



ENVIRONMENTAL IMPACT SCREENING COMMITTEE

FAXED
SEP 12 2006

September 8, 2006

Submission Number: [09-06-01]

Andrew Applejohn
Director
Aurora Research Institute
P.O. Box 1450
Inuvik, NT
X0E0T0



COPY	
BOARD	S
G. W.	1
E. A.	1
W. RES.	1
NWDO	1
FILE	1817

Dear Mr. Applejohn:

RE: Proposed 2006-2008 Mallik Gas Hydrate Production Research Project

During a meeting held September 6 - 8, the Environmental Impact Screening Committee (EISC) screened the above-noted project description. Based on the information provided, the EISC decided that the development, if authorized subject to environmental terms and conditions recommended by the Screening Committee, will have no significant negative impact on the environment or Inuvialuit wildlife harvesting in the Inuvialuit Settlement Region [IFA Section 11.(17)(b)]. A copy of the decision has been attached.

Subject to a final decision by the licensing or permitting authority and the issuance of appropriate permits and approvals, this project may proceed.

In rendering its decision, the EISC made the following recommendations:

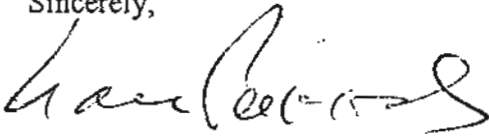
- 1) That the proponent maintain sufficient grey water tank capacity at the project site to accommodate the potential that discharge requirements may not be met and disposal in Inuvik may become necessary. This would prevent the need to discharge grey water that does not meet discharge standards to the environment.
- 2) As indicated during the presentation by the proponent to the EISC, the proponent intends to use "enviro-tanks" for fuel storage during the first year of operation as well as during the second year. The EISC encourages this practice to limit the potential for fuel spills.
- 3) That the proponent adhere to appropriate measures for grizzly bears in accordance with NWT ENR departmental guidelines (Please see ENR letter attached), as well as contacting ENR to arrange for the carrying out of a bear and bear den survey

prior to beginning the project. This would help minimize potential negative impacts on bears.

- 4) As indicated during the presentation by the proponent to the EISC, the proponent intends to use adequate rig matting in the staging area on which to place project material. The EISC encourages this practice to protect the tundra and vegetation from project materials off-loaded at the staging area.
- 5) That the proponent follow appropriate flaring practices to limit potential negative environmental impacts. (Please refer to the ENR and Environment Canada letters attached.)
- 6) As indicated during the presentation by the proponent to the EISC, the proponent intends to monitor the existing sumps at the Mallik site. The proponent committed to provide the EISC with a letter outlining the intention to carry out long term monitoring, especially the sump which will be encroached upon by the ice pad constructed for this project.

The EISC would appreciate receiving a copy of any follow-up reports that may be produced as a result of this development.

Sincerely,



Larry Peckford
Secretary

- | | |
|-----------|---|
| Encl. (1) | EISC Decision |
| Encl. (2) | Fisheries Joint Management Committee Letter |
| Encl. (3) | Environment and Natural Resources Letter |
| Encl. (4) | Environment Canada Letter |



ENVIRONMENTAL IMPACT SCREENING COMMITTEE

NAME OF PROPONENT: AURORA RESEARCH INSTITUTE

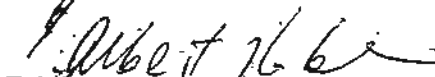
PROJECT DESCRIPTION: 2006 to 2008 MALLIK GAS HYDRATE PRODUCTION RESEARCH PROJECT

DECISION OF THE SCREENING PANEL (circled):

1. The development will have no such significant negative impact and may proceed without environmental impact assessment and review under the Inuvialuit Final Agreement. [IFA s. 11. (17) (a)]
2. The development if authorized subject to environmental terms and conditions recommended by the screening committee, will have no such significant negative impact and may proceed without environmental assessment and review under the Inuvialuit Final Agreement. [IFA s. 11(17)(b)]
3. The development could have significant negative environmental impact and is subject to assessment and review under the Inuvialuit Final Agreement. [IFA s. 11. (17) (c)]
4. The development proposal has deficiencies of a nature that warrant a termination of its consideration and the submission of another project description. [IFA s. 11. (17) (d)]


Signed on the 8 day of SEPT 2006.



