



AFFECTED SYSTEM INTERCONNECTION FACILITIES STUDY REPORT

J1299

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By SPP Generator Interconnections Dept.

REVISION HISTORY

DATE OR VERSION NUMBER	AUTHOR	CHANGE DESCRIPTION
03/13/2023	SPP	Initial report issued.
05/08/2023	SPP	Final report issued.



Facility Study for Sikeston-Miner

Sikeston-Miner Transmission Line,
161kV, 342MVA Minimum Rating

March 13, 2023

Summary

At the request of Southwest Power Pool (SPP), Southwestern Power Administration (SWPA) performed the following Facility Study. This Facility Study is in regard to SPP request for increase to the facility rating of the existing Sikeston-Miner transmission line owned by Ameren. The existing FAC-008, facility rating for the Sikeston-Miner transmission line is 280MVA and 330MVA, for Summer and Spring/Fall Normal and Emergency ratings, respectively. The Winter Normal and Emergency rating is 335MVA. SPP is requesting upgrade to 342MVA.

1. Introduction

The SPP has requested a Facility Study for the purpose of upgrading the existing Sikeston-Miner transmission line for a facility rating of 342MVA due to the below listed contingency. In order to achieve a facility rating of 342MVA, 1226 amps, for the SWPA owned equipment located in bay 62 at SWPA's Sikeston Substation, three hand operated disconnect switches and three 161kV metering current transformers will need to be replaced. This upgrade is estimated to cost \$160,000.

Scenario	Monitored Facility	Rate Base (MVA)	Rate Cont (MVA)	Contingency Name	BC Cont Flow (MVA)	TC Cont Flow (MVA)	BC Loading (%)	TC Loading (%)
04ALL-26L0	Sikeston-Miner	280	333	40874 J1087 POI - 344847 5KELSO	<90%	341.5	<90%	102.57
04NR-26L0	Sikeston-Miner	280	333	40874 J1087 POI - 344847 5KELSO	<90%	341.5	<90%	102.57

Table 1: SPP Sikeston-Miner Transmission Line Contingency Requiring Upgrading

2. Existing Facilities Review

The existing Sikeston-Miner transmission line is limited at the Sikeston substation by 1200 amp disconnect switches and free-standing meter current transformers. The next limiting element is the transmission line.

	Summer Normal	Summer Emergency	Spring/Fall Normal	Spring/Fall Emergency	Winter Normal	Winter Emergency
Disconnect Switches (Amps)	1200	1200	1200	1200	1200	1200
Metering CTs (Amps)	1200	1200	1200	1200	1200	1200
Transmission Line (Amps)	1004	1194	1004	1194	1299	1482
MVA Rating (MVA)	280	333	280	333	335	335

Table 2: Existing Sikeston-Miner Transmission Line Rating and Limiting Elements

After the disconnect switches are replaced with 2,000 amp disconnect switches and the current transformers are replaced with 1200:5, TR: 2.0 current transformers, the table below shows the transmission line would then be the limiting element with the below MVA ratings, with the exception of the Winter Emergency rating is limited by the bus/jumpers. This upgrade will only result in an increase to the facility rating for the Winter Normal and Winter Emergency.

	Summer Normal	Summer Emergency	Spring/Fall Normal	Spring/Fall Emergency	Winter Normal	Winter Emergency
Disconnect Switches (Amps)	2000	2000	2000	2000	2000	2000
Metering CTs (Amps)	2400	2400	2400	2400	2400	2400
Bus/Jumpers (1590AAC)	1304	1304	1304	1304	1304	1304
Transmission Line (Amps)	1004	1194	1004	1194	1299	1482
MVA Rating (MVA)	280	333	280	333	362	363

Table 3: Future Sikeston-Miner Transmission Line Rating and Limiting Elements

3. Impact of Ameren Comstock Project

Ameren is currently in negotiations with SWPA to construct a new substation, Comstock, adjacent to SWPA's Sikeston Substation, which will include re-routing of the Ameren Sikeston-Miner transmission line to the new substation, resulting in the Sikeston-Miner transmission line becoming the Comstock-Miner transmission line. SWPA used SPP's DPP2019CENTRALBC04ALL-26L0 and DPP2019CENTRALTC04ALL-26L0 models to evaluate the impact of Ameren's Comstock substation addition. Ameren will own the Comstock substation and Southwestern believes that Comstock substation equipment will all be 2,000 amp rated or higher. Simulation with the above mentioned SPP models shows that the Comstock addition relieves SWPA's Sikeston substation of all thermal overloads for this contingency.

4. Required Facility Upgrades

In order to meet 342MVA for the above mentioned project, Southwestern will require the below listed funding.

Sikeston Disconnect Switch and Metering CT Upgrade	\$160,000	24 months
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