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Texas Commission on Environmental Quality
New Technology Research & Development (NTRD) Program
Monthly Project Status Report

Contract Number: ____582-5-70807-0005_____

Grantee: _____**Teledyne Energy Systems, Inc.**_____

Date Submitted: _____09 June 2006_____

Report for the **Monthly** period:

Starting Date ____1 May 2006___ Ending Date ____30 May 2006_____

Section I. Accomplishments (*Please provide a bulleted list of project accomplishments as well as a description of their importance to the project.)*

- Teledyne Energy Systems (TESI) and subcontractor Clean Fuel Generation (CFG) held two regular biweekly telecoms during the month of May.
- The Railroad Commission of Texas completed the draft of the Task 1 report and submitted it to TESI for review. The report was reviewed by TESI and passed on to CFG for their review.
- A load profile will be used for the purpose of determining the system operating conditions to be simulated during testing the components of the APU. It is intended to represent how the system will be used under actual conditions. The load profile being used was included as part of a TIAX presentation at the 2004 Fuel Cell Seminar. It was developed through literature reviews, industry input, and the auxiliary power requirements obtained from the American Trucking Association.
- Progress continued on Task 2 objectives. The process flow diagram integrating the reformer/purifier and fuel cell subsystems was reviewed and refined by TESI and CFG. Components were specified and the items to be tested under Task 2 were selected. These items include the air compressor, hydrogen compressor, hydrogen circulating pump, DI water pump, humidifier, and condenser. Purc-hasing of these items will occur in early June.
- In May, CFG continued testing the reformer with the new batch of catalyst and it still has not demonstrated the short lifetime seen in previous tests. Catalyst performance has not shown any degradation in performance. CFG is also working with catalyst manufacturers to determine how to reduce the effects of thermal cycling; extending the life and performance of the catalysts.
- The completed new hydrogen purifier components fabricated last month did not pass leak testing and had to be returned to the vendor for rework. As reported last month, when completed these units will undergo bench and longevity testing after which they will be coupled with the reformers for in-situ testing.

Indicate which part of the Grant Activities as defined in the grant agreement, the above accomplishments are related to:

The above accomplishments are related to Task 2 in the Grant Activities including system modeling and evaluation of subsystems for the fuel processor.

Section II: Problems/Solutions

Problem(s) Identified (*Please report anticipated or unanticipated problem(s) encountered and its effect on the progress of the project)*	The contract specifies evaluation of the subsystem components on board an existing 3 kW PEM fuel cell system. This system originally considered for this purpose is no longer available for use subsequent to the move of Teledyne's fuel cell operations from Florida to Maryland.
Proposed Solution(s) *(Please report any possible solution(s) to the problem(s) that were considered/encountered)*	The components that have been chosen for evaluation will be run in test set-ups that simulate the conditions under which they will operate in the fuel cell system. The operating conditions of the various components will be well-characterized through a combination of modeling of this system and Teledyne's past fuel cell system experience.
Action(s) Conducted and Results *(Please describe the action(s) taken to resolve the problem(s) and its effect)*	

Section III. **Goals and Issues for Succeeding Period**: (*Please provide a brief description of the goal(s) you hope to realize in the coming period and identify any notable challenges that can be foreseen)*

Goals for June are to continue reformer testing, start purifier testing, and procure and begin testing of the fuel cell subsystem components. Work on the APU system model will be ramped up. Two TESI engineers will visit CFG to review the reformer and purifier testing and work on the system model.

Additional information-

Date: *09 June 2006*

Authorized Project Representative's Signature

NOTE: *Please attach any additional information that you feel should be a part of your report or that may be required to meet the deliverable requirements for tasks completed during this reporting period.*