



***System Impact Study SPP-2002-159  
For Transmission Service  
Requested By  
Cargill – Alliant***

***From KCPL To ERCOTN***

***For a Reserved Amount Of 50 MW  
From 1/1/03  
To 1/1/04***

***&***

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

***SPP Coordinated Planning***

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## **1. Executive Summary**

Cargill – Alliant (CRGL) has requested a system impact study for long-term Firm Point-to-Point transmission service from KCPL to ERCOTN. The request is for reservation 395822 for 50 MW from 1/1/2003 to 1/1/2004 and reservation 395832 for 50 MW from 11/1/2002 to 11/1/2003.

The principal objective of this study is to identify system problems and potential system modifications necessary to facilitate the two 50 MW transfers while maintaining system reliability. Analysis was conducted for the requested service periods above and for the remaining planning horizons from 1/1/04 to 4/1/09 and 11/1/03 to 4/1/09. The additional evaluation of the planning horizons was conducted to determine any future constraints that may limit the renewal of service. The transfers were studied together in cases where they overlapped.

New overloads caused by the 100 MW transfer were identified along with determining the impact of the transfer on any previously assigned and identified facilities.

The KCPL to ERCOTN 50 MW transfers cause new facility overloads on the SPP transmission system, as well as increasing the loading on previously assigned and identified facilities. Table 3 lists the previously assigned and identified facilities impacted by the 50 MW transfers. Facilities found in Table 3 limit the ATC to zero during the requested service periods. The Westar North American Philips Junction (South) to West McPherson 115 kV line Circuit 1 for the outage of the East McPherson to Summit 230 kV line limits the ATC to zero in the 2002 Fall and 2002/03 Winter months. The facility cannot be relieved through system upgrades until 11/1/03; therefore, the requests will be refused.

## **2. Introduction**

Cargill – Alliant (CRGL) has requested a system impact study for long-term Firm Point-to-Point transmission service from KCPL to ERCOTN.

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 100 MW. This study includes steady-state contingency analyses (PSS/E function ACCC) and Available Transfer Capability (ATC) analyses for the requested service period and the remaining planning horizon.

The steady-state analyses consider the impact of the 100 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 remaining planning horizon was studied to identify any constraints that may restrict the renewal of service.

### **3. Study Methodology**

#### **A. Description**

Two analyses were conducted to determine the impact of the 100 MW transfer on the system. The first analysis was conducted to identify any new overloads caused by the 100 MW transfer. The second analysis was done to ensure that available capacity exists on previously identified circuits. Both analyses were performed on the models available for the requested service periods and all remaining models available from the 2002-planning horizon.

The first analysis was to study the steady-state analysis impact of the 100 MW transfer on the SPP system. The second step was to study Available Transfer Capability (ATC) of the facilities identified in the steady-state analysis impact. The steady-state analysis was done to ensure current SPP Criteria and NERC Planning Standards requirements are fulfilled. The Southwest Power Pool (SPP) conforms to the NERC Planning Standards, which provide the strictest requirements, related to thermal overloads with a contingency. It requires that all facilities be within emergency ratings after a contingency.

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

#### **B. Model Updates**

SPP used twelve seasonal models to study the KCPL to ERCOTN 50 MW transfers for their requested service periods and the remaining planning horizon. The SPP 2002 Series Cases 2002 Fall Peak, 2002/03 Winter Peak, 2003 April Minimum, 2003 Spring Peak, 2003 Summer Peak, 2003 Fall Peak, and 2003/04 Winter Peak were used to study the impact of a 50 MW transfers on the SPP system during the requested service periods of 1/1/03 to 1/1/04 and 11/1/02 to 11/1/03. The SPP 2002 Series Cases 2003/04 Winter Peak, 2004 Spring Peak, 2005 Summer Peak, 2005/06 Winter Peak, 2008 Summer Peak, and 2008/09 Winter Peak were used to study the impact of the 50 MW transfers on the SPP system during the remaining planning horizons from 1/1/04 to 4/1/09 and 11/1/03 to 4/1/09. The Spring Peak models apply to April and May, the Summer Peak models apply to June through September, the Fall Peak models apply to October and November, and the Winter Peak models apply to December through March.

