

Oil & Natural Gas Technology

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Quarterly Progress Report (July - September 2009)

DRILLING AND PRODUCTION TESTING THE METHANE HYDRATE RESOURCE POTENTIAL ASSOCIATED WITH THE BARROW GAS FIELDS

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Prepared for:
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National Energy Technology Laboratory

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Office of Fossil Energy

TWELFTH QUARTERLY PROGRESS REPORT

JULY-SEPTEMBER 2009

**CHARACTERIZATION AND QUANTIFICATION
OF THE METHANE HYDRATE RESOURCE POTENTIAL ASSOCIATED WITH THE
BARROW GAS FIELDS**

DOE Project Number: DE-FC26-06NT42962

Awarded to

North Slope Borough, Alaska

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EXECUTIVE SUMMARY

Phase 2 of this project commenced December 1, 2008, followed immediately on December 2 with a kick-off meeting in Barrow between the Petrotechnical Resources of Alaska (PRA) technical team and North Slope Borough project management team. In this, the third quarter of Phase 2, and the eleventh project quarter, the team focused on procurement, logistics and permitting issues, as well as progressing the design effort for the drilling, completion and tie-in of the wells. Based on responses from the vendor community to the Request for Proposals, a slate of vendors was identified to support project activities, and AFE-quality (Authorization for Expenditure) cost estimates were rigorously computed. The cost estimate results will require that project scope be adjusted, and a refocusing of effort in the East Barrow Gas Field is under consideration.

Significant activity in the field occurred in support of the Environmental Assessment and permitting process. Lake studies were completed to support water and ice chip offtake from lakes in the Barrow area for construction of ice pads and roads. Archeological studies were completed to identify any archeological sites within the project area. Meetings with permitting agencies were arranged to provide preliminary information on project activities, and the response from agency personnel was very positive and very helpful. Waste disposal options are being addressed, with annular injection, dedicated disposal well, use of an existing derelict well, or barging back to Prudhoe Bay for disposal all being considered.

PROGRESS, RESULTS AND DISCUSSION

TASK 1: Project Management Plan (PMP) and Project Reporting

Project reporting this quarter included regular meetings with DOE-NETL CO, and frequent interaction with TAG members regarding finalization of the coring manual.

TASK 2: Establish Technical Advisory Group

The Technical Advisory Group was asked to review the coring manual prepared to describe the objectives, procedures and resourcing requirements for acquisition, handling, and analysis of core for this project. Very valuable feedback was provided through this review process, and the team would like to thank Drs. Timothy Collett and Carolyn Ruppel in particular for their significant contributions to this review process.

TASK 3: Design optimized well drilling and completion

Well design work remained a key activity during this quarter, with progress made in a variety of areas:

Developed a Logistics Plan of Operations to address ice pad/ice road issues, and worked closely with ice construction consultant Robert Lewellen to choose best routing, pad locations and sources of water and ice chips. Snow fencing and other aids to initiate ice road and pad construction early in the season were reviewed.

Initiated a Logistics Plan of Operations to address long lead time item delivery, base case barging manifest preparation, barging schedule, rig and camp move schedule, etc. This plan will mature as discussions with vendors are initiated, and equipment inventories are developed.

Worked closely with permitting effort to support summer studies associated with drill pads/ice road access routing for East Barrow and Walakpa. Figure 1 is an overview map showing well locations, ice roads, and existing pipelines/facilities associated with the Barrow Gas Fields hydrate project.

