

# Oil & Natural Gas Technology

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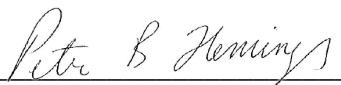
## Quarterly Research Performance Progress Report (Period Ending 06/30/2015)

### Deepwater Methane Hydrate Characterization and Scientific Assessment

Project Period 10/01/2014 – 09/30/2018

Submitted by:

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## I. ACCOMPLISHMENTS:

This report outlines the progress of the third quarter of the first budget period.

### A. What are the major goals of the project?

The goals of this project are to plan and execute a state of the art field program in the Gulf of Mexico to characterize methane hydrates. The project team will acquire conventional core, pressure core, and downhole logs, and perform in situ testing and measure physical properties in methane hydrate reservoirs in the Gulf of Mexico (GOM) to meet this goal.

Milestone Description	Planned Completion	Actual Completion	Verification Method	Comments
Milestone 1A: Update Project Management Plan	9/15/2014	V1: 03/18/2015 V2: In process	Project Management Plan	Revised PMP being created as part of Budget Period transition
Milestone 1B: Project Kick-Off Meeting	10/1/2014	12/11/2014	Presentation	Complete
Milestone 1C: Achieve ranked list of priority drilling locations	3/31/2015		Phase 1 Report	Potential sites identified and general prioritization set
Milestone 1D: Achieve detailed plan on scientific drilling goals	9/30/2015 (Y1 Q4)		Phase 1 Report	Scientific plans set for each potential site, progress made on operational and logistics planning
Milestone 1E: Updated CPP submitted	9/30/2015 (Y1 Q4)		Quarterly Report / Phase 1 Report	Updated CPP submitted April 2015, Revisions due to review responses in process (due October 2015)

### B. What was accomplished under these goals?

#### **CURRENT - BUDGET PERIOD 1 – SITE SELECTION**

##### **Task 1.0 Project Management and Planning** (*Plan Finish: 09/30/18, Actual Finish: In progress*)

##### Q3 Objectives and Achievements

Objective 1: Assemble teams according to project needs.

- Hired two postdoctoral positions
- Recruited Graduate Research Associate
- Hired Project Manager

Objective 2: Coordinate the overall scientific progress, administration and finances of the project

- Managed the compilation and delivery of data in support of the IODP CPP
- Negotiated land test location details and started associated contracts
- Coordinated meetings with ship vendors in preparation for Phase 2 Marine Test
- Developed Marine Test Scope of Work
- Monitored costs

Objective 3: Communicate with project team and sponsors

- Several communication tools were established to ensure successful collaborative work and to exchange information
- Organized regular team meetings
  - Monthly Sponsor Meetings
  - Monthly Mapping Team Meetings
  - Monthly PCTB Development Team Meetings
- SharePoint sites developed for each project team to facilitate online communication and collaboration
- Established email list serves for key project teams

Objective 4: Coordinate and supervise all subcontractors and service agreements to realize deliverables and milestones according to the work plan

- Actively managed subcontractors and service agreements.

Objective 5: Compare identified risks with project risks to ensure all risks are identified and monitored. Communicate risks and possible outcomes to project team and stakeholders.

- Actively monitored project risks and as needed reported to project team and stakeholders.

## **Task 2.0 Site Analysis and Selection** (*Plan Finish: 03/31/15, Actual Finish: In progress*)

**Subtask 2.1 Site Analysis** (Status: Complete, Actual Finish: 3/31/15): Reported in Y1Q2 quarterly report

### **Subtask 2.2 Site Ranking** (*Plan Finish: 03/31/15, Actual Finish: In Progress*)

Continued to work on analysis of proposed sites, with detailed mapping and integration of seismic and well log datasets. Sites of focus include, Terrebonne, Orca Basin, Sigsbee, and Perdido Institutions developed a unified mapping strategy. Work included developing structure and amplitude maps of key hydrate bearing horizons. Work also focused on doing log-seismic ties to interpret the potential for significant sand-bearing reservoirs at both locations.

- Worked on trying to locate and release the JIP Leg 2 seismic data.

