

NTRD Program Disclaimers

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**Texas Commission on Environmental Quality
New Technology Research & Development (NTRD) Program
Monthly Project Status Report
GTI Project # 20484**

Contract Number: 582-5-70807-0001

Grantee: Gas Technology Institute

Date Submitted: November 10, 2005

Report for the Monthly period: October 2005

Starting Date : October 1, 2005

Ending Date: October 31, 2006

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

Accomplishment	Importance to the Project
GTI has received the QuestAir hydrogen purification system that was ordered in the previous reporting period.	The QuestAir hydrogen pressure-swing absorption system is the primary method used to purify the natural gas reformat which is a mixture of hydrogen, CO ₂ , and residual methane to a near-pure stream of hydrogen that can be used as fuel for a hydrogen-fueled vehicle.
GTI has received a number of inquiries from potential host sites for the hydrogen fueling station for eventual deployment, which are being evaluated for suitability.	Identifying a suitable deployment site is important during this phase of the project in order to properly scale the hydrogen station supply capability and to configure a hydrogen-fueled vehicle that can be incorporated into the host site's daily operations.
Multiple vehicle providers have provided hydrogen-fueled vehicle proposals to GTI. These are being evaluated by GTI for project suitability.	The choice of a vehicle provider is important in order to correctly configure a vehicle to match the station site host's operational requirements and to fit within project budget and timing constraints.
GTI and Greenfield are evaluating two separate system compressor configurations. One involves using purchased PDC compressor while the other uses a Greenfield proprietary compression system that is under development.	Characteristics for a compression system that are important to the project include: <ul style="list-style-type: none"> • Compressor reliability and maintenance cost • Compressor's ability to operate with minimal lubricant oil contamination • Integration with other system components such as PSA and SMR units.
GTI has commenced fabrication and testing of the Steam Methane Reformer (SMR) hydrogen generation system	The hydrogen generation system is the key technology at the heart of the integrated hydrogen station. It converts pipeline-quality natural gas to "reformat" that is then purified to a hydrogen gas stream.

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

Accomplishment	Grant Activity
PSA Unit receipt from QuestAir	Task 1, Article 2.1.1.1 in the Project S.O.W.
Host site inquiries for station deployment	Task 1, Article 2.1.2 in the Project S.O.W.
Vehicle proposal evaluations	Task 2
Compression system evaluation	Task 1
SMR fabrication and testing	Task 1, Article 2.1.1.1 in the Project S.O.W.

Section II: Problems/Solutions

<p>Problem(s) Identified</p> <p><i>(Please report anticipated or unanticipated problem(s) encountered and its effect on the progress of the project)</i></p>	<p>1) Eventual deployment site identification will significantly influence the configuration of the fuel cell vehicle. The vehicle should be designed to fit with the eventual host site's operations. The host site may not be identified however before a purchase commitment must be made for a vehicle in order to meet project deadlines.</p>
<p>Proposed Solution(s)</p> <p><i>(Please report any possible solution(s) to the problem(s) that were considered/encountered)</i></p>	<p>1) GTI can configure a vehicle to meet the needs of the most-likely deployment host site, or GTI can configure a fuel cell vehicle that fits the broadest-possible range of applications and then choose a host site whose vehicle applications fit within that range.</p>

Action(s) Conducted and Results

(Please describe the action(s) taken to resolve the problem(s) and its effect)

- 1) GTI has discussed vehicle proposals with additional providers since the last month's reporting period. Proposals are being evaluated for project suitability that include:
 - a. Modifying an existing vehicle as a fuel cell "plug-in hybrid" that is supplied by the deployment site host, or
 - b. Identifying supplemental funding from a new (TBD) project participant to purchase a fuel cell powered vehicle from an OEM.

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)*

Each of the following goals and issues listed will likely continue through the December 2005 reporting period.

- Choose compression technology and vendor for the fueling station system.
- Identify most likely deployment location and begin on-site permitting, gas supply, and operating groundwork.
- Resolve remaining issues concerning the supply and configuration of the hydrogen-fueled vehicle.
- Identify and resolve major decisions on hydrogen station dispensing configuration.
- Continue the fabrication and testing of the hydrogen generation system.



Date: 11-9-05

Authorized Project Representative's Signature

**J. Brian Weeks, Associate Director,
Hydrogen Energy Systems
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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.*