William Klassen, Chair


Albert Ruben, GNWT Member


Ron Gruben, Inuvialuit Member

YTG Member


Eric Cockney, Inuvialuit Member


Johnny Lennie, Canada Member

Darren Nasogaluak, Inuvialuit Member

Tuktoyaktuk Hunters & Trappers Committee



P.O. Box 286, Tuktoyaktuk, N.W.T. X0E 1C0 • Phone (403) 977-2457 •

Christine Inglangasuk
EISC Resource Person
Joint Secretariat
P.O. Box 2120
Inuvik, NT X0E 1C0

September 5, 2006

Attention Ms. Inglangasuk:

Re: 2006 to 2008 Malik Gas Hydrate Production Research Project

Please forgive me for the late submission of this letter.

The Tuktoyaktuk Hunters & Trappers Committee held its regular board meeting on August 28, 2006. The board of directors have reviewed the above referenced project proposal and have concluded that they have no concerns and therefore approve the application.

Unfortunately, the phone and fax lines of the Tuktoyaktuk Hunters & Trappers Committee are temporarily out of service. Therefore, if you have any questions or concerns regarding this matter, you can contact the Chairperson, Paul Voudrach at (867) 977-2350 or fax (867) 977-2335.

Sincerely,

A handwritten signature in black ink, appearing to read 'Lila Voudrach'. The signature is fluid and cursive, with the first letter 'L' being particularly large and stylized.

Lila Voudrach, Resource Person
Tuktoyaktuk Hunters & Trappers Committee



September 6th, 2006

Bill Klassen, Chair
Environmental Impact Screening Committee
Box 2120
Inuvik, NT
X0E 0T0

Dear Bill Klassen:

**Re: Aurora Research Institute, 2006-2008 Mallik Gas Hydrate Production
Research Project**

Committee members have had the opportunity to review this submission and I would like to outline several areas that Committee members discussed. The Committee understands that although vibroseis will be used during the project, it will be used on land or bottom fast ice, and as a result, will have no effect on fish. Also, the proponent is planning on re-injecting produced water and trucking out drill cuttings and other drilling waste, and therefore will not require the use of sump. The Committee would like to commend the proponent for incorporating the concerns of the Inuvialuit regarding sumps and utilizing other methods for drilling waste management. Finally, the proponent indicates that wastewater will be treated to meet NWT regulations and used for construction of ice roads. If circumstances determine that those regulations cannot be met, the waste will be transported to Inuvik for disposal. Again, we commend the proponent for this commitment, but we also lament the fact that an area that would have been a good source to fill a tea pail will have disappeared.

In summary, the Committee has no significant concerns with this project as submitted, with respect to impacts on fish and marine mammals, or their habitat – provided it is carried out as described. Committee members feel that any effects of the project will be short-term, and have little residual or long-term effects or cumulative impacts.

The Committee does have one other comment for your consideration. In the project description, the proponent did not consider the beluga harvest as a *Valued Component* because the project will be taking place outside of the Beluga Management Zone 1a. This statement assumes that the Inuvialuit hunt beluga only within these areas, and therefore hunting would not be disturbed. The beluga harvest, however, can and has taken place in waters outside of these areas. Due

to the timing of this project the proponent is correct in stating that there will be no interference with beluga harvest, but the Committee wanted to point out that the proponent's rationale for this conclusion is incorrect.

On behalf of the Committee, thank you for giving the FJMC this opportunity to comment on this submission.