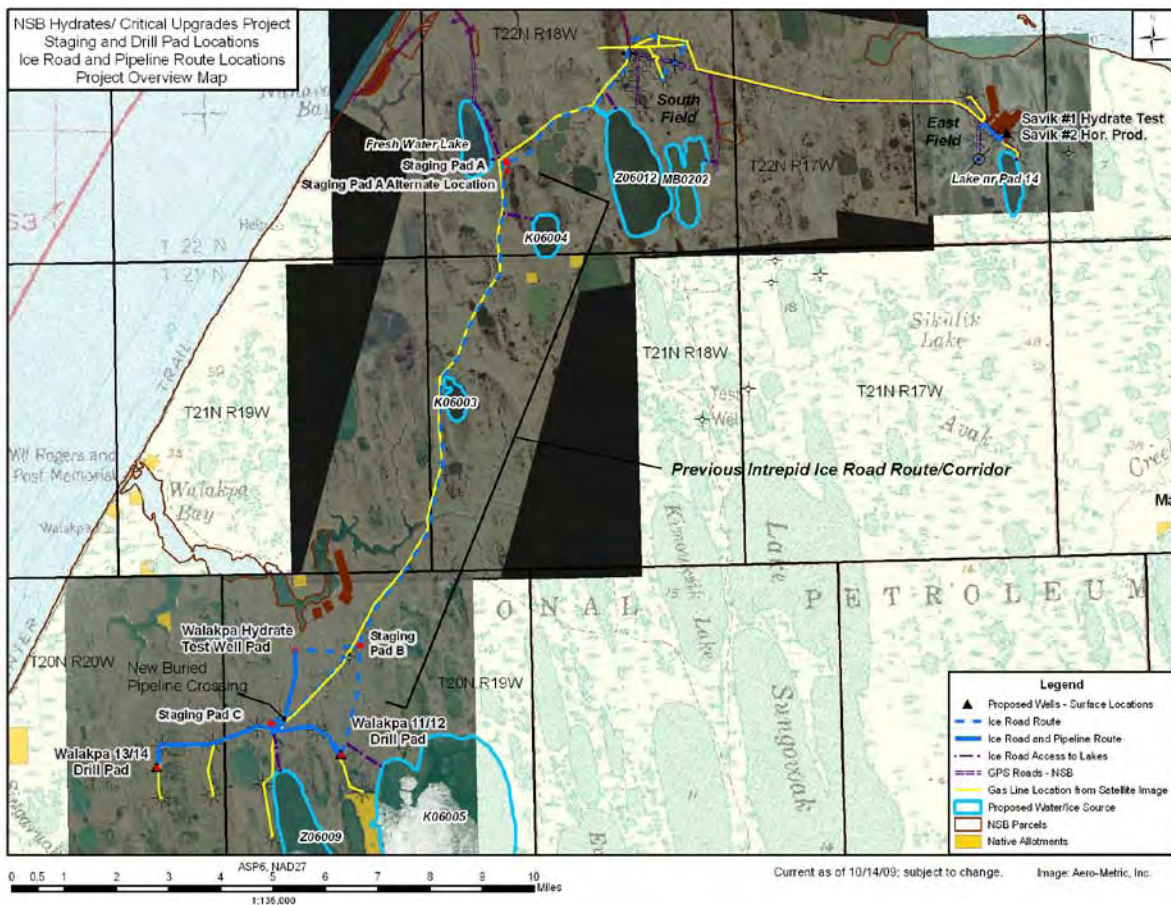


Figure 1—Overview map showing well locations, ice roads, gas lines, lakes, etc.

A topical report was published covering much of the design work in great detail. The report is available on the link for this project on the DOE-NETL website:

TASK 4: Design surveillance program and "smart well" components and conduct Phase IIA surveillance and monitoring

Pressure and temperature data acquired in the prior quarter are being analyzed for the Walakpa and East Barrow Gas Fields. Additionally, gas samples from E Barrow and Walakpa wells were collected, and analysis and interpretation are currently underway.

TASK 5: Prepare Request for Proposals and evaluate contractor bids

The procurement process was a focus of the project team again this quarter, and as a recap: The RFP was sent to 35 technically qualified contractors on July 10, 2009. The RFP included requests for prices of specified services or materials and detailed the NSB sealed bid process to be used by responders. Task 5 subtask progress this quarter included:

- Response Analysis of all RFP Proposals – Develop an Evaluation and Ranking spreadsheet
- Respond to all RFP Questions raised by proposers– Addenda I-VII
- Gap Analysis to determine if all required services were covered by proposals
- Evaluation and Ranking of qualified proposals.
- Program cost model development via P10/P50/P90 probability cases.
- Well Construction Phase Time Allocations : Savik#1, Savik#2, Walakpa
- Recommend slate of vendors to NSB

