"Characterizing Natural Gas Hydrates in the Deep Water Gulf of Mexico"

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Abstract

The main reason for conducting the research described in this presentation is to collect data, generate protocols, develop knowledge and promote safety in the future development of oil and gas fields in the deep water Gulf of Mexico (GOM). To accomplish this main objective, we have developed a comprehensive research plan that is divided into two phases, with an optional third phase, if warranted.

Phase I began in 2001 and will last through the first quarter of 2003. During Phase I, we will hold workshops, collect and analyze data, develop protocols, and plan a core and well log data collection effort that will be conducted during Phase II of this project.

A data collection workshop was held on March 14-15, 2002. The goals of the workshop were to develop a clear understanding of what is known and available about naturally occurring hydrates in the GOM, determine the additional data needed to meet the goals of the Joint Industry Project (JIP), and to identify individuals and institutions actively involved in projects related to this JIP. Additional workshops are planned for May 9-10, 2002, to develop details for modeling and drilling needs. The Modeling Workshop will be used to determine what data are required by geoscientists and engineers for their models. The Drilling and Coring Workshop will be conducted concurrently with the Modeling Workshop. Areas of interest to this workshop are how to drill through naturally occurring gas hydrates, how to core these hydrates, and how to handle, transport and test these core samples.

We will also encourage the development of gas hydrate sensors, develop well bore stability models, and improve seismic data acquisition and analyses of the formations near the seabed floor in deep water. We will also begin laboratory analyses of the kinetic, thermodynamic, physical and chemical properties of core samples that are saturated or partially saturated with gas hydrates. All of these measurements will improve our ability to measure the properties of gas hydrates using signals from seismic, drilling, MWD, logging and coring operations in future field tests. One important deliverable from Phase I will be a recommendation concerning the location for drilling test wells in Phase II.

Phase II will primarily consist of drilling wells in two areas in the deep water GOM for the primary purpose of collecting drilling, MWD, logging and coring data. Phase II will occur during 2003 and 2005. We will evaluate all data in detail and integrate the data with existing data and seismic information. Two wells will be drilled in an area that

should contain a large volume of naturally occurring gas hydrates. The third well will be drilled nearby, but in an area that does not contain any gas hydrates. Ideally, the data sets from the two areas will allow us to determine the effects of gas hydrates in the pore space of the rocks upon the responses from seismic data, drilling data, MWD data, open hole logging data, core data and any test data we can acquire.

The results from Phases I and II will be evaluated. If warranted by the results, a Phase III project will be proposed. The Phase III project will begin in 2005 and will conclude in 2007. Phase III will involve drilling seven additional data collection wells in the deep water GOM.