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

#### **C. Transfer Analysis**

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

## **4. Study Results**

### **A. Study Analysis Results**

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

Table 1 shows the new SPP facility overloads caused by the 100 MW transfer. Available solutions are given in the table.

Table 2 documents overloads on Non SPP Regional Tariff participants' transmission systems caused by the 100 MW transfer.

Table 3 documents the 100 MW transfer impact on previously assigned and identified SPP facilities. Available solutions are given in the table.

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

Note: For the 2002 Fall Peak only 50 MW was evaluated.

**Table 1** – SPP Facility Overloads caused by the KCPL to ERCOTN 100 MW Transfer

Study Year	From Area To Area	Branch Over 100% RateB	RATE B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	ATC	Comments
02FA		NONE					50	
02WP		NONE					100	
03AP		NONE					100	
03G		NONE					100	
03SP		NONE					100	
03FA		NONE					100	
03WP		NONE					100	
04G		NONE					100	
05SP	WERE-WERE	Weaver - Rose Hill JCT. 69kV	43	99.2	101.8	El Paso - Farber 138 kV	100	Westar Transmission Operating Directive 1104
05WP		NONE					100	
08SP	WFEC-OKGE	Franklin Switch - Midwest Tap 138KV	215	99.9	100.4	Hollywood - Midwest Tap 138 kV	27	Replace 600A metering CTs with 1200A
08SP	WFEC-WFEC	Carter Jct - Dill Jct 69 kV	26	99.6	100.2	Pine Ridge - Washita 69 kV	65	Solution Undetermined
08WP		NONE					100	

Note: For 2002 Fall Peak only 50 MW was evaluated.

**Table 2** – Non - SPP Facility Overloads caused by the KCPL to ERCOTN 100 MW Transfer

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload
02FA	AMRN-AMRN	31221 MOBERLY 161 to 31222 MOBERLY 69.0 CKT 1	75	100.0	100.1	31436 PALMYRA 345 to 31437 PALMYRA 161 CKT 1 & 31435 PALM TAP345 to 64408 SUB T 3345 CKT 1
02WP		NONE				
03AP		NONE				
03G	AMRN-AMRN	31221 MOBERLY 161 to 31409 OVERTON 161 CKT 1	142	99.7	100.3	96044 7MCCRED 345 to 96049 7THOMHL 345 CKT 1 & 96043 7KINGDM 345 to 96044 7MCCRED 345 CKT 1
03SP		NONE				
03FA		NONE				
03WP	AMRN-AMRN	31408 OVERTON 345 to 31409 OVERTON 161 CKT 1	300	99.8	100.2	96120 5THMHIL 161 to 96126 5MOBTAP 161 CKT1
03WP	NPPD-NPPD	64895 MCCOOK 869.0 to 64894 MCCOOK 7 115 CKT 2	28	99.8	100.2	64894 MCCOOK 7 115 to 64895 MCCOOK 869.0 CKT1
04G		NONE				
05SP	AECI-AECI	96120 5THMHIL 161 to 96172 2TMHILL 69.0 CKT 1	84	99.8	100.1	96044 7MCCRED 345 to 96049 7THOMHL 345 CKT 1 & 96043 7KINGDM 345 to 96044 7MCCRED 345 CKT 1
05WP	NPPD-NPPD	64895 MCCOOK 869.0 to 64894 MCCOOK 7 115 CKT 1	28	99.7	100.1	64894 MCCOOK 7 115 to 64895 MCCOOK 869.0 CKT2
08SP	AECI-AECI	96071 5CLINTN 161 to 96108 5OSCEOL 161 CKT 1	123	97.5	100.1	30957 LKSID 1138 to 31024 MARIES 138 CKT 1 & 30154 BLAND 345 to 96041 7FRANKS 345 CKT 1
08SP	AECI-AECI	96108 5OSCEOL 161 to 96811 2OSCEOL 69.0 CKT 1	56	98.7	101.2	52698 STOCKTN5 161 to 96108 5OSCEOL 161 CKT1
08SP	EES-EES	98107 8RICHARD 500 to 98430 8WEBRE 500 CKT 1	1732	100.0	100.2	50009 BVISTA 4 138 to 50206 WAXLAKE4 138 CKT1
08SP	EES-EES	98107 8RICHARD 500 to 98430 8WEBRE 500 CKT 1	1732	99.9	100.1	50070 FRONTST6 230 to 98652 6MICH 230 CKT1
08SP	NPPD-NPPD	64755 BROKENB7 115 to 64884 LOUPCTY7 115 CKT 1	92	99.0	100.2	64893 MAXWELL7 115 to 64910 N.PLATT7 115 CKT1
08SP	AECI-AECI	96108 5OSCEOL 161 to 96071 5CLINTN 161 CKT 1	123	97.8	100.9	56793 NEOSHO 7 345 to 57981 LACYGNE7 345 CKT1
08WP		NONE				

