

Geological Survey of Canada ("GSC") of the Earth Sciences Sector of the Department of Natural Resources Canada - United States Geological Survey ("USGS") - Collaborative Research Project Annex #3 - Project Title: MALLIK GAS HYDRATE PRODUCTION RESEARCH WELL, MACKENZIE DELTA, NORTHWEST TERRITORIES, CANADA

Correspondents: USGS - Suzanne D. Weedman, 915-A National Center, 12201 Sunrise Valley Drive, Reston, VA 20192; phone - (703)648-6470; fax - (703)648-5464; e-mail - sweedman@usgs.gov. USGS - Timothy S. Collett, Box 25046, Denver Federal Center, Denver, CO 80225; phone (303)236-5731; fax - (303)236-5888; e-mail - tcollett@usgs.gov.

GSC - Don Lemmen, 601 Booth Street, Ottawa, Ontario, K1A 0E8 Canada; phone - (613)992-5861; fax - (613)992-0190; e-mail - dlemmen@NRCan.gc.ca.

Responsible Senior Managers: USGS - P. Patrick Leahy - (703)648-6600
GSC - Jan Boon - (613)995-2340.

Background: United States Geological Survey (USGS) recognizes gas hydrates as a possible future energy resource and an issue of relevance to their research programs in Coastal and Marine Geology and Energy Resources. Geological Survey of Canada (GSC) has long-standing research interests in the field of natural gas hydrates from the perspective of energy supply, natural hazard and climate change and therefore views further drilling and sampling of gas hydrates in Canada as beneficial for the fulfillment of its needs.

Scope: To establish a scientific and engineering appraisal of the production potential of the Mallik gas hydrate deposit, a multi-disciplinary Project to Drill a Gas Hydrate Production Research Well ("Project") is proposed. The Project will establish a benchmark contribution by providing a full and comprehensive assessment of the production potential of a gas hydrate reservoir. A two-phase program is anticipated, consisting of a detailed geophysical appraisal of the reservoir, selected coring and geologic studies, and a field production test with comprehensive *insitu* monitoring of the formation/engineering properties of the production zone. To carry out this Project, expertise and funding is required from the USGS.

Work Plan: USGS shall participate in, but is not limited to, geological and surface geophysical investigations, field and laboratory geotechnical testing and modeling, gas hydrate testing and modeling and the release of information through the production of state of the art scientific publications. GSC shall be the Coordinator of Phase I, Pre-field Project Management and of Phase II of the Science Program.

Funding Arrangements: There will be no exchange of funds between GSC and USGS ("Party" or "Parties"). USGS shall have responsibility for funding their own research activities in support of the Project estimated at Canadian \$2,500,000 (two million five hundred thousand CDN dollars) which shall include, but is not limited to, scientific expertise, sample analyses in USGS laboratory facilities, and other scientific support.

Additional Partners: In addition to USGS and GSC collaborating in this Project, USGS and GSC shall enter into other agreements with organizations interested in the development of gas hydrates.

Intellectual Property: As per the "Agreement on the Allocation of Intellectual Property Rights, Interests and Royalties for Intellectual Property Created or Furnished under Certain Scientific and Technological Cooperative Research Activities" between the Government of Canada and the Government of the United States of February 4, 1997, USGS and GSC shall retain background intellectual property that they bring to the Project. Over the course of the Project, GSC anticipates sharing the intellectual property arising out of or resulting from the Project to the USGS for the USGS to perform work identified under the work plan above. Subsequently, USGS agrees to openly share their value-added intellectual property.

Period of Confidentiality: Subject to any law or judicial decree compelling disclosure, intellectual property arising out of the Project shall remain confidential until December 31, 2003.

Notwithstanding the period of confidentiality, intellectual property acquired as a result of the Field Operations and the Science Program cannot be released until two (2) years subsequent to the completion of the Field Operations. Earlier release of such intellectual property may only be made subject to permission. However, no early release of such intellectual property shall take place without providing the parties with an opportunity for editing and review.

Publications: Publications and announcements in connection to this Annex shall be made in a spirit of collaboration, with full consultation and participation where possible by the parties. Except as provided below, all publications and announcements shall acknowledge the role and contribution of the parties to the Project. Either party shall have the right to have its name and/or the name of another participating organization as defined under Article V of the Memorandum of Cooperation, dated April 9, 1999, removed from any publication or public statement made in connection with the Project.

Warranty: GSC and USGS make no representation or warranty respecting the results arising from the Project, either expressly or implied by law or otherwise, including but not limited to, implied warranties or conditions of merchantability or fitness for a particular purpose.

Duration and Termination: This Annex shall come into effect upon signature by GSC and USGS and shall terminate on December 31, 2003. Either party may, by giving the other party ninety (90) days written notice, terminate this Annex. Changes or modifications to this Annex shall be by written document and signed by USGS and GSC. Each party shall immediately upon termination, return the other party's papers, materials, or other property held for the purpose of carrying out the Project.

FOR THE U.S. GEOLOGICAL SURVEY
OF THE DEPARTMENT OF INTERIOR
OF THE UNITED STATES OF AMERICA:

FOR THE GEOLOGICAL SURVEY OF
CANADA OF THE EARTH SCIENCES
SECTOR OF THE DEPARTMENT OF
NATURAL RESOURCES CANADA:

P. Patrick Leahy
Associate Director for Geology

Jan Boon, Director General
Sedimentary & Marine Geoscience Branch

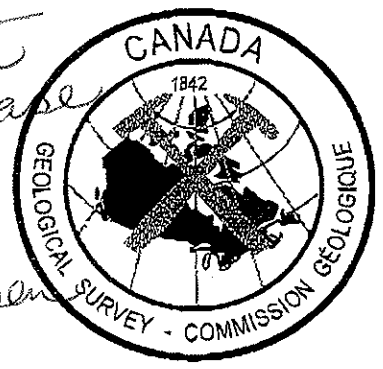
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Date: 7/23/01

Natural Resources Canada
Ressources naturelle Canada

EARTH SCIENCES SECTOR
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**GEOLOGICAL SURVEY OF CANADA
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Serge
For your
mon database
+ file
Susan

Sedimentary & Marine
Geoscience Branch

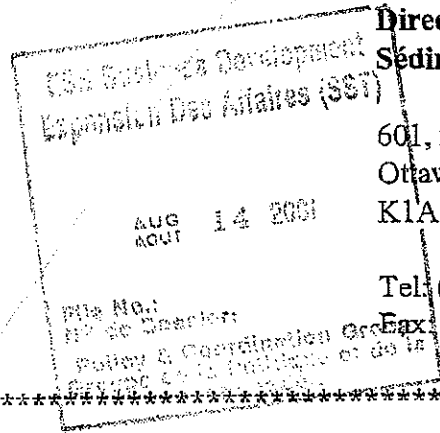
601 Booth Street - Room 216
Ottawa, Ontario
K1A 0E8

Tel: (613) 996-6233
Fax: (613) 996-6575

**Direction de la Géologie
Sédimentaire et Marine**

601, rue Booth - Pièce 216
Ottawa, Ontario
K1A 0E8

Tel: (613) 996-6233
Fax: (613) 996-6575



To - À: Susan Mrak Don Lemmen Scott Dallimore
995-8737 992-0190 250-363-6565

From - De: Margot Snider (for Jean-Serge Vincent)

Date: August 14, 2001

Pages: 4 (Including cover page - incluant la page couverture)

Subject - Sujet: Mallik Gas Hydrate Production Research Well, Mackenzie Delta, NWT

Following for your records is a copy of the signed USGS-GSC
Collaborative Research Project Annex #3.