



***Facility Study for Generation
Interconnection Request
GEN – 2008 – 006***

***SPP Coordinated Planning
(#GEN-2008-006)***

March 2009

Summary

American Electric Power Southwest Transmission Planning (AEP) performed the following study at the request of the Southwest Power Pool (SPP) for SPP Generation Interconnection request Gen-2008-006. The request for interconnection was placed with SPP in accordance SPP's Open Access Transmission Tariff Attachment V, which covers new generation interconnections on SPP's transmission system.

Pursuant to the tariff, AEP was asked to perform a detailed Facility Study of the generation interconnection request to satisfy the Facility Study Agreement executed by the requesting customer and SPP.

***Generation Interconnection
Facilities Study***

For

GEN-2008-006

***American Electric Power
Southwest Transmission Planning***

October 2008

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Introduction

The Southwest Power Pool (SPP) has requested a Facility Study for interconnecting a 510 MW (summer rating) or 580 MW (winter rating) 2-on-1 combined cycle power plant in Caddo Parish, Louisiana. The plant consists of two combustion turbines (CTs) and one steam (ST) unit. Each CT is connected to the 138 kV bus with a 15/138 kV step-up transformer and the ST is connected to the 138 kV bus with an 18/138 kV step-up transformer. Each CT is rated 1/3 of the total capacity and the ST is rated 1/3 of the total capacity. The proposed in-service date is June 1, 2010.

The purpose of this study is to identify the facilities and their costs needed to interconnect the new generators with AEP's 138 kV transmission system. This facilities study is done in conjunction with SPP Feasibility and Impact Studies for Generation Interconnection Request GEN-2008-006.

The interconnection point for the new generation will be AEP's Arsenal Hill 138 kV substation. AEP will add a 138 kV breaker to the existing ring bus scheme to accommodate the new interconnection. AEP will also add a Control House to provide room for all metering, protection and SCADA systems needed for the interconnection.

A detailed description of all costs associated with the construction of this interconnection is shown in Table 1.

Interconnection Facilities (See Figures 1 and 2)

Arsenal Hill 138 kV Substation

A new 138 kV terminal will be added at Arsenal Hill substation for the generation interconnection. This terminal will consist of one 138 kV circuit breaker and associated equipment. The position where the new line to the generator connects to the 138 kV ring bus will require changing out one 138 kV breaker (breaker 4200) for thermal capacity. To accommodate the new 138 kV line to the generator, the Linwood 138 kV line will be reconnected to a new position on the ring bus. In addition, motor operators will be added to each 138 kV line switch and new 138 kV transmission line relays will be added to each remote terminal. A new Control House will be installed at Arsenal Hill to accommodate the required metering, protection and SCADA systems needed for the interconnection. See Figure 1 for details.

The design and construction of the new terminal at Arsenal Hill will meet all AEP specifications for stations. Bus work and disconnect switches will be designed to accommodate the loading requirements, and circuit breakers will be rated to ensure adequate load and fault interrupting capability. Metering equipment will be installed to monitor the plant output and will meet the required accuracy specifications. AEP will own, operate and maintain the station.

A short 138 kV line will be required to connect the new generation to the 138 kV ring bus. The cost for this new line is part of the generation costs and is not included in this Facility Study.

Short Circuit Fault Duty Evaluation

It is standard practice for AEP to recommend replacing a circuit breaker when the current through the breaker for a fault exceeds 100% of its interrupting rating with recloser de-rating applied, as determined by the ANSI/IEEE C37.5-1979, C37.010-1979 & C37.04-1979 breaker rating methods.

In the AEP system, two breakers (138 kV breaker 4980 at Arsenal Hill and 138 kV breaker 7260 at South Shreveport) were found to exceed their interrupting capability after the addition of the 580MW of generation and related facilities. The cost to replace these two breakers is included in the costs associated with the Gen-2008-006 interconnection.

Interconnection Costs

Listed below are the costs associated with interconnecting the 580 MW generation facility to the AEP transmission system.

