



SPP *Southwest Power Pool*

***System Impact Study SPP-2001-120
For Transmission Service
Requested By
Utilicorp United Inc.***

From WPEK to EES

***For a Reserved Amount Of 50MW
From 6/1/01
To 9/1/01***

SPP Transmission Planning

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1. Executive Summary

Utilicorp has requested a system impact study for Monthly Firm transmission service from WPEK to EES. The period of the transaction is from 6/1/01 to 9/1/01. The request is for reservation 243678 for the amount of 50MW.

The 50MW transaction from WPEK to EES has a positive response on the Elk City 230/138kV transformer, Tuco to Oklaunion flowgate. The impact of this transfer on the Elk City 230/138kV transformer will cause an overload for the loss of the Tuco to Oklaunion, 345kV line during the time period of this request. To provide the ATC that is necessary for this transfer, the impact on this flowgate must be relieved.

It has been determined that there is not sufficient time available to complete any upgrades to the system that would relieve this flowgate.

Redispatch was looked at as an option to relieving the impact on the Elk City 230/138kV transformer, Tuco to Oklaunion flowgate caused by the 50MW transfer.

The Transmission Owners were given the opportunity to participate in the redispatch of their generation resources in order to relieve a system constraint caused by a transfer. Those companies owning units, which through increasing or decreasing generation will relieve the impact on the Elk City 230/138kV transformer, Tuco to Oklaunion flowgate, declined to participate in redispatching. There are no additional options available to relieve the impact on this flowgate caused by the 50MW WPEK to EES transfer.

2. Introduction

Tenaska has requested an impact study for transmission service from WPEK control area with a sink of EES.

The Elk City 230/138kV transformer, Tuco to Oklaunion flowgate has been identified as a limiting constraint for the WPEK to EES transfer. For this flowgate, the Elk City 230/138kV transformer is monitored during the loss of the Tuco to Oklaunion, 345kV line. It has been determined that the 50MW transfer from WPEK to EES will cause the Elk City 230/138kV transformer to overload should the loss of the Tuco to Oklaunion line occur.

There are no facility upgrades available to relieve this flowgate that can be completed in the time period available. This impact study reviews redispatch as an option to relieving the transmission restraint.

3. Study Methodology

A. Description

Southwest Power Pool used the NERC Generator Sensitivity Factor (GSF) Viewer to obtain possible unit pairings that would relieve the constraint. The GSF viewer calculates impacts on monitored facilities for all units above 20MW in the Eastern Interconnection. The Elk City 230/138kV transformer, Tuco to Oklaunion flowgate is included in the flowgate list.

B. Model Updates

The 2001 Southwest Power Pool Summer Peak model was used for the study. This model was updated to reflect the most current information available.

C. Transfer Analysis

Using the short-term calculator, the limiting constraint for the transfer is identified. The response factor of the transfer on that constraint is also determined.

4. Study Results

A. Study Analysis Results

NERC calculates shift factors on specified facilities for all generation units over 20MW in the Eastern Interconnection. NERC also provides a list of the Top 100 Relief pairs for a specified constraint. These generation shift factors were reviewed for impacts on the Elk City 230/138kV transformer, Tuco to Oklaunion flowgate for the redispatch assessment. SPP generators with both negative and positive impacts were available. Those with negative impacts would reduce transformer flows when unit output is increased. The generators with positive impacts would increase flows when unit output is increased and reduce flows when unit output is decreased. There are several redispatch options within SPP for pairing units with positive impacts to units with negative impacts.

The distribution factor on the Elk City 230/138kV transformer, Tuco to Oklaunion flowgate for the WPEK to EES transfer is 5.3%. A redispatch would be required to relieve the 2.7MW impact on the constraint under emergency conditions.

Table 1 documents the SPP generators top 40 relief pairs for the Elk City 230/138kV transformer, Tuco to Oklaunion flowgate.

