

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

<b>Contract Number:</b>	582-11-11145-3264		
<b>Grantee:</b>	The University of Texas at Austin (UT)		
<b>Report for the Monthly period:</b>	October 2012	<b>Date Submitted:</b>	November 09, 2012

**Section I. Accomplishments**

*Provide a bulleted list of project accomplishments as well as a description of their importance to the project.*

**Performed maintenance on hydrogen station and replaced natural gas booster compressor**

- Gas Technology Institute (GTI) made a site visit to install new booster compressor. After installation, the booster compressor was run and was able to deliver the desired quantity of natural gas to the reformer.
- Additional maintenance items that were done by GTI on their visit to replace the booster compressor were included installing a new air actuator for the low bank priority fill valve and a new check valve in the priority panel.
- The reformer was operated for about 24 hours and produced 12.3kilograms of hydrogen.
- Two samples were drawn from the hydrogen buffer tank downstream of the pressure swing adsorption (PSA) and are being sent to GTI for major component analysis

**Other work**

- The fuels cell modules were shipped to Austin, Texas, and installed by Hydrogenics and Proterra on the week of October 8, 2012. After a period of testing over the following week along with additional driver training, the bus went into passenger service on October 22, 2012.
- The bus was in service from October 22 through October 29, 2012. On October 29th, the onsite Proterra technician found that one of the fuel cell modules turned off during the dead-head back to the depot after the day's service period. The bus did not go back into service on October 30, 2012, or October 31st as Proterra and Hydrogenics diagnosed the problem.
- Proterra and Hydrogenics are schedule to be in Austin, Texas, the first week of November 2012 to address the fuel cell issue. *NOTE: At the time of submitting this report, the fuel cell problem has been correct and the bus is back in service.*

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

*Task 2.5: The PERFORMING PARTY will operate the hydrogen fuel cell hybrid-electric bus in a realistic working environment over a twelve month period, including using the hydrogen generation and fueling station as the bus's primary fuel source.*

## **Section II: Problems/Solutions**

*Problem(s) Identified: Report anticipated or unanticipated problem(s) encountered and its effect on the progress of the project*

- a) The desiccant dryer that conditions the muscle gas for the solenoid valves and the air used by the vortex cooler developed a major leak. The leak caused extended runtime of the UT shop air compressor.
- b) On October 29, 2012, after completing a day of service, the bus experienced a shutdown of one of the fuel cell modules.

*Proposed Solution(s): Report any possible solution(s) to the problem(s) that were considered/encountered*

- a) Repairing the existing desiccant dryer or replacing the existing dryer with a different technology
- b) Possible cause of fuel cell shutdown is thought to be the air blower, similar to issues noticed during September 2012.

*Action(s) Conducted and Results: Describe the action(s) taken to resolve the problem(s) and its effect*

- a) The desiccant dryer was bypassed. Due to the cooler weather the vortex cooler will not be needed to remove heat from the remote input-output (IO) electrical enclosure. A more permanent solution will be decided upon at a later time.
- b) Proterra and Hydrogenics will be onsite the first week of November 2012 to address the fuel cell issue. *Note: Although not part of work performed during October 2012, at the time of submitting this report, the fuel cell air blower was replaced and the bus is back in passenger service.*

### **Section III. Goals and Issues for Succeeding Period:**

*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*

- GTI will complete the analysis of the hydrogen gas samples. These samples will confirm the purity of the hydrogen being produced or identify impurities that need to be addressed.
- The reformer will be operated to replenish hydrogen consumed by the bus.
- Correct fuel cell issues experienced at the end of October 2012, and continue operating the bus in passenger service.

*Date:* 11/09/2012

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*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.*