

## “Demonstration of Mer-Cure™ Technology for Enhanced Mercury Control”

Summary of the presentation for DOE/NETL’s Mercury Control Technology Conference  
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ALSTOM Power, Inc. – U.S. Power Plant Laboratories (ALSTOM-PPL) is currently conducting a program to demonstrate Mer-Cure™ technology. In the program, ALSTOM-PPL teams up with the University of North Dakota – Energy and Environmental Research Center (EERC), Lower Colorado River Authority (LCRA), and Reliant Energy. The program objective is (i) to demonstrate at a full scale greater than 90% mercury capture based on baseline mercury level (ii) at a cost significantly less than 50% of the \$60,000/lb of mercury removed.

The proposed full-scale demonstration program is to perform test campaigns in two host sites: LCRA’s 480-MW<sub>e</sub> Fayette Unit 3 (FPP3) burning PRB blends, and equipped with an ESP and a wet scrubber; and Reliant Energy’s 190-MW<sub>e</sub> Shawville Unit 3 burning Eastern bituminous coal, and equipped with two Ljungstrom air heaters and two ESPs. The demonstration program includes a two- to five-week short-term field test followed by two-month long-term demonstration for each of the two selected sites.

In this presentation, ALSTOM-PPL is reporting the budget period 1 activities, i./e., a short-term demonstration at LCRA’s Fayette Unit 3. The test campaign, delayed due to contractual issues, started on March 5, 2007, and has been completed by April 13, 2007. Due to boiler tube leakage, the five-week test program was terminated one week earlier than originally planned.

Baseline measurements at FPP3 showed that the native capture of mercury at FPP3 is approximately 50%: about 27% capture was observed across air heaters and ESP’s and 23% across wet scrubbers. A significant amount of oxidized mercury was reduced to elemental mercury in the wet scrubber modules.

Mer-Cure™ performance was determined for four sorbents: Alstom’s Mer-Clean™ 8, Envergex’s eSorb™ 11, eSorb™ 13, and eSorb™ 18. eSorb™ 11 performed better than Mer-Clean™ 8 or eSorb™ 13. eSorb™ 18 performed the worst. The mercury performance at FPP3 showed that at an injection rate of approximately 0.8 lb/MMacf, the mercury removal rate was greater than 90% based on the uncontrolled mercury level at the stack. About 0.5 lb/MMacf was needed to achieve 90% reduction based on the input mercury.

Analysis indicates that for Mer-Clean™ 8 sorbent, reduction of 72% of baseline mercury or 87% of input mercury can be achieved while still allowing continued ash sales. For eSorb™ 13 sorbent, reduction of 85% of baseline mercury or 92% of input mercury can be achieved while allowing continued ash sales.

Leaching test results for ash samples collected during continuous injection period indicate that no detectable mercury leached out. Stack opacity measurements showed that sorbent injection did not increase particulate emission levels at the stack.