

EMD Gas Hydrates Committee Report

November 1, 2012

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Vice-Chairs:

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Committee Activities

The Gas Hydrate Committee convened two sessions (one oral and one poster) at the 2012 ACE in Long Beach. In addition, Vice-Chair Ashley Gould organized a “Friends of Gas Hydrate” meeting at the convention on the afternoon of Tuesday, April 24.

Because much of the gas hydrate activity related to energy resource development is occurring outside of North America, there is a specific need for members who will contribute to the committee’s work by reviewing reports, organizing sessions at AAPG conventions, and contributing to the EMD Web Portal. Thus far, none of those approached to serve on the committee besides the chair and vice-chair have agreed to do so.

United States Gas Hydrate Program

The U.S. Department of Energy’s Methane Hydrate Program continues to pursue several important areas of gas hydrate research and characterization despite severe budget constraints. The selected projects are designed to increase the understanding of gas hydrates in the context of future energy supply and changing climates. The following are the most significant programs and results:

Ignik Sikumi Gas Hydrate Exchange Trial

The Ignik Sikumi Gas Hydrate Exchange Trial was carried out from February 15 to April 10, 2012 in Prudhoe Bay Field, Alaska. The project team injected a mixture of carbon dioxide (CO₂) and nitrogen into hydrate-bearing sand, and demonstrated that this mixture could promote the production of natural gas.

This test was the first ever field trial of a methane hydrate production methodology whereby CO₂ was exchanged in situ with the methane molecules resulting in methane gas and CO₂ hydrate. The depressurization phase of the test extended for 30 days. The prior longest-duration field test of methane hydrate extraction via depressurization was six days and was conducted in the 2007-2008 Mallik test in the Canadian Arctic.

A 9-minute video on the project is available at:
<http://www.youtube.com/watch?v=zfgnaeBPZKY>



Nordic-Calista Drilling Rig #3 on site at the Ignik Sikumi #1 well, Prudhoe Bay Unit, Alaska North Slope - photo courtesy ConocoPhillips

ConocoPhillips will refine, analyze, and make publicly available field data acquired during the Ignik Sikumi program. An overview of the project was presented by David Schoderbek (ConocoPhillips) at the Long Beach ACE meeting. Additional results and interpretations will be presented at the AGU 2012 Fall Meeting in San Francisco (December 3-7).

It is worth noting that a press release from the DOE was interpreted by some as meaning that production of natural gas from hydrate was now commercially viable through CO₂ injection. However, far more research is needed to validate and advance this technology for hydrate development.

