



## **Lignite Fuel Enhancement**

### **Quarterly Technical Progress Report:**

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## **Abstract**

This 11th quarterly Technical Progress Report for the Lignite Fuel Enhancement Project summarizes activities from January 1<sup>st</sup> through March 31st of 2007. It summarizes the completion of the Prototype testing activity and initial full-scale dryer design, Budget Period 2 activity during that time period.

## **Acknowledgement**

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## **Executive Report**

### **Progress:**

The Design Team completed process design and layouts of air, water, and coal systems. Heyl-Patterson completed dryer drawings and has sent RFPs to several fabricators for build and assembly. Several meetings were held with Barr engineers to finalize arrangement of the drying, air jig, and coal handling systems. Honeywell held meetings to discuss the control system logic and hardware location. By the end of March we had processed nearly 300,000 tons of lignite through the dryer. Outage preparation maintenance activities on a coal transfer hopper restricted operation of the dryer in February and March. The Outage began March 17<sup>th</sup>. We will not dry coal again until early May when the Outage on Unit #2 completes.

The Budget Period 1 (Phase 1) final report was submitted this quarter. Comments were received from NETL and are being reviewed. The Phase 2 Project Management Plan was submitted to NETL in January 2007. This deliverable also included the Financing Plan. An application for R&D 100 award was submitted in February. The project received an award from the Minnesota Professional Engineering Society's Seven Wonders of Engineering Award and Minnesota ACEC Grand Award in January.

To further summarize, the focus this quarter has been on finalizing commercial design and the layout of four dryers behind each Unit. The modification to the coal handling facilities at Coal Creek and incorporation of air jigs to further beneficiate the segregated material the dryers will reject 20 to 30 % of the mercury and sulfur is segregated however this modification will recover the carbon in that stream.

Great River Energy and Headwaters continue to meet to discuss the Commercialization Plans. Contacts have been made from Texas lignite mines, Rio Tinto, Vattenfall, Canadian as well as Australian interests in recent weeks.

Invoices #27 & #28 were submitted this quarter. NETL is awaiting signed contracts from the three primary contractors Barr, EPRI, and Lehigh University before processing can be completed. The Budget expended through August 31<sup>st</sup> was \$10,425,202 (budget \$10,856,518). DOE contribution was half and paid.

Charles Bullinger gave a presentation and tour of the Coal Creek drying facility to engineers and miners from San Miguel Power in March.

**Problems Encountered:**

Outage preparation maintenance restricted dryer operation from February through March.

**Plans for the next reporting period:**

Expect some material (heavy steel) and major components to begin arriving in May. Primary contractor Budget Period 2 assignment agreements will be sent to DOE. Structural footings will be poured and steel erection will commence. Fabrication of Dryers 21 and 22 will begin and Dryer 21 should ship on site late next quarter. Honeywell controls, baghouse, and conveyors will be ordered.

Per the Cooperative Agreement, GRE would be obtaining DOE's review of the commercial-scale (full-scale) dryer system. GRE will be presenting the design details, drawings, and test plans, to DOE at a meeting scheduled at NETL-Morgantown on April 17, 2007. A similar meeting was conducted to obtain DOE's review on the prototype dryer design. This meeting was held at NETL-Pittsburgh on January 26, 2005. These meetings satisfy the deliverable requirements of the Design Tasks 1.2 and 2.2 of the Statement of Project Objectives in the Cooperative Agreement.

**Prospects for future progress:**

The prospects are quite good that all the next Quarter deliverables will be met. All drawings should be completed by Barr and Heyl-Patterson.



**Experimental Apparatus:**

Details of the dryer and system, P&ID's, schematics, and drawings contain "Limited Rights" information which cannot be disclosed at this particular time.

**Experimental & Operating Data:**

No "new" data to report. Data is being collected by the digital control system however no analysis has been done on it. The testing this quarter has been focused on "life" issues. Inspections will be conducted during the Outage to monitor these affects but have not yet been completed.

**Data Reduction:**

Nothing new to report this quarter.

**Hypothesis & Conclusions:**

Hypothesis remains the same. We will be able to dry lignite an increment to benefit the performance of and reduce emissions from a coal burning electric power generating station.