Sincerely,

A handwritten signature in black ink, appearing to read "R. K. Bell". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Robert K. Bell
Chairman, FJMC

Environmental Protection Operations Directorate
Suite 301, 5204 - 50th Avenue
Yellowknife, NT X1A 1E2
tel: (867) 669-4700

September 5, 2006

Our File: 4709 002 039

Environmental Impact Screening Committee
The Joint Secretariat
Inuvialuit Renewable Resource Committees
P.O. Box 2120
Inuvik, NT
X0E 0T0

Attention: Christine Inlangasuk

Re: 09/06-01 2006 to 2008 Mallik Gas Hydrate Production Research Project

On behalf of Environment Canada, I have reviewed the information submitted with the above application, received August 14, 2006. The following advice is provided pursuant to Section 12(2) of the *Canadian Environmental Assessment Act*.

Environment Canada's (EC) contribution to your request for specialist advice is based primarily on the mandated responsibilities for the enforcement of Section 36(3) of the *Fisheries Act*, the *Canadian Environmental Protection Act* (CEPA) the *Migratory Birds Convention Act* (MBCA), and the *Species at Risk Act* (SARA).

It is the understanding of Environment Canada that the proponents The Japan Oil, Gas & Metals National Corporation (JOGMEC) and Natural Resources Canada (NRCan), in conjunction with the Aurora Research Institute, the Operator of Record, are proposing to drill one monitoring well, deepen two existing wells and conduct production testing on well Mallik 2L-38. The proposed project entails the construction of an ice road, establishment of remote camps, and the use of an existing staging area on Harry Channel, supported by barge. The ice road is expected to be 115 km in length. The proposed terrestrial access roads proposed will have a footprint of two hectares. The Project site is proposed to have a footprint of 16.5 hectares, including the snow belt. In the second year of operation, the footprint is proposed to increase by two hectares for the use of a staging area. A vertical seismic profile is proposed in addition to the project footprint. In a conversation with Douglas Ashford of the Inuvialuit Oilfield Services on September 1, 2006, the seismic program consists of a single pass, 600 m in length and a maximum width of 10 m. The seismic path is to run SW in direction from well Mallik 2L-38. Within the proposed project site, a flare pad is incorporated; the minimum radius of the flare pad will be 10 meters, with a minimum thickness of 30 cm. The flare stack will be a minimum of 12 metres high. Flaring is to occur for 20 days during 2006 - 2007, and 77 days during 2007-2008. Produced water will be pumped into a sand formation below the gas hydrate formation. In the second year, during production testing, the contingency plan is to pump the sand and water to the surface, separate the water, where it will be injected downhole into well 3L-38. The drill cuttings will be dewatered and transported in plastic lined sea cans to Fort Nelson, BC for disposal. Incinerators will be used to burn combustible materials and food wastes on a daily basis. The incinerator ash will be disposed of in the Inuvik landfill, as will the compactable, non-combustible garbage. Incineration methods will comply with Northwest Territories Used Oil and Waste Fuel Management Regulations. In 2006-2007 there will be a 64 person camp, as well as a 36 sleeper annex. In

2007-2008, the camp will accommodate 48 people. Sewage and grey water will be treated using FilterBoxx™, membrane bioreactor biological treatment systems. The contingency plan is to transport and dispose of all wastewater in Inuvik, should the FilterBoxx™ not function properly. All water discharged will meet the Northwest Territories Water Board standards of quality. The proposed project is scheduled to commence in November 2006 to April 2007, and September 2007 to April 2008. The proposed project located on Richards Island (69°27'38"N, 134°39'42"W) is expected to advance scientific research and development of gas hydrates.