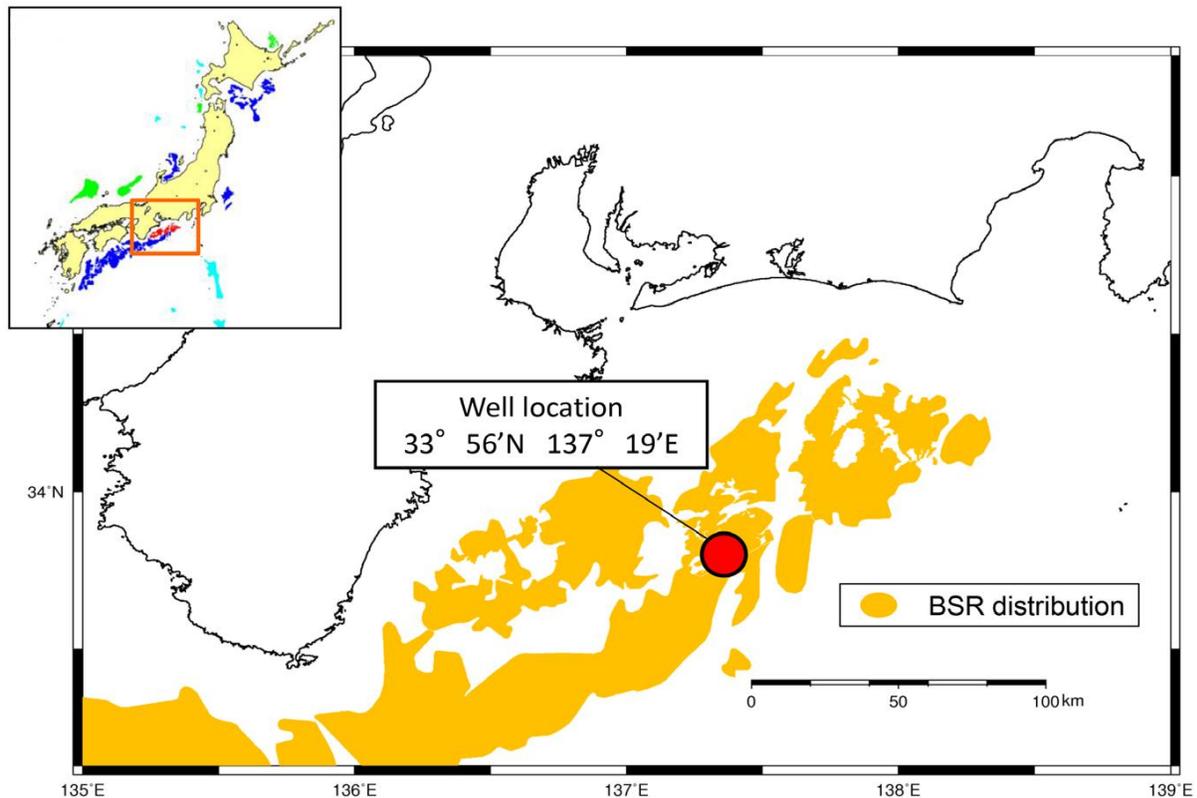
Marine Gas Hydrate Characterization

The DOE-funded Gulf of Mexico Joint Industry Project (JIP) has worked collaboratively with industry, international groups, and U.S. federal agencies to determine the scale, nature, and implications of gas hydrates in the U.S. Outer Continental Shelf since 2001. The JIP is scheduled to end within the next year. The JIP has funded two field expeditions in the gulf along with laboratory studies at over a dozen universities. In addition, the project initiated a wide range of technology development efforts that have also been applied in other areas of marine research. The project focus has been to address both gas hydrate resource characterization and drilling safety.

As the JIP concludes its work, the DOE is funding new and on-going research efforts to assess the response of hydrate-bearing sediments to environmental change, and to better understand the potential role of gas hydrate in seafloor stability and geohazards.

Gas Hydrate in Japan

A gas hydrate production test will be conducted in the Nankai Area of Offshore Japan in early 2013. The test site is located on the north slope of Daini Atumi Knoll off Atsumi and Shima peninsulas in water depths of approximately 1000 meters. Seismic surveys, cores, and log data collected at this location during an exploratory drilling program in 2004 identified a zone of turbiditic sediments several tens of meters thick, containing concentrated gas hydrate. These deposits are approximately 300 meters below the seafloor. The test is part of the Research Consortium for Methane Hydrate Resources in Japan (MH21), sponsored by the Japanese Ministry of Economy, Trade and Industry (METI).



The drilling location of the first methane hydrate offshore production test

In preparation for the production test, a part of the production well (AT1-P) and two temperature monitoring boreholes (AT1-MC/MT1) were drilled in February and March, 2012. During drilling operations, intensive geophysical logging was conducted. Additionally, a dedicated borehole in the same area was drilled to recover pressure cores. This was undertaken to obtain detailed data regarding the geology, geomechanics, geochemistry, microbiology, and petrophysics of the hydrate-bearing sediments.

With a successful production test, commercial gas hydrate production may commence within a few years.

Gas Hydrate in India

An LWD drilling program is scheduled for offshore India in late 2012. This program is focused on reservoir delineation and resource assessment, and is targeting hydrate-bearing sands. At present, information about the drill sites and the program timetable is not readily available.

Meetings

Gas hydrate sessions are included in many conferences, especially those that feature unconventional resource developments. However with the slow pace of progress toward commercialization in North America, the number of gas hydrate sessions and papers at industry meetings is small compared with resource plays such as gas shale. Gas hydrate papers have been invited to the URTeC meeting but it is unknown for now how many hydrate abstracts will be received and accepted.

The American Geophysical Union (AGU) Fall Meeting will be held from Monday, December 3 thru Friday, December 7 in San Francisco. As in past years this meeting will include a number of sessions devoted to gas hydrate research. The Wednesday schedule includes three sessions on marine and permafrost gas hydrate systems, with a total of 23 papers. The Thursday schedule includes two paper sessions and three poster sessions, with a total of seven papers and 36 posters covering fluid flow and gas hydrates in continental margins, the role of gas- or hydrate-containing sediments in deformation and slope stability, and marine and permafrost gas hydrate systems.