

Simulated Coal Gas MCFC Power Plant System Verification

**Technical Report
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EXECUTIVE SUMMARY

Overview

This is the Technical Progress Report covering September 1998. All tasks have been completed, except for those discussed on the following pages. Unocal estimated the costs of dismantling and packaging the test facility for storage and shipment. The scope of work for the contract has been modified to accommodate the dismantling and packaging of the plant. An amendment to Sub-Contract No. MCP-9-UNO between M-C Power and Unocal has been executed which includes the Scope of Work in Unocal's cost estimate.

TASK 1. COMMERCIALIZATION

This task is complete.

TASK 2. POWER PLANT DEVELOPMENT

This task is complete

TASK 3. MANUFACTURING FACILITIES DEVELOPMENT

This task is complete.

TASK 4. TESTING FACILITY DEVELOPMENT

Unocal continued maintenance of the 250-kW demonstration power plant. Bid packages for plant dismantling have been prepared and sent out to appropriate contractors for their proposals.

TASK 5. STACK RESEARCH

This task is complete.

TASK 6. ADVANCED RESEARCH AND TECHNOLOGY DEVELOPMENT

The individual final reports from the Illinois Institute of Technology, Texas A&M, and the University of Minnesota are being assembled into a complete final report.

Subtask 4.2 Upgrading of Existing, U.S. Government-Owned, Test Facilities

Objective:

To upgrade the existing, government-owned 20-kW test facility to improve its reliability for long-term operation.

Discussion:

A work plan and estimate for dismantling and packaging the plant for shipment has been prepared by Unocal. The plan has been reviewed by M-C Power and Bechtel with modifications made where appropriate.

Unocal has obtained vendor qualifications for possible bidders who are acceptable to M-C Power. M-C Power has revised the bid packages to incorporate the modifications. Disassembly activities will proceed upon review of the proposals and subsequent releasing of a disassembly sub-contract. Shipment of the BOP from Unocal to M-C Power is expected to take place during December 1998.

Subtask 6.2 Advanced MCFC Component Research

Objective:

To conduct research to resolve issues relating to the improvement of the efficiency and cost effectiveness of the MCFC by improving the following: protection of the current collector plate from corrosion; reduction of cathode over potential losses; understanding the effects of electrolyte basicity and oxygen reduction kinetics to reduce cathode over potential; and measuring the wetting angles of various electrolytes to reduce the electrolyte loss/migration during the MCFC operation.

Discussion:

Final reports have been received from IIT, UMinn, and Texas A&M. They are being assembled into a report for submittal to FETC.