SP	FORT SMITH to ARKANSAS NUCLEAR ONE 500KV 55305 [FTSMI8] TO 17632 [8ANO] CKT 1	BULL SHOALS to MIDWAY AEC 161KV 52660 BULL SH5 161 17875 5MIDWAY# 161 1	SWPA-EES	162	100.1	235	New Overload
04SP	FRANKS to SALEM 345KV 96041 [7FRANKS] TO 96047 [7SALEM] CKT 1	BULL SHOALS to MIDWAY AEC 161KV 52660 BULL SH5 161 17875 5MIDWAY# 161 1	SWPA-EES	162	100.1	245	New Overload
04SP	ELDORADO-EHV 500/345KV XFRM 17529 [7ELDEHV] TO 17530 [8ELDEHV] CKT 1	PATTERSON to SOUTH NASHVILLE 138KV 53306 PATTERS4 138 53321 SNASHVL4 138 1	CESW-CESW	105	105.0	148	New Overload
04SP	LONGWOOD to ELDORADO-EHV 345KV 53424 [LONGWD 7] TO 17529 [7ELDEHV] CKT 1	PATTERSON to SOUTH NASHVILLE 138KV 53306 PATTERS4 138 53321 SNASHVL4 138 1	CESW-CESW	105	105.2	146	New Overload
04SP	DOLET HILLS 345/230KV XFRM 50045 [DOLHILL7] TO 50046 [DOLHILL6] CKT 1	HOPE to PATMOS WEST SS 115KV 53383 HOPE 3 115 17537 3PATMOS# 115 1	CESW-EES	174	106.5	119	New Overload
04SP	LYDIA to VALIANT 345KV 53277 [LYDIA 7] TO 54037 [VALIANT7] CKT 1	HOPE to PATMOS WEST SS 115KV 53383 HOPE 3 115 17537 3PATMOS# 115 1	CESW-EES	174	105.8	143	New Overload
04SP	PITTSBURGH to VALIANT 345KV 54033 [PITTSB-7] TO 54037 [VALIANT7] CKT 1	HOPE to PATMOS WEST SS 115KV 53383 HOPE 3 115 17537 3PATMOS# 115 1	CESW-EES	174	100.8	236	New Overload
04SP	LONGWOOD to WILKES 345KV 53424 [LONGWD 7] TO 53620 [WILKES 7] CKT 1	HOPE to PATMOS WEST SS 115KV 53383 HOPE 3 115 17537 3PATMOS# 115 1	CESW-EES	174	107.7	86	New Overload

Table 1 continued – Overloads caused by the 250MW transfer that have not been previously assigned.

Study Year	Load flow case description / (opened branch(es))	OVERLOADED BRANCH(ES)	From - To	Rate B <MVA>	%LOADING	ATC	ASSIGNMENT
04SP	CROCKETT to TENASKA 345KV 53526 [CROCKET7] TO 54061 [TENASKA7] CKT 1	HOPE to PATMOS WEST SS 115KV 53383 HOPE 3 115 17537 3PATMOS# 115 1	CESW-EES	174	111.4	25	New Overload
04SP	MUSKOGEE to FORT SMITH 345KV 55224 [MSKGE7] TO 55302 [FTSMI7] CKT 1	HOPE to PATMOS WEST SS 115KV 53383 HOPE 3 115 17537 3PATMOS# 115 1	CESW-EES	174	101.1	225	New Overload
04SP	SOUTH SHREVEPORT to WALLACE LAKE 138KV 53446 [S SHV 4] TO 53461 [WALLAKE4] CKT 1	FORBING TAP to SOUTH SHREVEPORT 69KV 53406 FORBNGT269.0 53445 S SHV 269.0 1	CESW-CESW	95	102.4	109	New Overload
04SP	DOLET HILLS 345/230KV XFRM 50045 [DOLHILL7] TO 50046 [DOLHILL6] CKT 1	SOUTH SHREVEPORT to WALLACE LAKE 138KV 53446 S SHV 4 138 53461 WALLAKE4 138 1	CESW-CESW	209	107.6	57	New Overload
04SP	SUB 383-MONETT 161/69KV XFRM 59480 [MON383 5] TO 59591 [MON383 2] CKT 1	DIAMOND JCT. to SARCOXIE SOUTHWEST 69KV 59538 DIA131 269.0 59582 SAR362T269.0 1	EMDE-EMDE	38	100.3	104	New Overload
04WP	ELDORADO-EHV 500/345KV XFRM 17529 [7ELDEHV] TO 17530 [8ELDEHV] CKT 1	PATTERSON to SOUTH NASHVILLE 138KV 53306 PATTERS4 138 53321 SNASHVL4 138 1	CESW-CESW	105	102.4	202	New Overload
04WP	LONGWOOD to ELDORADO-EHV 345KV 53424 [LONGWD 7] TO 17529 [7ELDEHV] CKT 1	PATTERSON to SOUTH NASHVILLE 138KV 53306 PATTERS4 138 53321 SNASHVL4 138 1	CESW-CESW	105	102.3	199	New Overload
04WP	ELDORADO-EHV 500/345KV XFRM 17529 [7ELDEHV] TO 17530 [8ELDEHV] CKT 1	HOPE to PATMOS WEST SS 115KV 53383 HOPE 3 115 17537 3PATMOS# 115 1	CESW-EES	197	111.0	46	New Overload
04WP	LONGWOOD to ELDORADO-EHV 345KV 53424 [LONGWD 7] TO 17529 [7ELDEHV] CKT 1	HOPE to PATMOS WEST SS 115KV 53383 HOPE 3 115 17537 3PATMOS# 115 1	CESW-EES	197	111.0	43	New Overload

