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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: _____08 September 2006_____

Report for the **Monthly** period:

Starting Date _____1August 2006___ Ending Date ____31 August 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 August.
- As noted in the July report, a hydrogen compressor and a hydrogen storage vessel were sized to compliment the variable load profile that will be applied to the fuel cell with the constant reformer output. The resulting volume and weight required to accommodate the required storage are considered too large for the APU application. A trade study was therefore performed comparing this gaseous storage to battery storage of the generated electrical power also resulting in greater than desired weight and volume.
- TESI began preliminary testing of the air and water pumps for the fuel cell system. The hydrogen compressor has been received for testing next month.
- TESI completed the testing a fuel cell stack through 3 scaled load profiles. Testing produced consistent results closely matching the load and total power of the profile model.
- CFG performed minimal reformer testing in August focusing on testing of the purifier. Emissions data of the reformer was collected and reported to TESI.
- TESI and CFG continued work on the system model. CFG worked on and delivered a draft model of the reformer to TESI.
- CFG continued testing of the hydrogen purifier unit which shows no detectable impurities after 28 thermal cycles and 100 hours operation.

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)*	As noted in the June and July reports, the lack of turndown of the reformer represents a design problem for the system. The possibility of pressurized hydrogen storage has been analyzed, but this adds considerable weight, volume, and complexity to the system. Battery storage has also been analyzed but the additional weight and volume of the batteries necessary to satisfy the anticipated load requirements are also an issue.
Proposed Solution(s) *(Please report any possible solution(s) to the problem(s) that were considered/encountered)*	TESI will look at the overall APU package to decide whether gaseous hydrogen or battery storage is the most optimum for this application. The resulting APU package will then be compared to the specifications set for the APU in Task 1.
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 September are to complete the Task 2 testing of the reformer, purifier, and fuel cell subsystem components. Work on the APU system model will continue including integration of the reformer/purifier and fuel cell portions and the preferred storage. Work will also begin on the Task 2 report.

Additional information-

Date: *08 September 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.*