Concerns and Recommendations:

1. In conversation with Douglas Ashford of Inuvialuit Oilfield Services on September 1, 2006, Inuvialuit Oilfield Services committed to providing Environment Canada with the detailed flare analysis for the production testing of well Mallik 2L-38. Upon receipt of the flare analysis, Environment Canada may provide additional comments. Further, Environment Canada requests Air Quality Modeling be conducted and submitted prior to commencement of proposed activities.
2. Environment Canada has concerns regarding the quantities of gas hydrates to be flared. The quantities proposed exceed Alberta Energy Utility Boards recommendations in *Guide 60 Upstream Petroleum Industry Flaring, Venting, Incinerating and Venting*. Environment Canada requests the proponent to provide justification for the quantities to be flared.
3. From conversation with Douglas Ashford of Inuvialuit Oilfield Services on September 1, 2006, it is understood that the proponents are proposing to cover a portion of the sump located just north of well 2L-38, with an ice pad a minimum of 30 cm thick. Steel mud tanks will be located on the ice pad. Prior to establishing the ice pad cover, existing conditions and contours of the sump will be documented, and as part of the clean up, the proponents may improve the sump containment.

Environment Canada has concerns regarding the proposed sump encroachment and the potential impacts of the ice pad and site activities on the thermal and structural stability of the existing sump. Given that there already exists potential long-term stability and containment issues with the historical sump, the proponents are requested to provide Environment Canada with justification for the sump encroachment. Further, if the sump encroachment is to proceed, Environment Canada requests that the proponents submit an impact analysis of the proposed encroachment on the sump's structural and thermal stability. The analysis should include waste and soil composition including the wastes freeze depression (core sampling if required), thermal regime (including background) deficiencies in sump performance (e.g. slumping, salt efflorescence, ponding, unfrozen wastes, etc.), existing drainage and vegetation in and around the sump area, in addition to the potential impacts to the sump from the placement of an ice pad. If the sump is to be encroached, the proponents should implement mitigative measures to ensure all site activities do not negatively impact sump performance.

In keeping with current regulatory and industry practice, this research project provides an excellent opportunity for the proponents to complete an audit of sump performance, document existing deficiencies, establish geo-thermal monitoring, and implement remedial measures to address deficiencies in sump performance. At a minimum, the Northwest Territories Water Board Guidelines for Sump Assessment should be followed, with cores, samples, and ground temperature monitoring to occur. Monitoring should include the drainage and vegetation on and around the sump, and any changes in those regimes that

occur, as well as monitoring of the thermal and structural stability of the sump over time. This information should be made available to stakeholders and regulators.

4. Upon review of 2006 to 2008 Mallik Gas Hydrate Production Research Project Spill Prevention and Control Plan, Environment Canada has the following advice:

5.1.1 Training

- Company personnel at the spill site should be familiar with the locations and operation of all safety equipment.
- To ensure that the Spill Response Team is prepared to respond to a spill situation in a reasonable manner, hands-on training and familiarization with equipment used for spill containment and recovery is critical. It provides the response crews with an understanding of the limitations or potential problems that may be encountered in the use of the various equipment pieces.
- Personnel should be aware of the properties of the products that they handle and have access to material safety data sheets (MSDS) and other sources of information.

5.1.4 Material Transfers

- Fuel or hazardous substance transfers – Secondary containment or a surface liner (drip pans, fold-a-tanks, etc) should be placed under all container or vehicle fuel tank inlet and outlet points, hose connections and hose ends during fuel or hazardous substance transfers. Appropriate spill response equipment and clean-up materials (absorbents, containment devices, etc) must be on hand during any transfer of fuel or hazardous substances.
- Transfer operations should be attended by trained personnel at all times.
- Berm areas - Decanting of snow or water from the berm area should proceed only if the appropriate chemical analysis has determined the contents meet the requirements of Section 36.3 of the *Fisheries Act*.

5.1.5 Storage Areas:

- Fuel containers, including barrels, should be marked with the responsible party's name, product type, and year purchased or filled.

23.4 Other Regulatory Agencies

- Environment Canada's (CWS) contact is (867) 920-5131 a 24-hour emergency pager monitored by Emergency and Enforcement Officers.

