DENSE MEDIA CYCLONE OPTIMIZATION

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Other Participants:

Massey Coal Services

Partition Enterprises

Precision Testing Laboratories

January-March 2001 Quarterly Report

Dense Medium Cyclone Optimization - Virginia Tech

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ABSTRACT

The project start date delayed by approximately 7 weeks due to contractual difficulties. Although the original start date was December 14, 2000, the Principal Investigator did not receive the Project Authorization Notice (PAN) from the Virginia Tech Office of Sponsored Programs until February 5, 2001. Therefore, the first project task (i.e., Project Planning) did not begin until February 2001. Activities completed as part of this effort included: (i) revision and updating of the Project Work Plan, (ii) preparation of equipment procurement documents for the Virginia Tech Purchasing Office, and (iii) initiation of preliminary site visits to several coal preparation plants to discuss test work with industrial personnel. After a brief (2 month) contractual delay, project activities are now underway. There are currently no contractual issues or technical problems associated with this project. Project work activities are now expected to proceed in accordance with the proposed project schedule.

Dense Medium Cyclone Optimization (Proposal #60)

- **Principal Investigator:** Gerald Luttrell (Virginia Tech)
- **NETL Project Manager:** David M. Hyman
- **Partners:** Massey Coal Services
Partition Enterprises (Australia)
Precision Testing
- **Total Project Cost:** \$320K
 - DOE Share: \$154K
 - Participant Share: \$166K
- **Project Period:** 12 months
- **Project Start Date:** 14 Dec. 2000

Background

- **Heavy Media Cyclones (HMCs)**
 - Serves as the “workhorse” in the coal preparation industry for removing waste rock from valuable coal
 - In the U.S., HMCs represent an installed capacity of >85,000 ton/hr
 - Problem - Improper operation can result in large losses of recoverable coal to the waste product
 - losses estimated to be more than \$45 million annually

Project Objectives

- **To develop a set of three basic engineering tools to improve the efficiency of heavy medium cyclone (HMC) circuits:**
 - low cost tracers to rapidly assess HMC performance
 - mathematical process models to predict the influence of changes in operating and design variables on HMC performance
 - model-based expert system to provide operators with a user-friendly interface for evaluating, optimizing, and troubleshooting HMC circuits

Project Cost Summary

Source	First Year		Second Year		Third Year		Totals	
	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual
Participant	\$166K	---	0	---	0	---	\$166K	---
DOE	\$154K	---	0	---	0	---	\$154K	---
Total	\$320K	---	0	---	0	---	\$320K	---

KEY:

Plan = Planned costs for the full year.

Actual = Actual costs through the reporting period.

Milestones and Status

Project Milestone	Target Date	Status of Proposed Work
1 - Baseline Assessment	Aug. 01	Project Planning Underway
2 - Circuit Modification	Sept. 01	---
3 - Follow-Up Assessment	July/Nov. 01	---
4 - Sample Analysis	Monthly	---
5 - Analysis/Simulation	Monthly	---
6 - Expert System Dev.	Nov. 01	---
7 - Concept Assessment	Dec. 01	---

Key Accomplishments

- **Project start date delayed by approximately 7 weeks due to contractual difficulties.**
 - Approved DOE Start Date: December 14, 2000
 - PAN Authorization Received: February 5, 2001
- **Project planning began in early February 2001:**
 - Project Work Plan revised and updated.
 - Documents for procurement of equipment prepared for Purchasing Office.
 - Preliminary site visits made to discuss test work with industrial personnel.

Good News!

- Project activities have now begun.
- All project participants confirmed the financial support for the R&D work.
- Preliminary site visits suggest strong interest by industry partners.

Project Assessment

(Internal DOE Use Only)

- **Open Issues and/or Problems**
 - None noted
- **Overall Assessment**
 - After a brief contractual delay, project activities are now underway.