Appendix B: Assessment of RPSEA Projects
B.1 GTI Recommendations

Technology Assessment and Field Test Recommendations
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Submitted To:
Houston Area Research Center

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OBJECTIVES
Gas Technology Institute (GTI) is offering to assist the Houston Advanced Research Center (HARC) in developing an integrated field test program. The principal objectives of the proposed work are:

1- Review, assessment, and inventory of technologies developed or in progress by RPSEA in view of their need for research quality data and readiness for field testing and verification.

2- Recommend a series of field-based projects for data acquisition, experimentation, testing, and verification of selected technologies.

SCOPE OF WORK

Task 1. Technology Review
Work under this task includes review of the status of technologies and techniques under development by RPSEA research teams and identification of their data needs and field test requirements. Parallel to these efforts, we shall review the state of the comparable technologies offered or being developed by the industry. In addition, we will contact the principal investigators of the relevant RPSEA projects for obtaining their desired data needs and technology issues that may be included in the field experimentation plan. GTI anticipates meeting with some of these research teams to discuss details of issues that could be considered for inclusion in field data acquisition efforts.

Deliverable from this task will be a report summarizing the state of the RPSEA projects relative to their data needs and field tests. Draft of this report will be presented to HARC for their review.

Task 2. Field Test Recommendation
Work under this task includes identification of technology issues with program level implications; such as hydraulic fracturing, formation evaluation and water management, that have application in all three unconventional gas resources and identification of data gaps the filling of which would accelerate the development of these resources. A significant criterion for selecting and recommending various elements of field tests and data acquisitions shall be the degree to which the field work fulfills the needs of individual RPSEA projects while addressing the industry needs. Note that in spite of the prominence of gas shales and tight sands in the present RPSEA portfolio of unconventional resources, the degree to which results from the field work can be utilized in other projects shall also influence the recommendation criteria.

Deliverable from this task will be a recommendation report. The draft copy of this report will be presented to HARC for discussion and finalization.

Deliverables
Project deliverables include:

Deliverable #1 - Technology assessment report submitted to HARC: target date of 30 days from project kick-off.
The report will include a summary matrix that includes the following:

<table>
<thead>
<tr>
<th>RPSEA Contract #</th>
<th>Title</th>
<th>Lead Institution</th>
<th>P.I. Contact information</th>
<th>Description</th>
<th>Technology Readiness Level</th>
<th>Technology fit for Field Testing</th>
<th>Recommendations concerning site and operator</th>
</tr>
</thead>
</table>

**Deliverable #2** - Draft Report incorporating the top technologies into field tests including recommendations concerning cost, schedule, partners and data collection to be prepared working with the TIP team. Draft Report to be submitted to HARC. Target date of 60 days from project kick-off.

**Deliverable #3** – Final Report incorporating the top technologies (based on draft report – modified with input from TIP team. Final Report to be submitted to HARC. Target date of 75 days from project kick-off.

**Deliverable #4** - GTI will make a presentation of the assessment reports at the Phase II Planning Session to be held in San Antonio on October 11, 2012.

**DURATION AND COST**

The proposed work shall be completed in three months as of the award of the contract at a total cost of $73,146.

**Cost Summary Form**

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Technical Level V</td>
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**KEY TECHNICAL STAFF**

The key technical staffs assigned to the project have extensive experience in management of integrated research and development projects. Mr. Iraj Salehi shall be the principal investigator and project manager. He has over 25 years of experience in program management including GRI’s Tight Gas Sands Program and Devonian Shale programs and several DOE sponsored projects including the Preferred Upstream Management Project (PUMP), LNG Vapor Dispersion Project, and the Laser Drilling project. Mr. Salehi has recently completed the RPSEA New Albany Shale project that can be referenced as an integrated project involving the coordination of nine research teams. Dr. Thomas Hayes shall also be assigned to the
Dr. Hayes project as the key technical expert in the area of environmental issues and water management. Dr. Hayes has over 25 years of experience in project management and his latest integration skills were manifested by integrating research activities of scores of researchers working in the area of water management for Barnett and Appalachian shales. Mr. Jordan Ciezobka shall be the third technical staff assigned to the project. Mr. Ciezobka is a mechanical engineer with has over five years of hands-on experience in hydraulic fracturing. Because hydraulic fracturing is involved in nearly all unconventional resource developments, Mr. Ciezobka’s knowledge of technical issues in this area will be quite valuable to the project.