CALDERON COKEMAKING
PROCESS/DEMONSTRATION PROJECT

QUARTERLY REPORT

Reporting Period Start Date: 08/26/1999 End Date: 11/25/1999

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QUARTERLY TECHNICAL PROGRESS REPORT
CALDERON COKEMAKING PROCESS/DEMONSTRATION PROJECT
CALDERON ENERGY COMPANY
COOPERATIVE AGREEMENT NO. DE-FC22-95PC92638

Reporting Period: 8-26-99 to 11-25-99

Date of Report: 12-21-99; Award Date: 5-25-95; Anticipated Completion Date: 11-25-00

Total Project: \$ 6,332,060.00 Total DOE Share: \$3,039,389.00

Contracting Officer's Representative (COR): Carl Maronde;

Project Director: Albert Calderon

Abstract

This project deals with the demonstration of a coking process using proprietary technology of Calderon, with the following objectives geared to facilitate commercialization:

- (i) making coke of such quality as to be suitable for use in hard-driving, large blast furnaces;
- (ii) providing proof that such process is continuous and environmentally closed to prevent emissions;
- (iii) demonstrating that high-coking-pressure (non-traditional) coal blends which cannot be safely charged into conventional by-product coke ovens can be used in the Calderon process;
- (iv) conducting a blast furnace test to demonstrate the compatibility of the coke produced; and
- (v) demonstrating that coke can be produced economically, at a level competitive with coke imports.

The activities of the past quarter continued to be focused on the following:

- Drafting of Contracts among the Stakeholders of the Team
- Completion and Delivery of Proposal for Phase II
- Permitting and Environmental Work
- Engineering Progress
- Preparation of Final Report for Phase I
- DCAA Audit
- Funding for Phase II

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Introduction

The commercialization path of the Calderon cokemaking process consists of the following general phases:

Phase I-- Proof of capability to produce acceptable product coke, proof of the process being environmentally closed, proof that non-conventional coal blends can be used, and proof that coke can potentially be economically produced domestically using U.S. metallurgical coals at a level competitive with low cost coke imported from foreign countries that are not subjected to U.S. environmental standards.

Phase II-- Scale-up of coking reactor to full size Commercial Demonstration Unit (CDU) in support of first commercial facility.

Phase III-- Construction and operation of first commercial facility.

Phase IV-- Worldwide commercialization of the technology aggressively by producing coke competitively and attaining a sizeable market share of the 400 million tons consumed globally per year.

Accomplishments and Discussion

During the past quarter numerous discussions took place among the team players (Bethlehem Steel, LTV Steel, Bechtel Corporation, Calderon Energy, Alliance Machine and FETC), and an understanding was reached among these members of the team. Calderon Energy will furnish technology and Bechtel will do the detail engineering, procurement and construction. Bethlehem will furnish coal and support, and LTV will supply coal and take the coke for the blast furnace test. Alliance Machine will supply equipment to Calderon for

installation by Bechtel. The present Cooperative Agreement between U.S. DOE and Calderon Energy which is still current (Phase I) will be extended as Phase II, to cover the construction and operation of the full size Commercial Demonstration Unit (CDU) at LTV. The drafting of the various agreements among the various parties was completed and negotiations have taken place. Agreements were reached on 85% on the issues.

Proposal for Phase II

The proposal for Phase II was completed during the quarter; it was submitted to NETC-PGH on October 1, 1999.

Permitting

The permit for the installation of the CDU at LTV Steel's former Coke Plant #1, was completed and submitted to the City of Cleveland on November 8, 1999. It is under consideration.

Engineering Progress

The most critical piece of equipment from a delivery standpoint is the charger for the reactor and the second most critical item are the SiC tiles for lining the reactor.

The design of the charger was completed, stress-analyzed and released for checking.

Discussions with Carborundum (now owned by St. Gobain, a French company) took place regarding the supply of the SiC tiles. A secrecy agreement was finally negotiated and it is in the process of being executed.

Preparation of Final Report for Phase I

The preparation of the Final Report for Phase I was completed in draft form and submitted to NETC-PGH for comments.

Audit

A representative from DCAA conducted an audit for 1997 and 1998 and an indirect cost factor was established for this project for these years. Also the budget for Phase II was reviewed by the same auditor.

Funding for Phase II

Notice was received that both the House of Representatives and the Senate reconciled and \$7 million for FY2000 for Phase II of the project were appropriated.

Conclusion

During the next quarter, the plan is to have agreements among the stakeholders concluded, a cooperative agreement with DOE entered into for Phase II, the Permit application acted on, and Bechtel's review of the work completed in Phase I in preparation of initiating the detailed engineering for Phase II of the project by Bechtel.

Submitted by:

Albert Calderon
Project Director