

FY05-LIII(53)-138

“Field Demonstration of Enhanced Sorbent Injection for Mercury Control”

Contractor: ALSTOM Power, Inc.
Principal Investigator: Srivats Srinivasachar.

PARTICIPANTS

<u>Sponsor</u>	<u>Cost Share</u>
Basin Electric Power Cooperative	\$ 50,000
Minnkota Power Cooperative (In-kind)	\$ 10,000
ALSTOM	\$ 151,065
DOE	\$1,233,195
NDIC	<u>\$ 200,000</u>
Total Cost	\$1,584,260

Project Schedule - 24 Months

Contract Date – 10/1/05
Start Date – 10/13/05
Completion Date – 7/31/06

Project Deliverables

Contract Signed: 10/1/05✓
Quarterly Reports:
10/1/05(✓);
3/1/06(✓);
Final Report 7/31/06(✓);

OBJECTIVE / STATEMENT OF WORK:

Conduct a seven-week full-scale demonstration of mercury capture at the Leland Olds Station (LOS). The LOS uses low chloride lignite and a high temperature flue gas entering an electrostatic precipitator (ESP), which represents one of the most challenging boiler configurations for mercury control. Different enhanced sorbents (chemical additives) and test parameters will be evaluated for effectiveness of mercury capture.

STATUS

October 2005 Status Report

Activities to date: Site kick-off meeting at the BEPC LOS; Completed fabrication of a mobile Mer-Cure activated char feeding system and installation of injection and sampling ports. Baseline mercury measurements were initiated. Tests at the LOS are scheduled from mid- June to mid-August, 2005.

March 2006 Status Report

Field testing has been completed at the LOS demonstrating the Mer-Cure™ system. The testing included parametric testing using a family of Mer-Cure™ system sorbents. Chemical analysis of solids samples and reduction of various data sets are currently being performed and will be included in the final report.

Final Report

A seven-week long test was conducted in Unit 1 of the LOS using the Mer-Cure™ technology. A small amount of sorbent (Mer-Cure™) is injected into a flue gas stream environment where the gaseous elemental mercury oxidation and removal is favorable. At an injection rate of 1.4 – 1.6

lb/MMacf, 90% removal of total gaseous mercury was achieved. Overall capital cost of the Mer-Cure™ system for LOS Unit #1 is estimated to be approximately \$1.8 million. The overall operating cost for LOS Unit #1 for 90% mercury control is \$855,625 or \$0.52 mills/kWh, with a delivered sorbent cost of \$1.25 per pound.