SYSTEM IMPROVEMENT	COST (2008 DOLLARS)
New terminal at AEP's Arsenal Hill substation including one new breaker, all metering, protection, and SCADA. Replace Arsenal Hill breaker 4200 (Thermal Capacity). Replace Arsenal Hill breaker 4980 (Short Circuit). Add motor operator to all 138 kV line switches. All new 138 kV breakers will be rated 3000 A, 63 KA.	\$3,718,577
Reconnect Arsenal Hill to Linwood 138 kV line at Arsenal Hill.	\$522,419
Replace South Shreveport breaker 7260 (Short Circuit). The new 138 kV breaker will be rated 3000 A, 63 KA.	\$285,823
Replace the 138 kV line relay at Lieberman on the Arsenal Hill circuit.	\$348,520
Replace the 138 kV line relay at Linwood on the Arsenal Hill circuit.	\$348,520
Replace the 138 kV line relay at Longwood on the Arsenal Hill circuit.	\$300,420
Replace the 138 kV line relay at Ft. Humbug on the Arsenal Hill circuit.	\$360,520
Replace the 138 kV line relay at Trichel on the Arsenal Hill circuit.	\$360,520
TRANSMISSION INTERCONNECTION FACILITY TOTAL COSTS	\$6,245,319

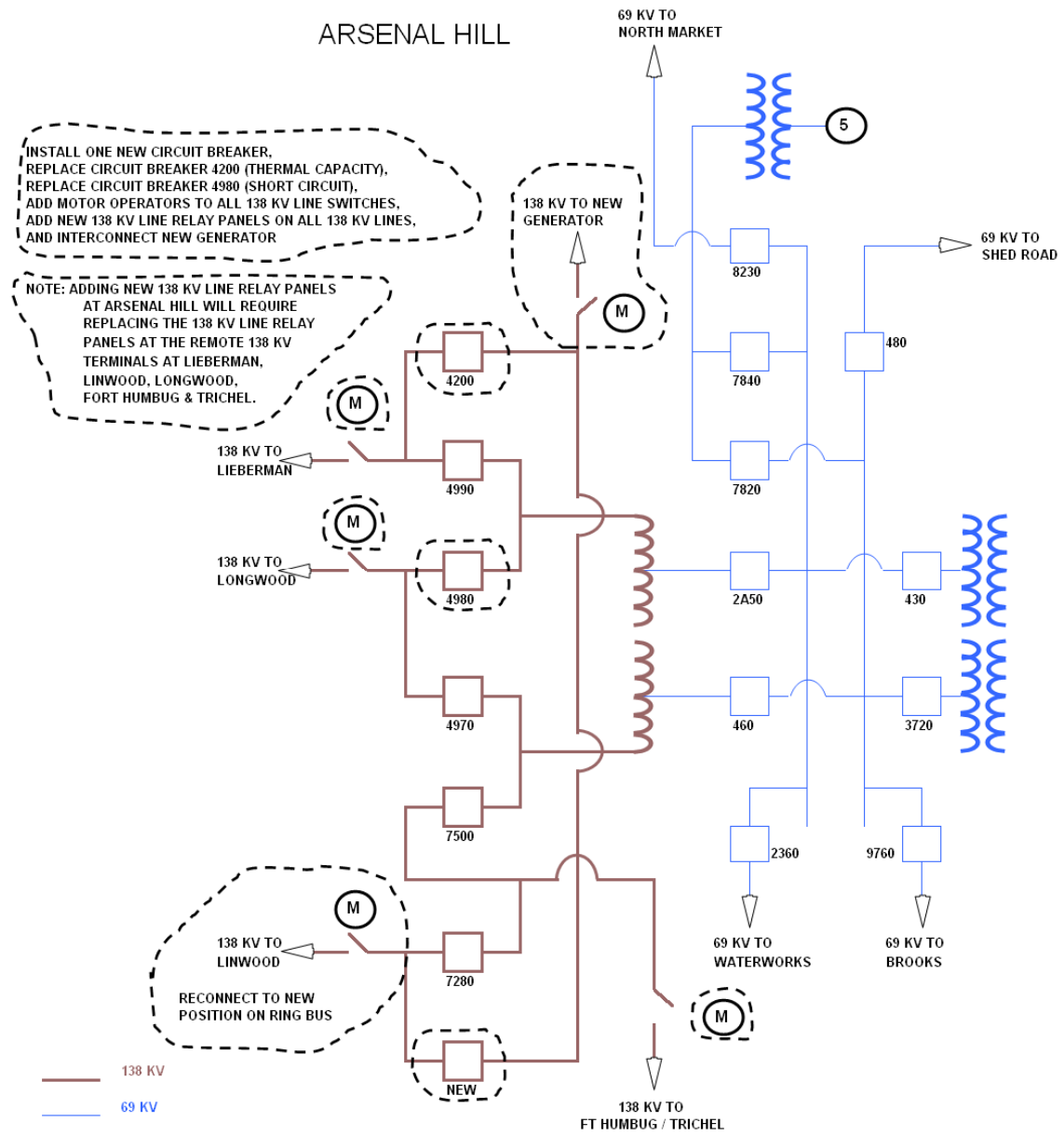


FIGURE 1
ARSENAL HILL 138 KV GENERATION INTERCONNECTION

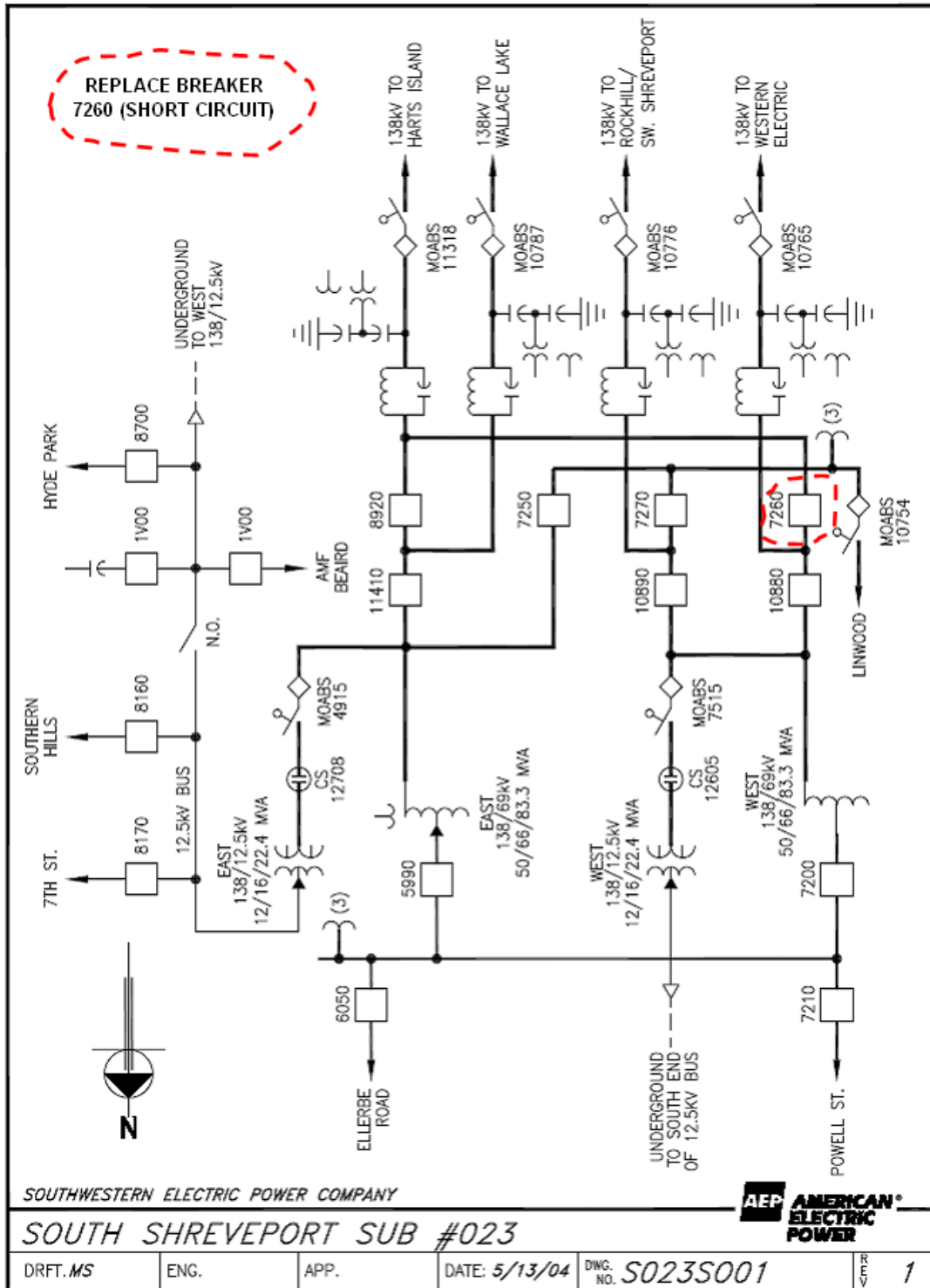


FIGURE 2
SOUTH SHREVEPORT 138 KV STATION FACILITIES

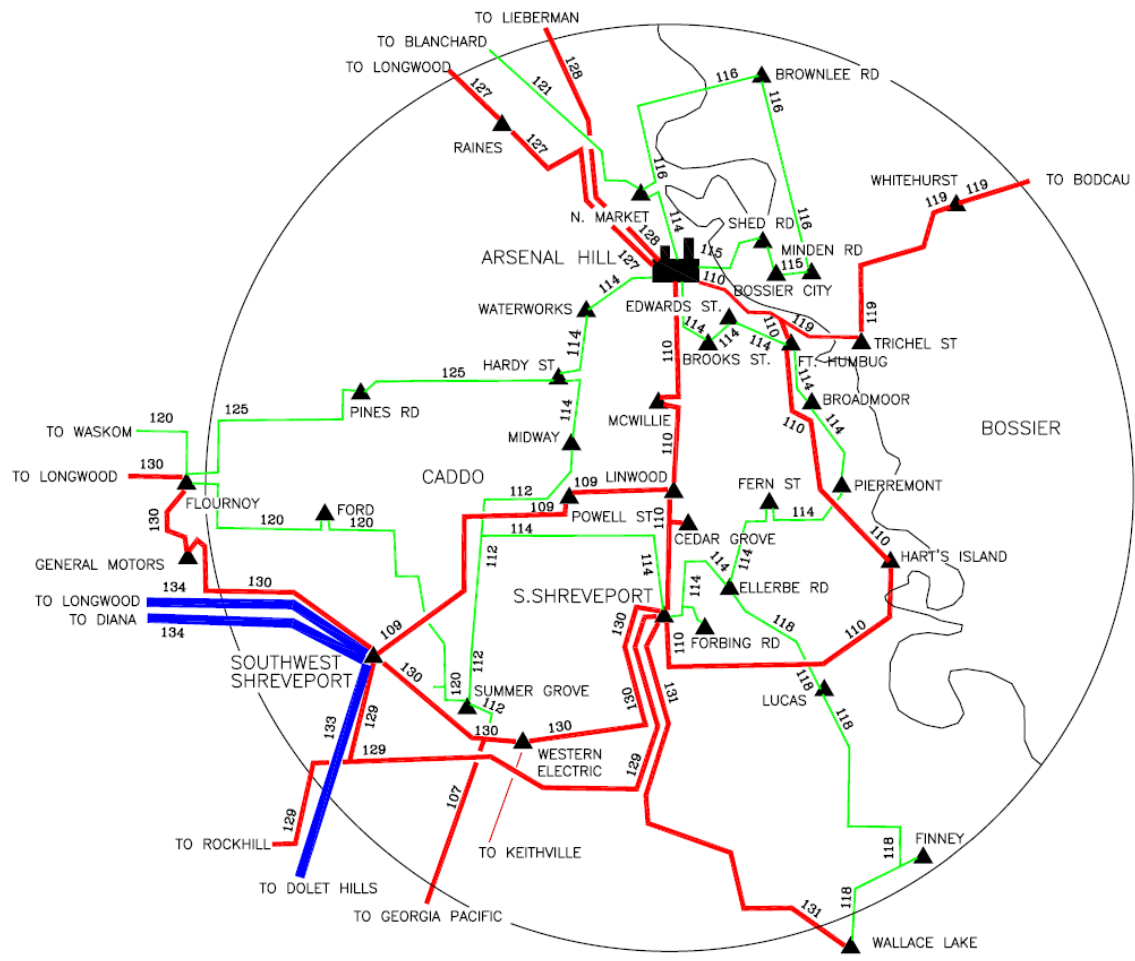


FIGURE 3 SHREVEPORT AREA TRANSMISSION SYSTEM