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Fire from ice: Gas hydrates next hot play?: Research team heads to Arctic to look for ways to tap frozen fuel bonanza

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DATE: 2006.09.30

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SECTION: News

PAGE: A3

BYLINE: Margaret Munro

SOURCE: CanWest News Service

ILLUSTRATION: Photo: The Canadian Press, file / Mallik drill rig on the Mackenzie Delta coast of the Beaufort Sea, shown in this 2002 file photo, has bored 1,200 metres into the tundra, studying an unusually rich and stable deposit of a mysterious substance called gas hydrates.

WORD COUNT: 758

An international team plans to head to the Canadian Arctic this winter to tap into a tantalizing new source of energy thought to exceed all the oil, conventional gas and coal reserves in the world.

The \$45-million project, funded largely by the Japanese, will explore ways to harvest the frozen fuel known as gas hydrates, which look like ice but burn with a flame when ignited. The hydrates, found in vast quantities in permafrost and under the world's oceans, trap and concentrate methane gas in tiny molecular crystals or cages.

The two-year project will build on earlier research done on the edge of the Beaufort Sea that showed the gas could be drawn up to the surface, at least in small amounts.

The multibillion-dollar question is whether hydrates can be economically produced, say the researchers who will work at the research site, known as Mallik, on the northern edge of the Mackenzie Delta.

In 2002, the researchers pumped hot water down a 1,200-metre well at Mallik that melted the gas hydrates in the vicinity. Enough gas escaped up the well to fuel a flame that lit up the frigid landscape and demonstrated for the first time the gas could be released.

The upcoming project will also tap into growing expertise in northern communities.

"We're breaking new ground with these partnerships," says Andrew

Applejohn, director of the Aurora Research Institute in Inuvik, which will be overseeing the drilling operations.

The project received key environmental approval in mid-September and drilling is expected to start in January.

Mallik is so remote it can only be reached in winter by ice road or helicopter. But the hydrates, a kilometre underground, are much more accessible than those under the world's oceans.

Fire from ice: Gas hydrates next hot play?: Research team heads to Arctic to look for ways to tap frozen fuel

"It's the most concentrated and well-described site in the world," says Scott Dallimore, a gas hydrate expert at Natural Resources Canada and one of the lead investigators.

High pressure and cold temperatures are needed to trigger formation of the lattice cages made of water molecules that trap the methane gas. The methane is produced as buried organic material rots and the gas percolates towards the surface until conditions are right to form hydrates in and under permafrost.

In the oceans, degrading organic matter on the seafloor generates methane that becomes trapped as hydrates because of the immense pressures underwater. Canadian scientists made international headlines in 2002 when they found car-sized chunks of hydrates sticking out of the seafloor off the British Columbia coast in waters almost a kilometre deep. Hydrates have long intrigued and worried scientists, who fear they might release large amounts of methane, a potent greenhouse gas, into the atmosphere as the climate warms.

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Dallimore cautions the estimates "do not speak to the reality, or the practicality" of recovering the gas. But the upcoming project should give a sense of its feasibility. About 70 engineers, researchers and drillers will spend almost a month at Mallik this winter, drilling down 1,300 metres to test techniques to depressurize hydrates. It's hoped the gas will be liberated and flow to the well as the pressure drops. The team will return for three months in the winter of 2008 for further tests.

Dallimore and his Canadian colleagues are providing expertise and support, but their partners at Japan Oil, Gas and Metals National Corporation (JOGMEC) are paying most of the bill. NRCan is providing \$2 million in direct funding for the project.

Kenichi Yokoi, leader of the JOGMEC's research team declined to comment on Canada's financial contribution. But he said in an interview the Japanese team values its "good relations" with NRCan scientists and is keen to build on work done at Mallik in 1998 and 2002.

Japan, which imports most of its fuel, has huge stores of offshore gas hydrates and has made it a priority to see if they can be exploited. The team has been exploring the hydrates in Japanese waters from research ships. But Mallik has the advantage of providing a solid platform — permafrost — to work from.

Dallimore says all data from the upcoming project will be made public after two years. He says the team will also explore the environmental issues associated with hydrate production.

"These will obviously have to be carefully addressed before commercial extraction takes place."

Tapping into a cool fuel of the future: International team plans \$45-million expedition to the Canadian Arctic to explore ways of harvesting gas hydrates

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DATE: 2006.09.30

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SECTION: News

PAGE: J7

BYLINE: Margaret Munro

SOURCE: CanWest News Service

ILLUSTRATION: Colour Photo: Scott Dallimore, CanWest News Service / In the Arctic, spewing gas can prevent ice from forming, even when temperatures drop to -40 C.

WORD COUNT: 766

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Hydrates have long intrigued and worried scientists, who fear they might release large amounts of methane, a potent greenhouse gas, into the atmosphere as the climate warms. But hydrates also promise to supply gas that burns much cleaner than coal or oil. One cubic metre of hydrates expands to 164 cubic metres of methane gas at room temperature and pressure.

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International project to explore Arctic for new energy source: \$45M research aims to harvest gas hydrates

PUBLICATION: National Post
DATE: 2006.09.30
EDITION: Toronto
SECTION: News
PAGE: A8
BYLINE: Margaret Munro
SOURCE: CanWest News Service
WORD COUNT: 399

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The project is expected to start drilling in January for the hydrates that are a kilometre underground but are much more accessible than those under the world's oceans.

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The low estimate is enough gas to supply Canada's energy needs for a couple of hundred years — if it could be recovered.

Potential energy source lures international team: Frozen gas hydrates in Arctic look like ice but burn with a flame when ignited

PUBLICATION: Times Colonist (Victoria)

DATE: 2006.09.30

EDITION: Final

SECTION: News

PAGE: A4

BYLINE: Margaret Munro

SOURCE: CanWest News Service

ILLUSTRATION: Photo: Mallik Science Team / A gas flare was produced during the thermal test program conducted in March 2002.

WORD COUNT: 447

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Arctic's frozen fuel tantalizes Team to investigate means of tapping enormous reserves

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PAGE: A8

SECTION: Canada Wire

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— CanWest News Service

Next hot energy source? Flaming ice: Gas Hydrates, which look like ice but burn with a flame when ignited, promise to supply gas that burns much cleaner than coal or oil. Also, twice as much energy is stored as gas hydrates than all other hydrocarbon sources combined

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DATE: 2006.09.30
EDITION: Final
SECTION: News
PAGE: A3
BYLINE: MARGARET MUNRO
SOURCE: CanWest News Service

ILLUSTRATION: Colour Photo: MALLIK 2002 SCIENCE TEAM / In 2002, researchers pumped hot water down a 1,200-metre well at Mallik that melted the gas hydrates in the vicinity. Enough gas escaped up the well to fuel a flame that lit up the frigid landscape and demonstrated for the first time the gas could be released.

WORD COUNT: 701

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Next hot energy source? Flaming ice: Gas Hydrates, which look like ice but burn with a flame when ignited,

Burning ice next hot energy source

PUBLICATION: The Windsor Star
DATE: 2006.09.30
EDITION: Final
SECTION: News
PAGE: C12
BYLINE: Margaret Munro
SOURCE: CanWest News Service
WORD COUNT: 442

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