Goal & Scientific Objective
The Mallik 2002 Gas Hydrate Production Research Well Program aimed to study and sample gas hydrate bearing sediments in a permafrost setting and to produce hydrocarbons by different stimulation tests. Three holes were drilled to penetrate a section with extensive gas hydrate accumulations in a depth interval from ~900 m - 1100 m below approx. 620 m of permafrost.

Operational Achievements
Three holes were drilled at 40 m distance, reaching a final depth of 1179 m (Mallik 3L-38), 1184 m (Mallik 4L-38) and 1165 m (Mallik 5L-38).

An extensive downhole measurement program including the full suit of open hole logs, porosity measurements, NMR and crosshole seismic experiments was executed by service companies.

Hydrate-bearing core has been retrieved from Mallik 5L-38 between 891 and 1150 m

In all wells, DTS (Distributed Temperature Sensor) cables were installed behind casing.

Several depressurization tests and a five-days thermal stimulation test were performed in the gas hydrate interval.

Data & Sample Access
Data holdings can be accessed on the ICDP website.

Web & Media Resources
http://mallik.icdp-online.org/
https://en.wikipedia.org/wiki/Mallik_gas_hydrate_site
www.youtube.com/watch?v=7OaQeeWxf0Y

Timeline
2001 ICDP proposal submission and approval
2001 - 2002 drilling/coring operations including production tests

Principal Investigators
Scott R. Dallimore, Geological Survey of Canada
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Scientific Findings

Investigations on drill core from Mallik 5L-38 have demonstrate that gas hydrate occurs within the pore space of medium grained sands with gas hydrate saturations between 50% and 90%

Isotope and chemical studies revealed that hydrocarbons trapped in gas hydrates at Mallik are not formed in-situ, but from thermal degradation of organic material at depths >4000 m. The precursor organic material of hydrocarbons is composed of a variety of higher land plants with a terrestrial origin.

Gas hydrates probably formed from formerly free-gas reservoirs during the last ice age when ground temperatures dropped. Intrapermafrost hydrocarbons of microbial origin underline a complex thermal history of the area.

The cumulative production of gas from the gas hydrate interval during a five day thermal production test was 468 m³.

Key Publications