Note: For 2002 Fall Peak only 50 MW was evaluated.



**Table 3** – Previously Assigned and Identified SPP Facilities Impacted by the KCPL to ERCOTN 100 MW Transfer

Study Year	From Area To Area	Branch Over 100% RateB	RATE B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	ATC	Comments
02FA	WFEC-WFEC	Acme - West Norman 69 kV	38	104.6	105.2	Canadian Switch 138/69KV Transformer	0	Solution Undetermined
02FA	WERE-WERE	North American Philips Junction (South) - West McPherson 115 kV CKT 1	68	102.6	103.8	East McPherson - Summit 230 kV	0	Reconductor 26 Miles with 266.8 ACSR
02FA	WERE-WERE	Exide Junction - Summit 115 KV	181	103.4	103.9	East McPherson - Summit 230 kV	0	Upgrade Not Modeled Assigned to SPP-1999-017 Est. In-Service Date 12/1/03
02FA	WERE-WERE	Auburn Road - Keene 115 kV CKT 1	68	105.4	105.9	East Manhattan - Jeffrey Energy Center 230 kV	50	Westar Transmission Operating Directive 900
02WP	WFEC-WFEC	Acme - West Norman 69 kV	38	122.5	123.5	Canadian Switch 138/69KV Transformer	0	Solution Undetermined
02WP	WERE-WERE	North American Philips Junction (South) - West McPherson 115 kV CKT 1	68	101.9	104.2	East McPherson - Summit 230 kV	0	See Previous
02WP	WFEC-WFEC	Goldsby- Oklahoma University Sw 69 kV	34	99.0	100.1	Acme - West Norman 69 kV	89	Solution Undetermined
03AP		NONE					100	
03G	WFEC-WFEC	Acme - West Norman 69 kV	38	101.7	102.7	Canadian Switch 138/69KV Transformer	0	Solution Undetermined
03G	WERE-WERE	Exide Junction - Summit 115 KV	181	99.0	100.2	East McPherson - Summit 230 kV	84	Upgrade Not Modeled Assigned to SPP-1999-017 Est. In-Service Date 12/1/03
03G	WERE-WERE	Auburn Road - Keene 115 kV CKT 1	68	107.4	108.2	East Manhattan - Jeffrey Energy Center 230 kV	100	Westar Transmission Operating Directive 900
03G	WERE-WERE	Green - Coffey County No. 4 Vernon 69KV	45	102.7	103.7	Benton - Wolf Creek 345 kV	100	Westar Transmission Operating Directive 300 & 1304
03G	WERE-WERE	Green - Coffey County No. 4 Vernon 69KV	45	102.5	103.5	Rose Hill - Wolf Creek 345 kV	100	Westar Transmission Operating Directive 301 & 1304
03SP	WFEC-WFEC	Goldsby- Oklahoma University Sw 69 kV	34	111.0	112.1	Acme - West Norman 69 kV	0	Solution Undetermined
03SP	WFEC-WFEC	Acme - West Norman 69 kV	38	132.3	133.0	Canadian Switch 138/69KV Transformer	0	Solution Undetermined
03FA	WERE-WERE	Exide Junction - Summit 115 KV	181	103.6	104.8	East McPherson - Summit 230 kV	0	Upgrade Not Modeled Assigned to SPP-1999-017 Est. In-Service Date 12/1/03
03FA	WERE-WERE	North American Philips Junction (South) - West McPherson 115 kV CKT 1	68	97.5	102.9	East McPherson - Summit 230 kV	46	See Previous
03FA	WFEC-WFEC	Acme - West Norman 69 kV	38	99.5	100.5	Canadian Switch 138/69KV Transformer	51	Solution Undetermined
03FA	WERE-WERE	Auburn Road - Keene 115 kV CKT 1	68	100.6	101.5	East Manhattan - Jeffrey Energy Center 230 kV	100	Westar Transmission Operating Directive 900
03WP	WERE-WERE	North American Philips Junction (South) - West McPherson 115 kV CKT 1	68	99.8	102.2	East McPherson - Summit 230 kV	8	See Previous
03WP	WERE-WERE	Exide Junction - Summit 115 KV	181	99.4	100.5	East McPherson - Summit 230 kV	100	Upgrade Not Modeled Assigned to SPP-1999-017 Est. In-Service Date 12/1/03
03WP	WFEC-WFEC	Acme - West Norman 69 kV	38	119.4	120.3	Canadian Switch 138/69KV Transformer	0	Solution Undetermined
04G	WERE-WERE	Auburn Road - Keene 115 kV CKT 1	68	99.6	100.5	East Manhattan - Jeffrey Energy Center 230 kV	100	Westar Transmission Operating Directive 900
04G	WERE-WERE	Exide Junction - Summit 115 KV	181	99.4	100.6	East McPherson - Summit 230 kV	100	Upgrade Not Modeled Assigned to SPP-1999-017 Est. In-Service Date 12/1/03
04G	WERE-WERE	Green - Coffey County No. 4 Vernon 69KV	45	99.5	100.5	Benton - Wolf Creek 345 kV	100	Westar Transmission Operating Directive 300 & 1304
04G	WERE-WERE	Green - Coffey County No. 4 Vernon 69KV	45	99.4	100.4	Rose Hill - Wolf Creek 345 kV	100	Westar Transmission Operating Directive 301 & 1304
05SP		NONE					100	
05WP	WERE-WERE	North American Philips Junction (South) - West McPherson 115 kV CKT 1	68	101.7	104.3	East McPherson - Summit 230 kV	0	See Previous
08SP		NONE					100	
08WP		NONE					100	

