

## **NTRD Program Disclaimers**

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**Texas Commission on Environmental Quality  
 New Technology Research & Development (NTRD) Program  
 Monthly Project Status Report  
 GTI Project #20485**

Contract Number: 582-5-70807-0018

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.)*

<b>Accomplishment</b>	<b>Importance to the Project</b>
The gas liquefier has been partially disassembled in order to begin upgrading components in preparation for the field test.	Components for the liquefier are being individually tested and evaluated in order to determine whether they should be replaced, or cleaned and reinstalled. Components evaluated include: <ul style="list-style-type: none"> <li>• Gas clean-up system</li> <li>• Oil separator</li> <li>• Valve train for gas clean-up system</li> <li>• Heat exchanger</li> <li>• Oil cooler</li> </ul>
GTI is evaluating the emissions profile of the existing Cummins GTA8.3 natural gas-fueled engine that is used to power the liquefier.	The engine emissions test is an important activity to optimize the overall efficiency of the system. Since emissions reduction is an overall goal in the introduction of LNG as a fuel, the inclusion of a catalytic converter is being considered as part of the liquefier power system upgrade.
The gas clean-up tri-towers that are used to remove contaminants from the natural gas supply going into the system have been cleaned and painted.	This is to prepare the system for field testing.

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

Accomplishment	Grant Activity
Liquefier disassembly and component evaluation	Tasks 1-6
Engine emissions profile evaluation	Tasks 3 and 4
Clean-up and painting for gas clean-up towers	Task 5

## Section II: Problems/Solutions

Problem(s) Identified	
<p><i>(Please report anticipated or unanticipated problem(s) encountered and its effect on the progress of the project)</i></p>	<ol style="list-style-type: none"> <li>1) Height of current refrigerant heat exchanger could present problems for transporting the unit from GTI's testing labs to its deployment site in Texas.</li> <li>2) H-E-B Grocery may no longer be a suitable deployment location for the natural gas liquefier.</li> </ol>

<p><b>Proposed Solution(s)</b></p> <p><i>(Please report any possible solution(s) to the problem(s) that were considered/encountered)</i></p>	<ol style="list-style-type: none"><li>1. Incorporating reinforcement bracing into the existing design can stabilize the heat exchanger unit.</li><li>2. GTI has identified a major transit agency in Texas that operates LNG vehicles and is interested in becoming a replacement host site for the natural gas liquefier.</li></ol>
<p><b>Action(s) Conducted and Results</b></p> <p><i>(Please describe the action(s) taken to resolve the problem(s) and its effect)</i></p>	<ol style="list-style-type: none"><li>1. GTI is now designing a bracing configuration into the liquefier heat exchanger that would stabilize the system during transit.</li><li>2. GTI is currently in discussions with the transit agency concerning the details for field-testing the liquefier at that agency's LNG fueling site. The replacement host site is located in a non-attainment area.</li></ol>

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)*

- Continue systems refinement, efficiency enhancements, and system optimization activities that were initiated during the current month.
- Reach agreement on deployment location and begin on-site permitting, gas supply, and operating groundwork.



Date: 11-9-05

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*Authorized Project Representative's Signature*

**J. Brian Weeks, Associate Director,  
Hydrogen Energy Systems  
Gas Technology Institute**

**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.*