- Discussed availability and processing of 2D seismic data with USGS;
- Discussed Terrebonne site selection using revised 2D data with project team.

### **Task 3.0 Develop Pre-Expedition Drilling/Logging/Coring/Sampling Operational Plan**

*(Plan Finish: 09/30/15, Actual Finish: In progress)*

Began preliminary discussion of initial Drilling/Logging/Coring/Sampling Operational Plan with project team. Refined operational plans for field program and field test. Prepared outline of Initial Operations Plan and Preliminary Rig Time Estimate. Worked with vendor GeoTek to understand facilities necessary to deploy PCTB tool and associated PCATS capability.

### **Task 4.0 Complete and Update IODP CPP Proposal**

*(Plan Finish: 09/30/15, Actual Finish: In Progress)*

Uploaded and categorized the data available for the Data Bank on the IODP CPP. Data was continually updated for a period of two months while permissions with WesternGeco and BP were defined. Developed two different PowerPoint presentations for IODP CPP meeting. Revised seismic, log and bathymetric data at Terrebonne and Sigsbee locations in support of CPP proposal. Participated in activities to address science and technical concerns with the IODP CPP and resubmittal by end of September.

Deliverable: Submitted CPP document and data for IODP panel review.

### **Task 5.0 Pressure Coring and Core Analysis System Modification and Testing**

*(Plan Finish: 09/30/15, Actual Finish: In Progress)*

#### **PCTB Lab Test (Bench Test):**

*Initial test results reported in Y1Q2 Quarterly report.*

Objective: To obtain a high degree of confidence in overall PCTB operation with focus on pressure retention.

- Completed full function lab tests with heavy mud.
- Completed full function lab test of all subassemblies with water.
- Held Lab test data review meeting.

- Inner core tube collapse test delayed due to Geotek work load. Results from test expected in next quarter.

**PCTB Land Test:**

- Identified borehole to perform land test at Schlumberger Cameron Facility.
- Developed experimental plan.
- Investigate cost sharing with JOGMEC and CTTF.
- Scheduled test for Dec. 2015.
- Site visit to Catoosa Testing Facility.
- Identified Schlumberger Cameron Test Facility as preferred test site.

**PCTB Marine Test (Phase 2):**

- Begin sea trial vessel vetting process

**FUTURE – BUDGET PERIOD 2 – REFINE AND PLAN DRILLING PROGRAMS:** Not Started

**FUTURE – BUDGET PERIOD 3 – DRILLING AND POST EXPEDITION ANALYSIS:** Not Started

**C. What opportunities for training and professional development has the project provided?**

Performed detailed geological analysis and site characterization of multiple locations. This involved training graduate students and post-doctoral scientists and undergraduates.

**D. How have the results been disseminated to communities of interest?**

- Plans are being made to present at the American Geophysical Union in Dec. 2015
- Geophysics paper in review: The mud-sand crossover on marine seismic data; Cook & Sawyer
- AGU abstract: Gas migration in the Terrebonne Basin gas hydrate system; Cook, Hillman & Sawyer

**E. What do you plan to do during the next reporting period to accomplish the goals?**

***Task 3.0 Develop Pre-Expedition Drilling / Logging / Coring / Sampling Operational Plan***

- Develop a more detailed operational plan for the CPP Proposal
- Develop specific scientific plan with schedule to determine whether proposed effort is feasible within limited time
- Submit report to DOE on operational plan

***Task 4.0 Complete IODP CPP Proposal***

- Revise and resubmit the CPP proposal based on reviews provided by the IODP
- Refine seismic mapping at proposed locations

***Task 5.0 Pressure Coring and Core Analysis System Modifications and Testing***

- Complete bench testing of PCTB
- Submit report on bench test results

**II. PRODUCTS:**

**A. Publications, conference papers, and presentations**

- Plans are being made to present at the American Geophysical Union in Dec. 2015.
- Geophysics paper in review: The mud-sand crossover on marine seismic data; Cook & Sawyer
- AGU abstract: Gas migration in the Terrebonne Basin gas hydrate system; Cook, Hillman & Sawyer

**B. Website(s) or other Internet site(s)**

Project Website: <http://www.ig.utexas.edu/gom2/>

**C. Technologies or techniques**

Nothing to Report.