Note: For 2002 Fall Peak only 50 MW was evaluated.

## **5. Conclusion**

The Westar North American Philips Junction (South) to West McPherson 115 kV line Circuit 1 for the outage of the East McPherson to Summit 230 kV line limits the ATC to zero in the 2002 Fall and 2002/03 Winter months. The facility cannot be relieved through system upgrades until 11/1/03; therefore, the requests will be refused.

## Appendix A

### PSS/E CHOICES IN RUNNING LOAD FLOW PROGRAM AND ACCC

#### BASE CASES:

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

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

#### ACCC CASES:

Solutions – AC contingency checking (ACCC)

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

#### Newton Solution:

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

## Appendix B

**Table 1a** – Model Data for SPP Facility Overloads caused by the KCPL to ERCOTN 100 MW Transfer

Study Year	From Area To Area	Branch Over 100% RateB	RATE B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	ATC	Comments
02FA		NONE					50	
02WP		NONE					100	
03AP		NONE					100	
03G		NONE					100	
03SP		NONE					100	
03FA		NONE					100	
03WP		NONE					100	
04G		NONE					100	
05SP	WERE-WERE	57604 WEAVER 269.0 to 57837 RH JCT 269.0 CKT 1	43	99.2	101.8	57039 ELPASO 4 138 to 57042 FARBER 4 138 CKT1	100	Westar Transmission Operating Directive 1104
05WP		NONE					100	
08SP	WFEC-OKGE	55917 FRNKLNS4 138 to 54946 MIDWEST4 138 CKT 1	215	99.9	100.4	54946 MIDWEST4 138 to 54953 HOLLYWD4 138 CKT1	27	Replace 600A metering CTs with 1200A
08SP	WFEC-WFEC	55876 DILL JT269.0 to 55846 CARTERJ269.0 CKT 1	26	99.6	100.2	56027 PINERDG269.0 to 56088 WASHITA269.0 CKT1	65	Solution Undetermined
08WP		NONE					100	

Note: For 2002 Fall Peak only 50 MW was evaluated.