Table 2 – Overloads caused by 250MW transfer that have been assigned to previous customers.

Study Year	Opened branch(es)	OVERLOADED BRANCH	From - To	Rate B <MVA>	%LOADING	ATC	ASSIGNMENT/SOLUTION
01AP		NONE					
04SP	52680 [BEAVER 5] TO 52686 [NEO SPA5] CKT 1	52690 CARTHG 269.0 96649 2JASPER 69.0 1	SWPA-AECI	36	100.2	206	2000-003 01SP / CHANGE CT'S RATIO SETTINGS
04SP	17758 [8KEO] TO 17842 [8WM-EHV] CKT 1	52690 CARTHG 269.0 96649 2JASPER 69.0 1	SWPA-AECI	36	100.1	248	"
04SP	59468 [AURL24 5] TO 59499 [CPK446 5] CKT 1	52690 CARTHG 269.0 96649 2JASPER 69.0 1	SWPA-AECI	36	100.2	184	"
04SP	59969 [BRKLINE 5] TO 96101 [5MORGAN] CKT 1	52690 CARTHG 269.0 96649 2JASPER 69.0 1	SWPA-AECI	36	100.5	63	"
04SP	53277 [LYDIA 7] TO 54037 [VALIANT7] CKT 1	53522 CHEROKE4 138 53557 KNOXLEE4 138 1	CESW-CESW	209	101.9	142	2000-011 01SP / Reconductor 3.25 miles of 666 ACSR with 1272 ACSR \$720,000
04SP	50045 [DOLHILL7] TO 53469 [RRPORT 7] CKT 1	53522 CHEROKE4 138 53557 KNOXLEE4 138 1	CESW-CESW	209	100.3	232	"
04SP	53277 [LYDIA 7] TO 53615 [WELSH 7] CKT 1	53522 CHEROKE4 138 53557 KNOXLEE4 138 1	CESW-CESW	209	100.8	204	"
04SP	53444 [RRPORT 4] TO 53469 [RRPORT 7] CKT 1	53522 CHEROKE4 138 53557 KNOXLEE4 138 1	CESW-CESW	209	100.3	232	"
04SP	53448 [SPRIDGE4] TO 53455 [SW SHVT4] CKT 1	53522 CHEROKE4 138 53557 KNOXLEE4 138 1	CESW-CESW	209	100.8	163	"
04SP	53453 [SW SHV 4] TO 53454 [SW SHV 7] CKT 1	53522 CHEROKE4 138 53557 KNOXLEE4 138 1	CESW-CESW	209	103.1	20	"
04SP	53453 [SW SHV 4] TO 53454 [SW SHV 7] CKT 2	53522 CHEROKE4 138 53557 KNOXLEE4 138 1	CESW-CESW	209	102.6	59	"
04SP	53453 [SW SHV 4] TO 53455 [SW SHVT4] CKT 1	53522 CHEROKE4 138 53557 KNOXLEE4 138 1	CESW-CESW	209	102.5	61	"
04SP	53453 [SW SHV 4] TO 53464 [WESTELT4] CKT 1	53522 CHEROKE4 138 53557 KNOXLEE4 138 1	CESW-CESW	209	103.1	14	"
04SP	53542 [HARRISN4] TO 53561 [LIBCYTP4] CKT 1	53522 CHEROKE4 138 53557 KNOXLEE4 138 1	CESW-CESW	209	102.6	54	"
04SP	53545 [HNDRSNR2] TO 53595 [POYNTER2] CKT 1	53522 CHEROKE4 138 53557 KNOXLEE4 138 1	CESW-CESW	209	101.4	156	"
04SP	53549 [JACKSNV4] TO 53588 [OVERTON4] CKT 1	53522 CHEROKE4 138 53557 KNOXLEE4 138 1	CESW-CESW	209	102.3	83	"
04SP	53555 [KILGORR4] TO 53560 [LEVERET4] CKT 1	53522 CHEROKE4 138 53557 KNOXLEE4 138 1	CESW-CESW	209	101.0	176	"
04SP	53555 [KILGORR4] TO 53574 [MONROCR4] CKT 1	53522 CHEROKE4 138 53557 KNOXLEE4 138 1	CESW-CESW	209	101.3	159	"
04SP	53556 [KNOXLEE2] TO 53557 [KNOXLEE4] CKT 1	53522 CHEROKE4 138 53557 KNOXLEE4 138 1	CESW-CESW	209	100.2	240	"
04SP	53556 [KNOXLEE2] TO 53604 [SELONGV2] CKT 1	53522 CHEROKE4 138 53557 KNOXLEE4 138 1	CESW-CESW	209	100.1	246	"
04SP	53557 [KNOXLEE4] TO 53574 [MONROCR4] CKT 1	53522 CHEROKE4 138 53557 KNOXLEE4 138 1	CESW-CESW	209	101.5	141	"
04SP	53557 [KNOXLEE4] TO 53586 [OAK2HIL4] CKT 1	53522 CHEROKE4 138 53557 KNOXLEE4 138 1	CESW-CESW	209	102.8	45	"
04SP	53560 [LEVERET4] TO 53588 [OVERTON4] CKT 1	53522 CHEROKE4 138 53557 KNOXLEE4 138 1	CESW-CESW	209	100.9	189	"

