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Contract Number: 582-5-70807-0018
Grantee: Gas Technology Institute
Date Submitted: January 10, 2006
Report for the Monthly period: December 2005

Starting Date: December 1, 2005       Ending Date: December 31, 2005

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

<table>
<thead>
<tr>
<th>Accomplishment</th>
<th>Importance to the Project</th>
</tr>
</thead>
</table>
| The gas liquefier has been partially disassembled in order to begin upgrading components in preparation for the field test. This work is a continuation from the November, 2005 report. | 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:  
  - Gas clean-up system  
  - Oil separator  
  - Valve train for gas clean-up system  
  - Heat exchanger  
  - Oil cooler |
| Much of the work this month focused on the oil cooler, pump, and filtering system. Replacement piping was ordered for the heat exchanger and reassembly of those components was started. | Component refurbishment and/or replacement is needed to assure reliability and to maximize efficiency of the system. |
Indicate which part of the Grant Activities as defined in the grant agreement, the above accomplishments are related to:

<table>
<thead>
<tr>
<th>Accomplishment</th>
<th>Grant Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquefier system disassembly and component evaluation and replacement</td>
<td>Tasks 1-6</td>
</tr>
<tr>
<td>Engine component replacements</td>
<td>Tasks 1-6</td>
</tr>
<tr>
<td>Oil pump, filters, and cooler system reworked</td>
<td>Tasks 1-6</td>
</tr>
</tbody>
</table>

Section II: Problems/Solutions

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.
2) H-E-B Grocery will not be the deployment location for the natural gas liquefier.

These issues are carried over from last month’s report.
| Proposed Solution(s) | 1. Incorporating reinforcement bracing into the existing design can stabilize the heat exchanger unit.  
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.  
These solutions are still in progress from last month’s report |
|----------------------|---------------------------------------------------------------------------------------------------|
| Action(s) Conducted and Results | 1. GTI has completed the new design of the liquifier assembly. A pdf file with drawings is included in this report submission.  
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. |
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 October.
- Reach agreement on deployment location and begin on-site permitting, gas supply, and operating groundwork. This item will most likely continue for the next reporting period.

____________________________________________
**Date:** 1-10-06

**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.