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MALLIK GAS HYDRATE PRODUCTION RESEARCH PROGRAM

AURORA RESEARCH INSTITUTE



PROJECT DETAILS

The 2006-08 Mallik gas hydrate production research program is being conducted to evaluate the natural properties of gas hydrates, and for the first time to measure and monitor their long-term production behavior. The Japan Oil, Gas and Metals National Corporation (JOGMEC) and Natural Resources Canada (NRCan) are funding the program and leading the research and development studies. Aurora College/Aurora Research Institute is acting as the operator for the field program with support from Inuvialuit Oilfield Services who will be the project managers.

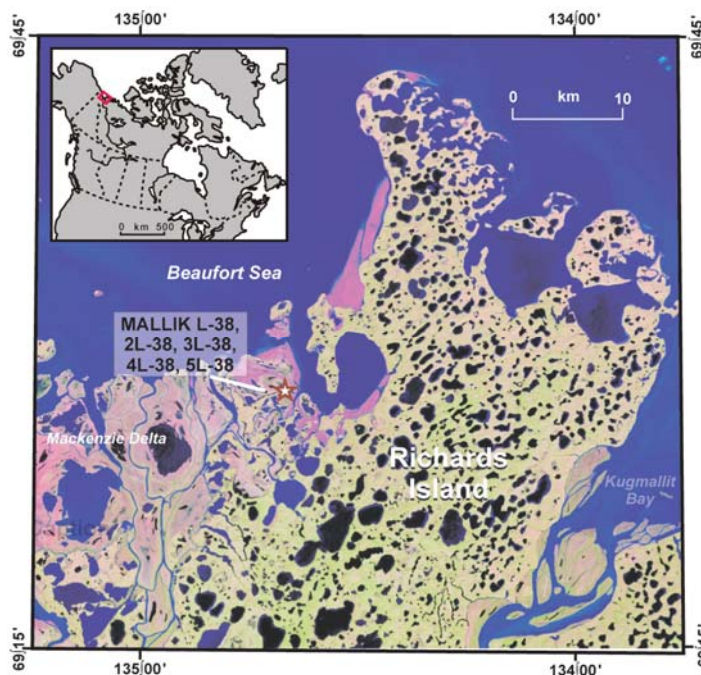
WINTER 2007: OPERATIONS

The primary objective of the winter 2007 field activities was to undertake new geophysical studies, install monitoring devices, complete a short duration production test, and prepare facilities for a planned second year testing program. A drilling rig, a service rig, and support facilities were mobilized by ice road from Inuvik to the Mallik site in January to allow re-entry and completion operations on Aurora/JOGMEC/NRCan Mallik 2L-38 and 3L-38 wells.

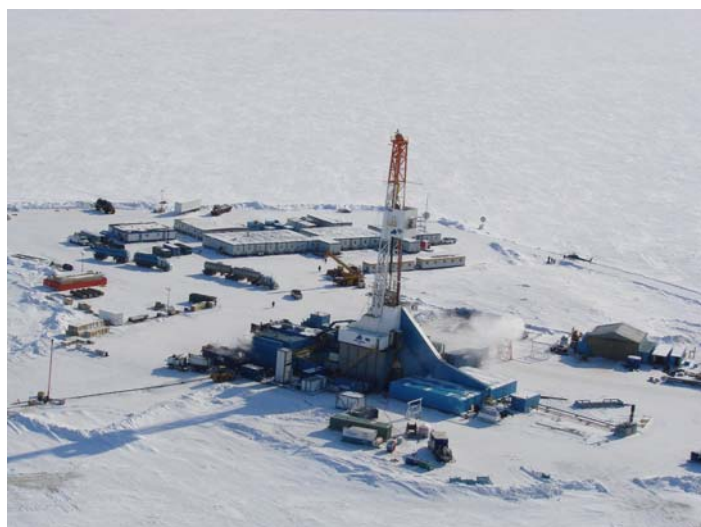
Mallik 2L-38 was spud on February 23rd, 2007. Originally drilled to 1150 m as a gas hydrate research and development well in 1998, this well was re-drilled and deepened to 1310 m (RKB). A state of the art well logging program was carried out to measure *in situ* gas hydrate properties and a production casing was installed. Five externally mounted geophysical sensors were successfully installed outside of the casing to monitor formation response to testing.

Operations on Mallik 3L-38, originally drilled in 2002, included deepening of the well from 1188 m to 1275 m. Logging was carried out to characterize the geology below the gas hydrate bearing intervals and to establish candidate horizons for water injection planned during 2007/08 production testing. Mallik 3L-38 was cased and subsequently perforated and injection tested.

After completion of installations at Mallik 2L-38 a 60-hr pressure draw down production test was completed on a 12 m gas hydrate interval to evaluate equipment performance and short-term producibility of gas hydrate.



The Mallik site is located ~130 km north of Inuvik, in the Mackenzie Delta.



Drilling activities during winter of 2007 at Mallik

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WINTER 2008: OPERATIONS



Flare from 2007 production test

The primary focus of winter 2008 operations will be to undertake longer production testing of the Mallik 2L-38 well. The onsite operations will involve the re-entering of both Mallik 2L-38 and 3L-38. Pressure draw down production testing will take place on the lower gas hydrate intervals (approximately 1100m depth) tested in 2007. Gas and produced water will be brought to the surface measured, and separated to allow for water re-injection in Mallik 3L-38. A full research and development program will be carried out by JOGMEC and NRCan with measurement of formation response to production by repeat cased hole logging and monitoring of a number of in situ geophysical devices installed in 2007. At the conclusion of the production test, all wells will be abandoned and all equipment will be moved off location.

SCHEDULE AND ACTIVITIES:

January - February

- Ice road construction from Inuvik to Mallik
- Mobilization of equipment and lease construction
- 60- to 70-man camp

March - early April

- Operation of service rig
- Re-entry of Mallik 3L-38 to establish water injection well
- Re-entry of Mallik 2L-38 to establish production test well
- Production testing
- Geophysical logging and monitoring
- Abandonment of all wells
- Removal of all equipment from site and demobilization by ice road

Summer

- Site clean up, inspections and environmental monitoring

RELEASE OF SCIENTIFIC RESULTS

Gas hydrates are thought to represent a vast potential energy resource for Canada with concentrated deposits known to occur in the Mackenzie-Beaufort area and the Arctic Islands. The research and development studies being undertaken by JOGMEC and NRCan being undertaken at Mallik are designed to address gaps in understanding of the properties of gas hydrates, document the production response and assess the utility of conventional production technologies. The Canadian effort is led by the Geological Survey of Canada as part of Earth Science Sector's Gas Hydrate Research Program.

Scientific and engineering results from the program will be made to available to scientists, regulators and northern stake holders through the release of publicly available reports and data bases. Aurora College and the Government of the NWT hope to encourage northern participation in all aspects of the program.

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