SPP IMPACT STUDY (#SPP-2000-043)

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Table 2 continued– Overloads caused by 250MW transfer that have been previously assigned to customers.

Study Year	Opened branch(es)	OVERLOADED BRANCH	From - To	Rate B <MVA>	%LOADING	ATC	ASSIGNMENT/SOLUTION
04SP	53561 [LIBCYTP4] TO 53576 [NEWGLAD4] CKT 1	53522 CHEROKE4 138 53557 KNOXLEE4 138 1	CESW-CESW	209	102.4	66	"
04SP	53576 [NEWGLAD4] TO 53590 [PERDUE 4] CKT 1	53522 CHEROKE4 138 53557 KNOXLEE4 138 1	CESW-CESW	209	101.9	106	"
04SP	53584 [NWHENDR4] TO 53585 [OAK1HIL4] CKT 1	53522 CHEROKE4 138 53557 KNOXLEE4 138 1	CESW-CESW	209	102.6	59	"
04SP	53585 [OAK1HIL4] TO 53586 [OAK2HIL4] CKT 1	53522 CHEROKE4 138 53557 KNOXLEE4 138 1	CESW-CESW	209	102.8	46	"
	Multiple Outage Contingency						
	53277 [LYDIA 7] TO 54037 [VALIANT7] CKT 1						
	53277 [LYDIA 7] TO 53301 [NWTXARK7] CKT 1						
04SP	53277 [LYDIA 7] TO 53615 [WELSH 7] CKT 1	53522 CHEROKE4 138 53557 KNOXLEE4 138 1	CESW-CESW	209	103.1	75	"
							2000-011 01SP / Reconnector 6.25 miles of 666 ACSR with 1272 ACSR \$1,300,000
04SP	53571 [MARSHL-4] TO 53592 [PIRKEY 4] CKT 1	53522 CHEROKE4 138 53611 TATUM 4 138 1	CESW-CESW	209	101.7	139	"
04SP	53592 [PIRKEY 4] TO 53602 [SABMINT4] CKT 1	53522 CHEROKE4 138 53611 TATUM 4 138 1	CESW-CESW	209	101.3	170	"
04SP	53602 [SABMINT4] TO 53605 [SEMRSHL4] CKT 1	53522 CHEROKE4 138 53611 TATUM 4 138 1	CESW-CESW	209	100.8	200	"
							1999-015 05SP / BASE CASE MITIGATION PLAN IN EFFECT
04SP	52690 [CARTHG 2] TO 96649 [2JASPER] CKT 1	59468 AUR124 5 161 59480 MON383 5 161 1	EMDE-EMDE	157	100.3	176	"
04SP	53140 [FLINTCR7] TO 54450 [GRDA1 7] CKT 1	59468 AUR124 5 161 59480 MON383 5 161 1	EMDE-EMDE	157	100.1	207	"
04SP	55305 [FTSMI8] TO 17632 [8ANO] CKT 1	59468 AUR124 5 161 59480 MON383 5 161 1	EMDE-EMDE	157	100.4	184	"
04SP	59489 [BRN413 5] TO 59497 [RVS438 5] CKT 1	59468 AUR124 5 161 59480 MON383 5 161 1	EMDE-EMDE	157	100.6	91	"
							2000-003 01SP / CHANGE CT'S RATIO SETTINGS
04WP	56756 [NEOSHO 7] TO 96045 [7MORGAN] CKT 1	52690 CARTHG 269.0 96649 2JASPER 69.0 1	SWPA-AECI	43	100.3	165	"
04WP	52692 [SPRGFLD5] TO 59479 [LAR382 5] CKT 1	52690 CARTHG 269.0 96751 2REEDS 69.0 1	SWPA-AECI	43	100.2	190	"
04WP	59499 [CPK446 5] TO 59618 [CPK446 2] CKT 1	52690 CARTHG 269.0 96751 2REEDS 69.0 1	SWPA-AECI	43	100.1	238	"
04WP	55224 [MSKGE7] TO 55302 [FTSMI7] CKT 1	54448 MAID 5 161 54455 TAHLQH 5 161 1	GRRD-GRRD	148	100.6	140	2000-004 01SP / TAKEN OUT BY GRDA

Table 3 – Summary of the overloads caused by the 250MW transfer owned by Non SPP Tariff Participants