**D. Inventions, patent applications, and/or licenses**

Nothing to Report.

**E. Other products**

Nothing to Report.

**III. CHANGES/PROBLEMS:**

**A. Changes in approach and reasons for change**

Based on discussions with DOE, we will plan to store and analyze pressurized hydrate cores. This was not originally planned for in the project. However, retrieving and analyzing pressure cores is a high priority for DOE. The addition of this scope will greatly improve the scientific results of this project.

**B. Actual or anticipated problems or delays and actions or plans to resolve them**

As reported in Y1Q2, the field test is delayed and will now fall in Phase 2. Budget and scope adjustments are still being negotiated with DOE. These will be finalized in the fourth quarter.

**C. Changes that have a significant impact on expenditures**

- Preliminary budgets provided by GeoTek for pressure coring are significantly higher than originally estimated. This will impact total cost (or the amount of work done) in future phases.
- Cost estimates for Land-based testing are higher than originally budgeted. It has been determined that PCATS (pressure characterization and analysis tool system) should be deployed in the Marine Test. This was not envisioned in the original proposal and will result in a significant cost increase (and scope increase) in Phase 2.
- The IODP drill ship may not be in the Gulf of Mexico within the timeframe originally envisioned. Thus the project may be extended and costs may increase.
- Requested addition of Hydrate Analysis will add a yet unknown cost.

**D. Change of primary performance site location from that originally proposed**

Nothing to Report.

#### **IV. SPECIAL REPORTING REQUIREMENTS:**

##### **CURRENT - BUDGET PERIOD 1 – SITE SELECTION**

###### *Task 1 – Project Management Plan*

- Submitted to DOE

###### *Task 2 – Site Location and Ranking Report*

- Will be included as a sub report in the Phase 1 Report

###### *Task 3 – Preliminary Drilling/Logging/Coring/Sampling Operational Plan Report*

- Will be included as a sub report in the Phase 1 Report

#### **5. BUDGETARY INFORMATION:**

The BP1 Cost Summary is located in Exhibit 1.



EXHIBIT 1 – COST SUMMARY

Budget Period 1							
Baseline Reporting Quarter	Q1		Q2		Q3		Q4
	10/01/14-12/31/14	Cumulative Total	01/01/15-03/31/15	Cumulative Total	04/01/15-06/30/15	Cumulative Total	07/01/15-09/30/15
	Q1	Q2	Q2	Cumulative Total	Q3	Cumulative Total	Q4
Cumulative Total	Q1	Q2	Q2	Cumulative Total	Q3	Cumulative Total	Q4
<b>Baseline Cost Plan</b>							
Federal Share	\$ 546,303	\$ 2,171,304	\$ 2,717,607	\$ 1,341,303	\$ 4,058,910	\$ 546,303	\$ 4,605,213
Non-Federal Share	\$ 324,627	\$ 15,057,876	\$ 15,382,503	\$ 324,627	\$ 15,707,130	\$ 324,627	\$ 16,031,757
Total Planned	\$ 870,930	\$ 17,229,180	\$ 18,100,110	\$ 1,665,930	\$ 19,766,040	\$ 870,930	\$ 20,636,970
<b>Actual Incurred Cost</b>							
Federal Share	\$ 51,635	\$ 1,818,533	\$ 1,870,168	\$ 209,729	\$ 2,079,897		
Non-Federal Share	\$ 15,345	\$ 501,005	\$ 516,350	\$ 129,045	\$ 645,395		
Total Incurred Cost	\$ 66,980	\$ 2,319,538	\$ 2,386,518	\$ 338,774	\$ 2,725,292		
<b>Variance</b>							
Federal Share	\$ (494,668)	\$ (352,771)	\$ (847,439)	\$ (1,131,574)	\$ (1,979,013)		
Non-Federal Share	\$ (309,282)	\$ (14,556,871)	\$ (14,866,153)	\$ (195,582)	\$ (15,061,735)		
Total Variance	\$ (803,950)	\$ (14,909,642)	\$ (15,713,592)	\$ (1,327,156)	\$ (17,040,748)		

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