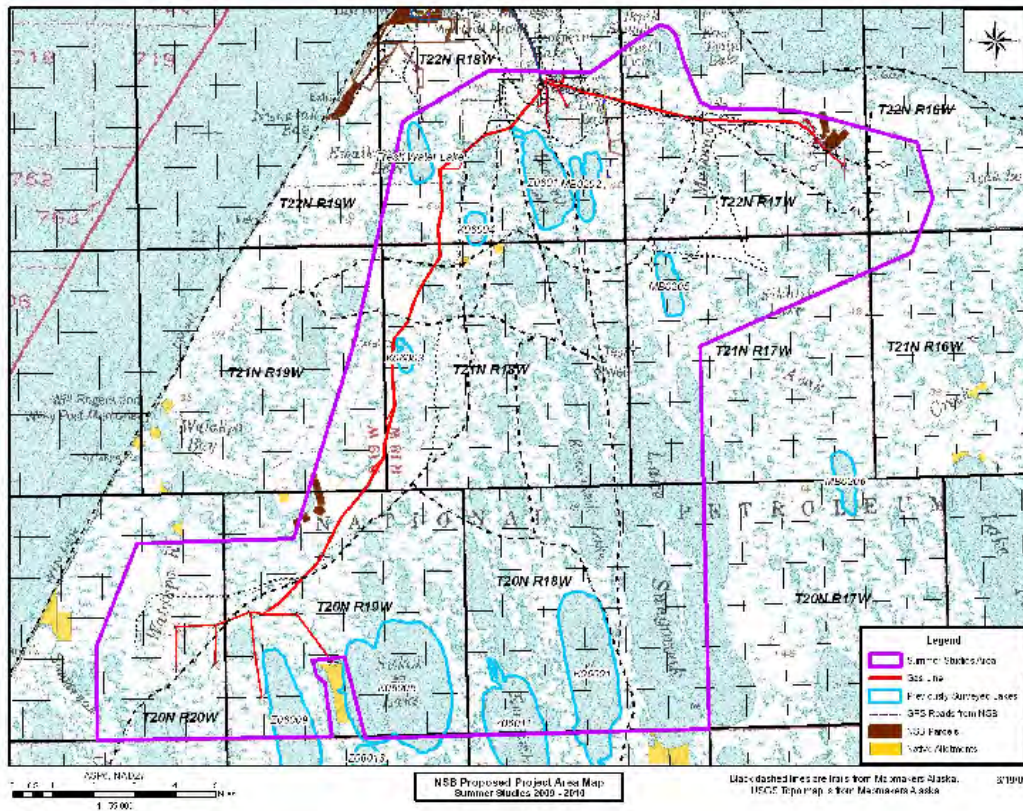
TASK 6: Permitting

Detailed project meetings with United States Fish and Wildlife Service and United States Army Corps of Engineers and coordination with all permitting agencies continued this quarter, resulting in ongoing cooperation on the project, integration of mitigation measures in project planning, and clear path forward on permitting requirements.

Summer studies commenced during this quarter, including archaeological clearance of pad sites and other areas, fisheries and water chemistry surveys for additional freshwater source lakes to support East Barrow ice/snow packed pad, EA contractor orientation, and survey crew access to the project area.

Support continued for DOE NEPA process, including NEPA citation research and support for regional environmental and logistic issues.

Figure 2: Summer studies coverage map



Subtasks associated with permitting this quarter included:

- Secured permits from State, Federal, and Local agencies including Coastal Zone Management approval for NSB/PRA and EA contractor field studies.
- Designed summer studies project plans for lakes research, site surveys, and archaeology/cultural studies
- Performed compliance training, and executed summer studies with subcontractor support
- Provided extensive support to EA contractor summer studies and EA project description including Fairbanks meeting with ABR (EA contractor) and extensive mapping and data support.
- Completed draft permitting plan of operations.

Work commenced this quarter on the waste disposal requirements for the project, and the following bullet points describe the activities undertaken in this area:

- Reviewed and screened existing wells in Walakpa, East Barrow and South Barrow fields for use as disposal wells.
- Reviewed annular disposal options and traditional disposal well options for disposal of liquid drilling waste in existing wells. Focused on wells likely to be plugged and abandoned for conversion to temporary disposal wells.
- Reviewed and researched options to dispose of solids and drill cuttings in NSB Barrow landfill as either waste or beneficial re-use cell cover material.