**Table 3a** – Model Data for SPP Facility Overloads caused by the KCPL to ERCOTN 100 MW Transfer

Study Year	From Area To Area	Branch Over 100% RateB	RATE B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	ATC	Comments
02FA	WFEC-WFEC	56095 WNORMAN269.0 to 55802 ACME 269.0 CKT 1	38	104.6	105.2	55841 CANADNS269.0 to 55842 CANADNS4 138 CKT1	0	Solution Undetermined
02FA	WERE-WERE	57374 SPHILPJ3 115 to 57438 WMCIPHER3 115 CKT 1	68	102.6	103.8	56872 EMCIPHER6 230 to 56873 SUMMIT 6 230 CKT1	0	Reconductor 26 Miles with 266.8 ACSR
02FA	WERE-WERE	57381 SUMMIT 3 115 to 57368 EXIDE J3 115 CKT 1	181	103.4	103.9	56872 EMCIPHER6 230 to 56873 SUMMIT 6 230 CKT1	0	Upgrade Not Modeled Assigned to SPP-1999-017 Est. In-Service Date 12/1/03
02FA	WERE-WERE	57151 AUBURN 3 115 to 57167 KEENE 3 115 CKT 1	68	105.4	105.9	56852 JEC 6 230 to 56861 EMANHAT6 230 CKT1	50	Westar Transmission Operating Directive 900
02WP	WFEC-WFEC	56095 WNORMAN269.0 to 55802 ACME 269.0 CKT 1	38	122.5	123.5	55841 CANADNS269.0 to 55842 CANADNS4 138 CKT1	0	Solution Undetermined
02WP	WERE-WERE	57374 SPHILPJ3 115 to 57438 WMCIPHER3 115 CKT 1	68	101.9	104.2	56872 EMCIPHER6 230 to 56873 SUMMIT 6 230 CKT1	0	See Previous
02WP	WFEC-WFEC	55924 GOLDSBY269.0 to 56018 OU SW 269.0 CKT 1	34	99.0	100.1	55802 ACME 269.0 to 56095 WNORMAN269.0 CKT1	89	Solution Undetermined
03AP		NONE					100	
03G	WFEC-WFEC	56095 WNORMAN269.0 to 55802 ACME 269.0 CKT 1	38	101.7	102.7	55841 CANADNS269.0 to 55842 CANADNS4 138 CKT1	0	Solution Undetermined
03G	WERE-WERE	57381 SUMMIT 3 115 to 57368 EXIDE J3 115 CKT 1	181	99.0	100.2	56872 EMCIPHER6 230 to 56873 SUMMIT 6 230 CKT1	84	Upgrade Not Modeled Assigned to SPP-1999-017 Est. In-Service Date 12/1/03
03G	WERE-WERE	57151 AUBURN 3 115 to 57167 KEENE 3 115 CKT 1	68	107.4	108.2	56852 JEC 6 230 to 56861 EMANHAT6 230 CKT1	100	Westar Transmission Operating Directive 900
03G	WERE-WERE	57636 GREEN 269.0 to 57631 CC4VERN269.0 CKT 1	45	102.7	103.7	56791 BENTON 7 345 to 56797 WOLFCRK7 345 CKT1	100	Westar Transmission Operating Directive 300 & 1304
03G	WERE-WERE	57636 GREEN 269.0 to 57631 CC4VERN269.0 CKT 1	45	102.5	103.5	56794 ROSEHIL7 345 to 56797 WOLFCRK7 345 CKT1	100	Westar Transmission Operating Directive 301 & 1304
03SP	WFEC-WFEC	55924 GOLDSBY269.0 to 56018 OU SW 269.0 CKT 1	34	111.0	112.1	55802 ACME 269.0 to 56095 WNORMAN269.0 CKT1	0	Solution Undetermined