Table 1: Top 40 Relief Pairs of SPP Generators

Source	Sink	Factor	Source	Sink	Factor	Source	Sink	Factor
WFEC_MORLND1 13.8_1	SPS_NICHL3 122.0_1	-64.4	WFEC_MORLND2 18.0_1	SPS_NICHL3 122.0_1	-64.4	WFEC_MORLND3 18.0_1	SPS_NICHL3 122.0_1	-64.4
WFEC_MORLND1 13.8_1	SPS_JONES21 21.0_1	-64.3	WFEC_MORLND2 18.0_1	SPS_JONES21 21.0_1	-64.3	WFEC_MORLND3 18.0_1	SPS_JONES21 21.0_1	-64.3
WFEC_MORLND1 13.8_1	SPS_JONES11 22.0_1	-64.3	WFEC_MORLND2 18.0_1	SPS_JONES11 22.0_1	-64.3	WFEC_MORLND3 18.0_1	SPS_JONES11 22.0_1	-64.3
WFEC_MORLND1 13.8_1	SPS_HARNG3 124.0_1	-64.3	WFEC_MORLND2 18.0_1	SPS_HARNG3 124.0_1	-64.3	WFEC_MORLND3 18.0_1	SPS_HARNG3 124.0_1	-64.3
WFEC_MORLND1 13.8_1	SPS_HARNG2 124.0_1	-64.3	WFEC_MORLND2 18.0_1	SPS_HARNG2 124.0_1	-64.3	WFEC_MORLND3 18.0_1	SPS_HARNG2 124.0_1	-64.3
WFEC_MORLND1 13.8_1	SPS_HARNG1 124.0_1	-64.3	WFEC_MORLND2 18.0_1	SPS_HARNG1 124.0_1	-64.3	WFEC_MORLND3 18.0_1	SPS_HARNG1 124.0_1	-64.3
WFEC_MORLND1 13.8_1	SPS_LP-BRND269.0_1	-64.3	WFEC_MORLND2 18.0_1	SPS_LP-BRND269.0_1	-64.3	WFEC_MORLND3 18.0_1	SPS_LP-BRND269.0_1	-64.3
WFEC_MORLND1 13.8_1	SPS_LP-HOLL269.0_1	-64.3	WFEC_MORLND2 18.0_1	SPS_LP-HOLL269.0_1	-64.3	WFEC_MORLND3 18.0_1	SPS_LP-HOLL269.0_1	-64.3
WFEC_MORLND1 13.8_1	SPS_LP-MACK269.0_2	-64.3	WFEC_MORLND2 18.0_1	SPS_LP-MACK269.0_2	-64.3	WFEC_MORLND3 18.0_1	SPS_LP-MACK269.0_2	-64.3
WFEC_MORLND1 13.8_1	SPS_LP-MACK269.0_1	-64.3	WFEC_MORLND2 18.0_1	SPS_LP-MACK269.0_1	-64.3	WFEC_MORLND3 18.0_1	SPS_LP-MACK269.0_1	-64.3
CSWS_SWS3-1PW24.0_1	SPS_NICHL3 122.0_1	-62.2	WFEC_ANADRK3 13.8_1	SPS_NICHL3 122.0_1	-62.2	WFEC_ANADRK4 13.8_1	SPS_NICHL3 122.0_1	-62.2
WFEC_ANADRK5 13.8_1	SPS_NICHL3 122.0_1	-62.2	WFEC_ANADRK6 13.8_1	SPS_NICHL3 122.0_1	-62.2	WFEC_ANADRK7 13.8_1	SPS_NICHL3 122.0_1	-62.2
WFEC_ANADRK8 13.8_1	SPS_NICHL3 122.0_1	-62.2	CSWS_SWS3-1PW24.0_1	SPS_JONES21 21.0_1	-62.1	WFEC_ANADRK3 13.8_1	SPS_JONES21 21.0_1	-62.1
WFEC_ANADRK4 13.8_1	SPS_JONES21 21.0_1	-62.1						

5. Conclusion

The Transmission Owners were given the opportunity to include their units for redispatch in order to provide relief on the flowgates impacted by a certain transaction. The participants owning units that would relieve the flowgate impacted by the 50MW WPEK to EES transfer declined to participate in the redispatch of those units. No other options are available to provide the capacity needed for the 50MW transfer. Therefore the request for monthly service from WPEK to EES must be refused due to the impact on the Elk City 230/138kV transformer, Tuco to Oklaunion flowgate.