Oil & Natural Gas Technology

DOE Award No.: DE-NT0006553

Progress Report
Fourth Quarter 2009

ConocoPhillips Gas Hydrate Production Test

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Prepared for:
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National Energy Technology Laboratory

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Office of Fossil Energy

Disclaimer

Executive Summary

Accomplishments

- Continued the process to gain working interest co-owner approval for the proposed production test sites.
- Progressed Experimental Design and Well Design

Current Status

- Integrating Prudhoe Bay Unit working interest owner feedback into revised ballot
- Progressing simulation and experimental projects to support field trial

Introduction

Work began on the ConocoPhillips Gas Hydrates Production Test (DE-NT0006553) on October 1, 2008. This report is the fifth quarterly report for the project and summarizes project activities from October 1, 2009 to December 31, 2009. Work during this quarter was focused on Tasks 3 and 4 from Phase 1 (Site Identification) and Tasks 5 and 6 from Phase 2 (Field Test Planning.)

Task 3 (Phase 1): Field Site Ownership Partner Negotiations

ConocoPhillips continues its efforts to gain permission from Unit co-owners for execution of production test at the site identified under Subtask 2.6. ConocoPhillips facilitated meetings with DOE, BP, ExxonMobil, Chevron, USGS, and ASRC representatives on November 3rd in Anchorage to advance project execution. At a follow up meeting of the Prudhoe Bay Working Interest Owners agreement was reached to draft a formal ballot for the proposed production test on an ice pad adjacent to Prudhoe Bay Unit L-pad. ConocoPhillips will continue to keep DOE informed of the progress on gaining formal co-owner approval for the field trial through regular project communications and will inform DOE of any issues that could affect the execution of the production test planned under this project.

Task 4 (Phase 1): Evaluation of Synergies with DOE-BP Arctic Field Project

ConocoPhillips personnel have facilitated meetings with Anchorage-based BP hydrates staff to review synergies between the ConocoPhillips CO_2/CH_4 exchange production test and BP's long-term depressurization test. Advancement of this initiative will occur upon receipt of a formal proposal to Prudhoe Bay Unit working interest owners for long-term depressurization test, outlining proposed location and operational plan.

Task 5 (Phase 2): Detailed Well Planning/Engineering

ConocoPhillips experimentation has confirmed that upon carbon dioxide injection, "excess free water" may combine with CO_2 to form CO_2-hydrate. Upon CO_2-hydrate formation, reservoir permeability may decrease sufficiently low that matrix injection of CO_2 will be inefficient. To address this eventuality, scoping evaluation of hydraulic fracture stimulation, using the commercially available "StimPlan" program, is underway.

Task 6 (Phase 2): Pre-Drill Estimation of Reservoir Behavior

ConocoPhillips simulation confirmed laboratory results regarding the detrimental affects of CO_2-hydrate formation on reservoir permeability. Simulation also indicates that heat-of-hydrate-formation, associated with conversion of 30% free water to CO_2-hydrate, at expected North Slope reservoir conditions, will increase reservoir temperature less than 1° Fahrenheit.

Cost Status

Expenses incurred during this quarter were above the Baseline Cost Plan as shown in Exhibit 1. However, Cumulative Incurred Costs are below Cumulative Baseline Cost due to the delay in purchasing long-lead items and fewer cumulative hours required by our Alaska and Technology staff to progress the project.

Exhibit 1 - Cost Plan/Status

COST PLAN/STATUS									
Project Phase ==>	Phase 1, Site Ident.		Phase 2, Field Test Planning			Phase 3, Field Test			
Baseline Reporting Quarter ==>	Q408	Q109	Q209	Q309	Q409	Q110	Q210	Q310	Q410
BASELINE COST PLAN									
Federal Share	0	0	60000	1450000	0	8315000	1300000	630000	0
Non-Federal Share	325100	499172	390875	333875	170699	361135	353410	348523	151351
Total Planned	325100	499172	450875	1783875	170699	8676135	1653410	978523	151351
Cumulative Baseline Cost	325100	824272	1275147	3059022	3229721	11905856	13559266	14537789	14689140
ACTUAL INCURRED COSTS									
Federal Share	0	0	0	0	0				
Non-Federal Share	121012	186099	275348	354447	254734				
Total Incurred Cost	121012	186099	275348	354447	254734				
Cumulative Incurred Cost	121012	307111	582459	936906	1191640				
VARIANCE									
Federal Share	0	0	-60000	-1450000	0				
Non-Federal Share	-204088	-313073	-115527	20572	84035				
Total Variance	-204088	-313073	-175527	-1429428	84035				
Cumulative Variance	-204088	-517161	-692688	-2122116	-2038081				

Milestone Status

Milestone Status is shown in Exhibit 2 below.

Exhibit 2 – Milestone Status

MILESTONE STATUS REPORT						
#	Task/Subtask Description	Planned Start Date	Planned End Date	Actual Start Date	Actual End Date	Comments
	Field trial site selected	1-Oct-08	31-Mar-09	1-Oct-08	3-Apr-09	Top sites identified
	Partner negotiations completed	15-Feb-09	31-Mar-09	17-Mar-09		Ongoing
	Synergies with DOE-BP project identified	1-Mar-09	31-Mar-09	30-Mar-09		Ongoing
	Well test designed and planned	1-Apr-09	30-Sep-09	10-Mar-09		Ongoing
	Well and reservoir performance predicted	1-Jul-09	31-Dec-09	22-Jun-09		Ongoing
	Field testing completed	1-Jan-10	31-Dec-10			
	Injection and production monitoring completed	1-Apr-10	30-Apr-10			
	Well abandonment complete	1-May-10	31-Dec-10			

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