03SP	WFEC-WFEC	56095 WNORMAN269.0 to 55802 ACME 269.0 CKT 1	38	132.3	133.0	55841 CANADNS269.0 to 55842 CANADNS4 138 CKT1	0	Solution Undetermined
03FA	WERE-WERE	57368 EXIDE J3 115 to 57381 SUMMIT 3 115 CKT 1	181	103.6	104.8	56872 EMCIPHER6 230 to 56873 SUMMIT 6 230 CKT1	0	Upgrade Not Modeled Assigned to SPP-1999-017 Est. In-Service Date 12/1/03
03FA	WERE-WERE	57374 SPHILPJ3 115 to 57438 WMCIPHER3 115 CKT 1	68	97.5	102.9	56872 EMCIPHER6 230 to 56873 SUMMIT 6 230 CKT1	46	See Previous
03FA	WFEC-WFEC	56095 WNORMAN269.0 to 55802 ACME 269.0 CKT 1	38	99.5	100.5	55841 CANADNS269.0 to 55842 CANADNS4 138 CKT1	51	Solution Undetermined
03FA	WERE-WERE	57151 AUBURN 3 115 to 57167 KEENE 3 115 CKT 1	68	100.6	101.5	56852 JEC 6 230 to 56861 EMANHAT6 230 CKT1	100	Westar Transmission Operating Directive 900
03WP	WERE-WERE	57374 SPHILPJ3 115 to 57438 WMCIPHER3 115 CKT 1	68	99.8	102.2	56872 EMCIPHER6 230 to 56873 SUMMIT 6 230 CKT1	8	See Previous
03WP	WERE-WERE	57368 EXIDE J3 115 to 57381 SUMMIT 3 115 CKT 1	181	99.4	100.5	56872 EMCIPHER6 230 to 56873 SUMMIT 6 230 CKT1	100	Upgrade Not Modeled Assigned to SPP-1999-017 Est. In-Service Date 12/1/03
03WP	WFEC-WFEC	56095 WNORMAN269.0 to 55802 ACME 269.0 CKT 1	38	119.4	120.3	55841 CANADNS269.0 to 55842 CANADNS4 138 CKT1	0	Solution Undetermined
04G	WERE-WERE	57151 AUBURN 3 115 to 57167 KEENE 3 115 CKT 1	68	99.6	100.5	56852 JEC 6 230 to 56861 EMANHAT6 230 CKT1	100	Westar Transmission Operating Directive 900
04G	WERE-WERE	57381 SUMMIT 3 115 to 57368 EXIDE J3 115 CKT 1	181	99.4	100.6	56872 EMCIPHER6 230 to 56873 SUMMIT 6 230 CKT1	100	Upgrade Not Modeled Assigned to SPP-1999-017 Est. In-Service Date 12/1/03
04G	WERE-WERE	57636 GREEN 269.0 to 57631 CC4VERN269.0 CKT 1	45	99.5	100.5	56791 BENTON 7 345 to 56797 WOLFCRK7 345 CKT1	100	Westar Transmission Operating Directive 300 & 1304
04G	WERE-WERE	57636 GREEN 269.0 to 57631 CC4VERN269.0 CKT 1	45	99.4	100.4	56794 ROSEHIL7 345 to 56797 WOLFCRK7 345 CKT1	100	Westar Transmission Operating Directive 301 & 1304
05SP		NONE					100	
05WP	WERE-WERE	57374 SPHILPJ3 115 to 57438 WMCIPHER3 115 CKT 1	68	101.7	104.3	56872 EMCIPHER6 230 to 56873 SUMMIT 6 230 CKT1	0	See Previous
08SP		NONE					100	
08WP		NONE					100	

Note: For 2002 Fall Peak only 50 MW was evaluated.