Study Year	Opened branch	OVERLOADED BRANCH	From - To	Rate B <MVA>	%LOADING
01AP	53424 [LONGWD 7] TO 17529 [7ELDEHV] CKT 1	16528 4L558T48 138 16532 4HUNTSVL 138 1	EES-EES	206	107.4
01AP	53424 [LONGWD 7] TO 17529 [7ELDEHV] CKT 1	16528 4L558T48 138 16534 4MT.ZION 138 1	EES-EES	206	109.1
01AP	17445 [8MTOLIV] TO 17530 [8ELDEHV] CKT 1	16534 4MT.ZION 138 16556 4GRIMES 138 1	EES-EES	206	104.7
01AP	16555 [7GRIMES] TO 16556 [4GRIMES] CKT 1	16555 7GRIMES 345 16556 4GRIMES 138 2	EES-EES	525	103.0
01AP	50023 [CARROLL6] TO 50126 [MESSICK6] CKT 1	17450 3RINGLD 115 17451 3SAILES 115 1	EES-EES	115	102.1
01AP	53424 [LONGWD 7] TO 17529 [7ELDEHV] CKT 1	17607 3MURF-S 115 17609 4MURFRE 138 1	EES-EES	60	103.4
04SP	53526 [CROCKET7] TO 16555 [7GRIMES] CKT 1	16618 4NEWTONB 138 16657 4LEACH 138 1	EES-EES	144.6	103.8
04SP	53526 [CROCKET7] TO 16555 [7GRIMES] CKT 1	16657 4LEACH 138 16677 4TOLEDO 138 1	EES-EES	144.6	105.4
04SP	17528 [3ELDEHV] TO 17530 [8ELDEHV] CKT 1	17430 3STERL 115 17480 3CROS-N 115 1	EES-EES	80	100.6
04SP	50023 [CARROLL6] TO 50126 [MESSICK6] CKT 1	17450 3RINGLD 115 17451 3SAILES 115 1	EES-EES	115	102.2
04SP	53526 [CROCKET7] TO 54061 [TENASKA7] CKT 1	17478 3COUCH 115 17502 3LEWIS # 115 1	EES-EES	159	110.0
04SP	53277 [LYDIA 7] TO 54037 [VALIANT7] CKT 1	17502 3LEWIS # 115 17537 3PATMOS# 115 1	EES-EES	159	113.2
04SP	53277 [LYDIA 7] TO 54037 [VALIANT7] CKT 1	17607 3MURF-S 115 17609 4MURFRE 138 1	EES-EES	60	108.2
04SP	50023 [CARROLL6] TO 50126 [MESSICK6] CKT 1	50024 CARROLL4 138 17450 3RINGLD 115 1	CELE-EES	125	103.4
04SP	17398 [6WINFLD] TO 17401 [6MONTGY] CKT 1	50057 FISHER 4 138 17400 3FISHER 115 1	CELE-EES	83	101.6
04WP	17196 [6BATESV] TO 17197 [3BATESV] CKT 1	17182 3NESBT* 115 17183 3HRNADO 115 1	EES-EES	108	100.2
04WP	17329 [8B.WLSN] TO 17432 [8STERL] CKT 1	17430 3STERL 115 17480 3CROS-N 115 1	EES-EES	80	100.9
04WP	50023 [CARROLL6] TO 50126 [MESSICK6] CKT 1	17450 3RINGLD 115 17451 3SAILES 115 1	EES-EES	115	100.9
04WP	53526 [CROCKET7] TO 16555 [7GRIMES] CKT 1	17478 3COUCH 115 17502 3LEWIS # 115 1	EES-EES	159	110.1
