

BALANCE OF PLANT IMPACTS AT BIG BROWN AND POPLAR RIVER POWER STATIONS

John Pavlish – Panel Discussion

University of North Dakota Energy & Environmental Research Center

Summary for the 2006 Mercury Meeting Panel Discussion on Balance of Plant (BOP) Issues

The EERC has been involved with several large-scale field tests of activated carbon injection (ACI) for mercury control. Two TOXECONTM configurations have been evaluated: one at TXU's Big Brown Station and the slipstream Emission Control Research Facility (ECRF) at SaskPower's Poplar River Station. Extended tests of ACI have been conducted at both locations, and potential BOP issues relating to bag performance with ACI have been observed. These observations will be summarized and discussed during the panel session.

BACKGROUND

Big Brown Station, located near Fairfield, Texas, comprises two 600-MW units. Particulate control for each unit is accomplished with four, parallel, cold-side ESPs followed by four, high air-to-cloth baghouses (COHPAC configuration). Big Brown typically burns a blend of locally mined Texas lignite and Powder River Basin (PRB) coal that is described as a 70%–30% blend of lignite–PRB, respectively. Mercury control testing was performed January–April 2006 across one-quarter of Unit 2. This testing included parametric screening of three activated carbon-based technologies, which was followed by a 1-month test at constant enhanced-ACI conditions.

Poplar River Station is located near the town of Coronach in south-central Saskatchewan; it comprises two units rated at 298 and 294 MW. Cold-side ESPs are currently used for particulate control. The ECRF at Poplar River is a 1–10-MW slipstream baghouse unit that can be arranged in a TOXECON configuration. The ECRF contains a prefilter with bypass and a spray cooler so that the baghouse inlet dust loading and temperature can be controlled. Three long-term (LT) mercury control tests were performed during the time from August 2005 to June 2006. The durations for LT1, LT2, and LT3 were 5, 10, and 10 weeks, respectively. All three tests maintained a baghouse air-to-cloth ratio of 6 ft/min and an outlet temperature of 300°F. LT1 and LT2 tested high ash and low ash conditions, respectively, while LT3 evaluated the high ash condition but with a switch to high-perm bags.