- Reviewed and researched requirements, options, and commercial terms to backhaul contaminated liquids, drill cuttings and solids to a Prudhoe Bay facility for disposal there.
- Began preparing a request to AOGCC and ADEC for a waiver of the oil spill contingency plan requirements for the proposed Barrow drilling activity. Will request a “gas well” designation for all activities.
- Began preparing a request to AOGCC for disposal well approvals in event dedicated disposal wells are needed.

Task #7 : Approval for Drilling

- Developed AFE full program cost model with major component and sub-component AFE classification categories, and used this cost model to estimate component and comprehensive project cost estimate.

Project Milestones:

Table 1. Milestone Plan for NSB Methane Hydrate Phase II Project

Task	Milestone	Due date	Comments
1	Updated Project Management Plan	1/12/09	Compl 2/4/09
1	Technology Status Assessment Report	2/6/09	Compl 2/26/09
2	TAG Members Confirmed	2/13/09	Compl 2/27/09
3	Well Drilling and Completion Plan Review submitted to TAG	3/16/09	Compl 3/16/09
3	RFP Specification Review submitted to TAG	5/1/09	Completed 5/29/09
4	Well Instrumentation Plan Review submitted to TAG	3/16/09	Completed 5/29/09
5	Request for Unpriced Technical Offer/Request for Qualifications Document	3/27/09	
5	Request for Proposal (RFP) with Specifications Documents	5/12/09	Completed 7/10/09
5	List of Prime Contractor selected for contracted service, equipment and materials	9/18/09	Completed 9/18/09
6	Permits required for Drilling Methane Hydrate Test wells at E. Barrow and Walakpa Fields	2/9/10	Ongoing
7	Approval for Drilling and Authority for Expenditure Topical Report	9/30/09	Completed 11/05/09
	Proceed to Budget Period 4	12/1/09	?
8	Updated Project Management Plan	12/21/09	
9	Contracts between NSB and all Prime Contractors providing services, equipment and materials	4/30/10	
10	Hydrate Test Well Drilled, cored and logged at East Barrow	11/30/10	*

10	**DECISION POINT** Complete or Abandon Hydrate Test Well Drilled at East Barrow	11/30/10	
10	Technical Presentation on Drilling of Hydrate Production Test Well	11/18/10	
11	Hydrate Production Test Well and Reservoir Surveillance Data and Analysis Topical Report	8/6/10	
	DECISION POINT Proceeding to Task 12 requires the written authorization of the DOE and the NSB	12/1/10	
12	Updated Project Management Plan	12/22/10	
13	Hydrate Test Well Drilled, cored and logged at Walakpa	6/30/11	*
13	**DECISION POINT** Complete or Abandon Hydrate Test Well Drilled at Walakpa	6/30/11	
13	Technical Presentation on Hydrate Production Test Well	10/24/11	
14	Hydrate Production Test Well and Reservoir Surveillance Data and Analysis Topical Report	8/5/11	
14	Technical Presentation on Hydrate Production Well Performance	5/22/12	
15	Updated Project Management Plan	6/22/12	
16	Hydrate Production Test Well and Reservoir Surveillance Data and Analysis Topical Report	8/5/13	
17	Technical Presentation on NSB/DOE Hydrate Project	1/30/13	
17	Technical Presentation on NSB/DOE Hydrate Project	5/30/13	
17	Technical Presentation on NSB/DOE Hydrate Project	9/27/13	

Accomplishments

- RFP released July 10, 2009
- Pre-proposal conference for all potential vendors scheduled for July 23 (Anchorage)
- Heavy equipment meeting scheduled for July 29 (Barrow)
- Summer studies for 2009 completed, including archaeological clearance of pad sites and other areas, fisheries and water chemistry surveys for additional freshwater source lakes to support East Barrow ice/snow packed pad, EA contractor orientation and support, and survey crew access to the project area.
- Well design and execution plan completed and cost estimates prepared based on RFP responses
- Vendors selected based on normalized ranking of responses to RFP
- Comprehensive cost analysis completed for all components of project scope, based on input gathered from vendor proposals

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