04WP	53277 [LYDIA 7] TO 54037 [VALIANT7] CKT 1	17502 3LEWIS # 115 17537 3PATMOS# 115 1	EES-EES	159	113.0
04WP	53454 [SW SHV 7] TO 53528 [DIANA 7] CKT 1	17607 3MURF-S 115 17609 4MURFRE 138 1	EES-EES	60	107.4

Table 4 – Facilities previously assigned to study SPP-2000-011

Upgraded Facility Name	Upgraded Component Within Facility	Transmission Owner	Estimated Cost	Date Required
ALUMAX TAP-BANN, 138KV	Reconductor 0.67 miles of 1024 ACAR with 1590 ACSR.	CESW	233,000	6/1/04
PATTERSON - ASHDOWN REC 115KV	Patterson Switch Replacement, 600A To 1200A	CESW	20,000	4/1/01
CHEROKEE REC-KNOX LEE, 138 KV	Reconductor 3.25 miles of 666 ACSR with 1272 ACSR.	CESW	720,000	6/1/01
CHEROKEE REC-TATUM, 138 KV	Reconductor 6.25 miles of 666 ACSR with 1272 ACSR	CESW	1,300,000	6/1/01
DYESS TO CHAMSPR5 161KV	Reconductor 18.73 miles of 666 ACSR with 1590 ACSR	CESW	4,700,000	6/1/04
EAST CENTERTON-GENTRY REC, 161 KV	E.Centernton 161kV Breaker & Switch Replacements, Gentry Tap 161kV Line Switch Replacement	CESW	167,960	6/1/04
GREGGTON-LAKE LAMOND, 69KV	Reconductor 2.66 miles of 755 ACAR with 1272 ACSR	CESW	1,400,000	6/1/04
HAWKINS TO HAWKINS REC 69KV	Reconductor 1.00 mile of 477 ACSR with 795 ACSR	CESW	375,000	6/1/04
JACKSONVILLE -PINE GROVE, 138KV	Reset 300/5 CTs at Jacksonville to 400/5	CESW	1,000	4/1/01
LIEBERMAN-IPC JEFFERSON, 138 KV	Replace 4/0 jumpers to switches & Wavetrap at Lieberman	CESW	10,000	6/1/01
NORTHWEST HENDERSON-POYNTER, 69KV	Replace 4/0 jumpers and bus at Poynter	CESW	45,700	6/1/01
NORTHWEST TEXARKANA TO PATTERSON 138KV	Reconductor 13.37 miles of 1024 ACAR with 1590 ACSR. Replace 1200A switches & brreaker @ Patterson, and replace wavetrap jumpers at both ends.	CESW	3,800,000	12/1/01
ROCK HILL TO TATUM 138KV	Reconductor 0.81 miles of 666 ACSR with 1272 ACSR. Replace 800A trap with new 2000A trap.	CESW	190,000	6/1/01
AURORA H.T.-MONETT, 161 KV	N/A	EDE	N/A	6/1/04
TIPTON FORD TO MONETT 161KV	Reconductor 30 miles of 336 ACSR with 795 MCM.	EDE	5,700,000	6/1/01
STILWELL-LACYGNE, 345 KV	Reconductor to 1192 MCM ACSR	KACP	14,700,000	6/1/01

