Oil & Natural Gas Technology

DOE Award No.: DE-FE0023919

Quarterly Research Performance Progress Report (Period Ending 12/31/2014)

Deepwater Methane Hydrate Characterization and Scientific Assessment

Project Period 10/01/2014 – 9/30/2018

Submitted by:
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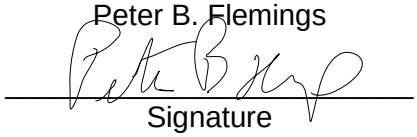

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1. ACCOMPLISHMENTS:

What was done? What was learned?

This report outlines the progress of the first quarter of the first budget period. The majority of the progress made was setting up project management, looking at the current status and plan forward for the pressure core system, and the project Kick-Off Meeting.

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 conventional core, pressure core and sample, downhole log, perform in situ testing and measure physical properties in methane hydrate reservoirs in the Gulf of Mexico (GOM) to meet this goal.

In Budget Period 1, we will analyze potential drilling sites and submit a Complementary Project Proposal (CPP) to the International Ocean Drilling Program (IODP). In Budget Period 2, detailed operational planning will commence as specific drilling plans are drawn up at each site, science party members are identified, the pressure coring system is tested and permitting takes place. In Budget Period 3, we will execute the drilling program and collect natural methane hydrate samples and characterize the in situ methane hydrate reservoir at the site locations in the Gulf of Mexico. Following the successful drilling program, we will perform initial analysis of the results and report our findings in the cruise specific IODP Proceedings Volume and in a special peer-reviewed journal volume. The Project Milestones are listed in the table below.

Milestone Description	Planned Completion	Actual Completion	Verification Method	Comments
Milestone 1.A: Update Project Management Plan	9/15/2014 (Y0)		Project Management Plan (Deliverable 1.1)	In progress (60%) – waiting to finalize language on financial reporting and DOE to confirm budget
Milestone 1.B: Project Kick-Off Meeting	10/1/2014 (Y1 Q1)	12/11/2014	Presentation	Complete
Milestone 1.C: Achieve ranked list of priority drilling locations	3/31/2015 (Y1 Q2)		Report (Deliverable 2.1)	In progress (20%) – Initial sites identified, site analysis team established, meets set to begin work in 2015
Milestone 1.D: Achieve detailed plan on scientific drilling goals	9/30/2015 (Y1 Q4)		Report (Deliverable 3.1)	
Milestone 1.E: Updated CPP Proposal submitted	9/30/2015 (Y1 Q4)		Report (Deliverable 4.1)	
Milestone 2.A: Scheduling of Hydrate Drilling Leg by IODP	6/30/2016 (Y2 Q3)		Report (Deliverable 5.1)	
Milestone 2.B: Demonstration of a viable PCS tool for hydrate drilling	9/30/2016 (Y2 Q4)		Report (Deliverable 10.1)	

Milestone 3.A: IODP and DOE agree on drilling program, project schedule, and commit to move forward	6/30/2017 (Y3 Q3)		Report (Deliverable 12.1)	
Milestone 3B: Complete Hazards Review	6/30/2018 (Y4 Q3)		Report (Deliverable 14.1, 15.1)	
Milestone 3.C: Acquisition of intact pressurized sandstone cores rich in hydrate	6/30/2018 (Y4 Q3)		Report (Deliverable 14.1, 15.1)	
Milestone 3.D: Acquisition of detailed log suite through log interval	6/30/2018 (Y4 Q3)		Report (Deliverable 14.1, 15.1)	
Milestone 3.E: Acquisition of in situ pressure & temperature measurements	6/30/2018 (Y4 Q3)		Report (Deliverable 14.1, 15.1)	
Milestone 3.F: in situ pressure measurements and pressure drawdown test in hydrate	6/30/2018 (Y4 Q3)		Report (Deliverable 14.1, 15.1)	
Milestone 3.G: Analysis of composition, habit, concentration, and petrophysical properties in hydrate-rich sandstone core	9/30/2018 (Y4 Q4)		Report (Deliverable 14.1, 15.1)	

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

- The Project Investigator hired a dedicated Project Manager for this project
- A draft Project Management Plan was created
- The Kick-Off Meeting was held on December 11, 2014
- Project Team meetings
- Definitization discussions
- Sub-award negotiations
- Development of SharePoint site
- Pressure Coring Strategy meeting was held in Salt Lake City on November 17 and 18, 2014

Task 2.0 Site Analysis and Selection
Plan Finish: 03/31/15
Actual Finish: In progress

Subtask 2.1 Site Analysis
Plan Finish: 12/31/14
Actual Finish: In progress

- The Site Analysis Team members were named and preparations for work to begin in January 2015 were made (setting up meeting times, discussion of what would be required, site assignments, etc.).
- UT negotiated seismic Master License Agreements with CGG and Schlumberger WesternGeco.
    - A supplement was signed with Schlumberger WesternGeco to provide seismic data access to the Mad Dog area.

Subtask 2.2 Site Ranking
Plan Finish: 03/31/15
Actual Finish: Not Started

Task 3.0 Develop Pre-Expedition Drilling / Logging / Coring / Sampling Operational Plan
Plan Finish: 09/30/15
Actual Finish: Not Started

Task 4.0 Complete and Update IODP CPP Proposal
Plan Finish: 09/30/15
Actual Finish: Not Started

FUTURE – BUDGET PERIOD 2 – REFINE AND PLAN DRILLING PROGRAMS

Task 5.0 Technical and Operational Support of CPP
Plan Finish: 09/30/16
Actual Finish: Not Started

Task 6.0 Research Vessel Access
Plan Finish: 09/30/16
Actual Finish: Not Started

Task 7.0 Refine Detailed Drilling / Logging / Coring / Sampling Operational Plan
Plan Finish: 09/30/16
Actual Finish: Not Started

Task 8.0 Assemble and Contract Pressure Coring Team Leads
Plan Finish: 09/30/16
Actual Finish: Not Started

Task 9.0 Plan for Permitting Process
Plan Finish: 09/30/16
Actual Finish: Not Started

Task 10.0 Review and Complete NEPA Requirements
Plan Finish: 09/30/16
Actual Finish: Not Started

Task 11.0 Pressure Coring and Core Analysis Systems
Plan Finish: 09/30/16
Actual Finish: Not Started

Subtask 11.1 Pressure Coring and Core Analysis System Modifications

Plan Finish: 09/30/16
Actual Finish: Not Started

Subtask 11.2 Field Test of Pressure Coring System
Plan Finish: 09/30/16
Actual Finish: Not Started

FUTURE – BUDGET PERIOD 3 – DRILLING AND POST EXPEDITION ANALYSIS

Task 12.0 Contract Project Scientists and Establish Project Science Team
Plan Finish: 12/01/16
Actual Finish: Not Started

Task 13.0 Finalize Drilling/Logging/Coring/Sampling Operational Plan
Plan Finish: 01/01/17
Actual Finish: Not Started

Task 14.0 Perform Hazard Review
Plan Finish: 04/01/17
Actual Finish: Not Started

Task 15.0 Field Operations
Plan Finish: 09/30/18
Actual Finish: Not Started

Subtask 15.1 Mobilization of a Scientific Ocean Drilling and Pressure Coring Capability
Plan Finish: 04/01/18
Actual Finish: Not Started

Subtask 15.2 Field Project Management, Operations and Research
Plan Finish: 07/01/18
Actual Finish: Not Started

Subtask 15.3 Demobilization of staffs, labs, and equipment
Plan Finish: 09/30/18
Actual Finish: Not Started

Task 16.0 Project Data Analysis and Reporting
Plan Finish: 09/30/18
Actual Finish: Not Started

Subtask 16.1 Sample and Data Distribution and Archiving
Plan Finish: 09/30/18
Actual Finish: Not Started

Subtask 16.2 Collaborative Post-Field Project Analysis of Geologic Data and Samples
Plan Finish: 09/30/18
Actual Finish: Not Started

Subtask 16.3 Proceedings of the IODP Volume
Plan Finish: 09/30/18

Actual Finish: Not Started

Subtask 16.4 Scientific Results Volume and Technical Project Presentations
Plan Finish: 09/30/18
Actual Finish: Not Started

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

- At the Pressure Core Strategy Meeting in Salt Lake City (November 17th and 18th, Jim Aumann (Aumann and Associates) gave a hands-on demonstration of the Pressure Core Tool with Ball (PCTB) for all participants.
    - This was beneficial to the team's general understanding of the tool as well as the modifications required for the tool to meet our testing objectives.