Table 4 continued – Facilities assigned to study SPP-2000-011

Upgraded Facility Name	Upgraded Component Within Facility	Transmission Owner	Estimated Cost	Date Required
BEAVER TO EUREKA SPRINGS 161KV	SWPA Cost-Reconnect CT's to 1000:5 Tap on Bkrs 42, 32, & half or 22. Replace metering & reset relays for Line 2 & Line 3	SWPA,CESW	22,500	6/1/01
"	CESW Cost-Reconductor 1.25 miles of 795 ACSR with 1590 ACSR (CSW owns 1.25 of 7.22 miles of the line)	"	515,000	"
GORE TO MUSKOGEE TAP 161KV	Disconnect Switch#71, 73, &77 Replacement Complete	SWPA	N/A	6/1/01
VAN BUREN TO ROBERT S. KERR 161KV	Replace 161-kV Disconnect Switches 31,33,35,&37 with 1200A Switches	SWPA	105,000	6/1/04
DYESS TO EAST ROGERS 161KV	Reconductor with 1590MCM	CESW	4,000,000	6/1/01
FLINK CREEK TO GENTRY 161KV	Replace Switch	CESW	60,000	6/1/04

Table 5 – Previously identified and upgraded Facilities needing additional capacity

Opened Branch	Overloaded Branch	Existing Rating A <MVA>	Existing Rating B <MVA>	Upgraded Rating A <MVA>	Upgraded Rating B <MVA>	Transfer Case Loading <MVA>
LONGWOOD TO WILKES 345KV 53424 LONGWD 7 345 TO 53620 WILKES 7 345 CKT 1	LIEBERMAN TO IPC JEFFERSON 138 KV 53420 LIEBERM4 138 53548 IPCJEFF4 138 1	97.0	115.0	117.0	134.0	158.815
DYESS TO EAST ROGERS 161 KV 53131 DYESS 5 161 TO 53135 EROGERS5 161 CKT 1	EAST CENTERTON TO GENTRY REC 161 KV 53133 ECNTRTN5 161 53187 GENTRYR5 161 1	305.0	335.0	305.0	353.0	366.8
DYESS TO EAST ROGERS 161 KV 53131 DYESS 5 161 TO 53135 EROGERS5 161 CKT 1	FLINT CREEK TO GENTRY 161KV 53139 FLINTCR5 161 53187 GENTRYR5 161 1	304.0	335.0	Not Available	Not Available	370.1

5. Conclusion

The results of the study show that before the 250MW transfer can take place system improvements will need to be completed. The facilities identified in Table 1 will be required before the start of service to maintain system reliability with the assumption that the facilities listed in Table 4 are accepted by the previous customer. Constellation Power Source, Inc. (CPS) may also be subject to the facilities needing additional upgrades, listed in Table 5.

The final assignment of facilities to CPS will be determined by the existence of future service agreements and upon the completion of an agreed upon 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 automatically
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 –1.0
2. Contingency case rating – Rate B
3. Percent of rating – 100
4. Output code – Summary
5. Min flow change in overload report – 1mw
6. Excl'd cases w/ no overloads form report – YES
7. Exclude interfaces from report – NO
8. Perform voltage limit check – YES
9. Elements in available capacity table – 60000
10. Cutoff threshold for available capacity table – 99999.0
11. Min. contng. case Vltg chng for report – 0.02
12. Sorted output – None

Newton Solution:

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