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

Nothing to Report.

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

Subtask 2.1 Site Analysis

- The Site Analysis Team members will attend a Site Review Meeting in Austin on January 27th and 28th to review the potential sites.
- The Site Analysis Team will also participate in a series of preparatory meetings to ensure progress is being made leading up to the review.

Subtask 2.2 Site Ranking

- The Site Analysis Team will end the Site Review Meeting with a draft list of prioritized drilling sites.
- Further analysis, after additional data acquisition, will confirm or modify the draft list.

2. PRODUCTS:

What has the project produced?

- The project produced a Kick-Off Presentation communicating the project management and technical plans forward.
    - This was shared with the Department of Energy during the Kick-Off Meeting on December 11, 2014.

a. Publications, conference papers, and presentations

Nothing to Report.

b. Website(s) or other Internet site(s)

Internal discussions at the Institute for Geophysics began on setting up an external project website. A webmaster / website creator was identified and the contents for the site were drafted.

The website is expected to communicate the following information:

- Project Description (summary, timeline, etc.)
- Project Status (photos, videos, etc.)
- Press (news articles, press releases, videos, etc.)
- Team (bios, contact information, etc.)
- Hiring
- Publications
- Other Useful Links

c. Technologies or techniques

Nothing to Report.

d. Inventions, patent applications, and/or licenses

Nothing to Report.

e. Other products

Nothing to Report.

3. CHANGES/PROBLEMS:
This section highlights changes and problems encountered on the project.

a. Changes in approach and reasons for change

Nothing to Report.

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

Nothing to Report.

c. Changes that have a significant impact on expenditures

Nothing to Report.

d. Change of primary performance site location from that originally proposed

Nothing to Report.

4. SPECIAL REPORTING REQUIREMENTS:
Special reporting requirements are listed below.

CURRENT - BUDGET PERIOD 1 – SITE SELECTION

Task 1 – Project Management Plan

- Draft Project Management Plan in progress.

Task 2 – Site Location and Ranking Report

- Report to be written next quarter as part of Site Selection Review and CPP submission preparations.

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

FUTURE – BUDGET PERIOD 2 – REFINE AND PLAN DRILLING PROGRAMS

Tasks 7 to 10 – Phase 2 Report includes the refined Operational Plan (Task 7), Pressure Coring Team Report (Task 8), Permitting Report (Task 9), and Environmental Review Report (Task 10)

Task 11 – Pressure Core Field Test Report

FUTURE – BUDGET PERIOD 3 – DRILLING AND POST EXPEDITION ANALYSIS

Task 13 - Final Drilling/Logging/Coring/Sampling Operational Plan Report

Task 14 – Field Program Hazards Report

Task 15 – IODP Preliminary Expedition Report

Task 16.1 – Project Sample and Data Distribution Plan

Task 16.3 – IODP Proceedings Expedition Volume

Task 16.4 – Expedition Scientific Results Volume

5. BUDGETARY INFORMATION:
The Cost Summary is located in Exhibit 1.

EXHIBIT 1 – COST SUMMARY

*****Budget, Baseline Cost Plans, and Non-Federal Share may change - award has not been definitized*****

Baseline Reporting Quarter	Budget Period 1							
	Q1		Q2		Q3		Q4	
	10/01/14-12/31/14		01/01/15-03/31/15		04/01/15-06/30/15		07/01/15-09/30/15	
	Q1	Cumulative Total	Q2	Cumulative Total	Q3	Cumulative Total	Q4	Cumulative Total
Baseline Cost Plan								
Federal Share	$ 546,303	$ 546,303	$ 2,171,304	$ 2,717,607	$ 1,341,303	$ 4,058,910	$ 546,303	$ 4,605,213
Non-Federal Share	$ 324,627	$ 324,627	$ 15,057,876	$ 15,382,503	$ 324,627	$ 15,707,130	$ 324,627	$ 16,031,757
Total Planned	$ 870,930	$ 870,930	$ 17,229,180	$ 18,100,110	$ 1,665,930	$ 19,766,040	$ 870,930	$ 20,636,970
Actual Incurred Cost								
Federal Share	$ 51,635							
Non-Federal Share	$ 15,345							
Total Incurred Cost	$ 66,980							
Variance								
Federal Share	$ (494,668)							
Non-Federal Share	$ (309,282)							
Total Variance	$ (803,950)							

Baseline Reporting Quarter	Budget Period 2							
	Q1		Q2		Q3		Q4	
	10/01/15-12/31/15		01/01/16-03/31/16		04/01/16-06/30/16		07/01/16-09/30/16	
	Q1	Cumulative Total	Q2	Cumulative Total	Q3	Cumulative Total	Q4	Cumulative Total
Baseline Cost Plan								
Federal Share	$ 1,766,212	$ 6,371,425	$ 1,766,212	$ 8,137,636	$ 1,766,212	$ 9,903,848	$ 1,766,212	$ 11,670,059
Non-Federal Share	$ 337,979	$ 16,369,736	$ 337,979	$ 16,707,715	$ 337,979	$ 17,045,693	$ 337,979	$ 17,383,672
Total Planned	$ 2,104,190	$ 22,741,160	$ 2,104,190	$ 24,845,351	$ 2,104,190	$ 26,949,541	$ 2,104,190	$ 29,053,731
Actual Incurred Cost								
Federal Share								
Non-Federal Share								
Total Incurred Cost								
Variance								
Federal Share								
Non-Federal Share								
Total Variance								

Baseline Reporting Quarter	Budget Period 3 (Year 1)							
	Q1		Q2		Q3		Q4	
	10/01/16-12/31/16		01/01/17-03/31/17		04/01/17-06/30/17		07/01/17-09/30/17	
	Q1	Cumulative Total	Q2	Cumulative Total	Q3	Cumulative Total	Q4	Cumulative Total
Baseline Cost Plan								
Federal Share	$ 3,700,069	$ 15,370,128	$ 3,700,069	$ 19,070,196	$ 3,700,069	$ 22,770,265	$ 3,700,069	$ 26,470,333
Non-Federal Share	$ 678,027	$ 18,061,699	$ 678,027	$ 18,739,725	$ 678,027	$ 19,417,752	$ 678,027	$ 20,095,778
Total Planned	$ 4,378,095	$ 33,431,826	$ 4,378,095	$ 37,809,921	$ 4,378,095	$ 42,188,016	$ 4,378,095	$ 46,566,111
Actual Incurred Cost								
Federal Share								
Non-Federal Share								
Total Incurred Cost								
Variance								
Federal Share								
Non-Federal Share								
Total Variance								

Baseline Reporting Quarter	Budget Period 3 (Year 2)							
	Q5		Q6		Q7		Q8	
	10/01/17-12/31/17		01/01/18-03/31/18		04/01/18-06/30/18		07/01/18-09/30/18	
	Q5	Cumulative Total	Q6	Cumulative Total	Q7	Cumulative Total	Q8	Cumulative Total
Baseline Cost Plan								
Federal Share	$ 3,700,069	$ 30,170,402	$ 3,700,069	$ 33,870,470	$ 3,700,069	$ 37,570,539	$ 3,700,069	$ 41,270,607
Non-Federal Share	$ 678,027	$ 20,773,805	$ 678,027	$ 21,451,831	$ 678,027	$ 22,129,858	$ 678,027	$ 22,807,884
Total Planned	$ 4,378,095	$ 50,944,206	$ 4,378,095	$ 55,322,301	$ 4,378,095	$ 59,700,396	$ 4,378,095	$ 64,078,491
Actual Incurred Cost								
Federal Share								
Non-Federal Share								
Total Incurred Cost								
Variance								
Federal Share								
Non-Federal Share								
Total Variance								

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