5. Meeting the requirements of the *Fisheries Act* is mandatory, irrespective of any other regulatory or permitting system. Section 36(3) of the *Fisheries Act* specifies that unless authorized by federal regulation, no person shall deposit or permit the deposit of deleterious substances of any type in water frequented by fish, or in any place under any conditions where the deleterious substance, or any other deleterious substance that results from the deposit of the deleterious substance, may enter any such water. The legal definition of deleterious substance provided in subsection 34(1) of the *Fisheries Act*, in conjunction with court rulings, provides a very broad interpretation of deleterious and includes any substance with a potentially harmful chemical, physical or biological effect on fish or fish habitat. Deleterious substances include, but are not limited to glycol, fuel, and cement.
6. Environment Canada recommends the disposal of treated camp effluent to be discharged to the land in a distributed surface application, rather than released to a watercourse. Digested

solids from the wastewater treatment plant should be removed from the site and disposed of at an approved landfill.

7. Environment Canada requests that the proponents supply confirmation that they have received permission from Inuvik, Fort Nelson and Fort St John to transfer proposed waste types and quantities to community waste handling facilities. If the community cannot accommodate the waste, the proponents are requested to provide alternate disposal options.
8. Environment Canada acknowledges the proponent's efforts to minimize the effects of the project on migratory birds by adjusting the project schedule and duration to the extent possible to avoid overlaps with sensitive life stages of migratory birds, limiting aircraft flights, following Inuvialuit Game Council Overflight Guidelines, and adjusting barge travel routes and landing sites to avoid birds.
9. Environment Canada recommends that camp waste be made inaccessible to wildlife at all times. Camp waste can attract predators of migratory birds (e.g., foxes and ravens) to an area if not disposed of properly.
10. The proponent must be aware of and remain in compliance with Section 35 of the Migratory Birds Regulations. Section 35 states that no person shall deposit or permit to be deposited, oil, oil wastes, or any other substance harmful to migratory birds in any water or any area frequented by migratory birds.
11. The following comments are pursuant to the Species at Risk Act (SARA), which came into full effect on June 1, 2004. Section 79 (2) of SARA, states that during an assessment of effects of a project, the adverse effects of the project on listed wildlife species and its critical habitat must be identified, that measures are taken to avoid or lessen those effects, and that the effects need to be monitored. This section applies to all species listed on Schedule 1 of SARA. However, as a matter of best practice, Environment Canada asks that species listed on other Schedules of SARA and under consideration for listing also be included in this type of assessment.

Species at Risk in the Project Area	Category of Concern	Schedule of SARA	Government Organization with Expertise on Species
Polar Bear	Special Concern	Pending	ENR, EC ¹
Grizzly Bear	Special Concern	Pending	ENR
Wolverine (Western Population)	Special Concern	Pending	ENR
Eskimo Curlew	Endangered	Schedule 1	EC
Peregrine Falcon (subspecies tundrius)	Special Concern	Schedule 3	ENR
Short-eared Owl	Special Concern	Schedule 3	ENR

¹ ENR has primary management responsibility for Polar Bears in the NWT, although Environment Canada has expertise on this species too.

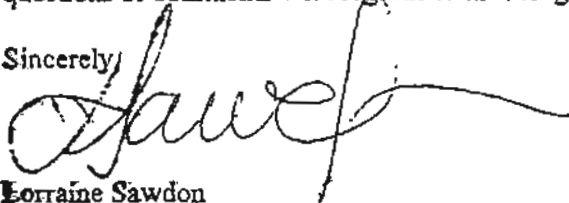
Impacts could be disturbance and attraction to operations.

Environment Canada recommends:

- Species at Risk that could be encountered should be identified and any potential adverse effects noted. The proponent has identified Species at Risk in the area and identified potential adverse effects to polar bears and grizzly bears.
 - If Species at Risk are encountered, the primary mitigation measure should be avoidance. The proponent should avoid contact with or disturbance to each species.
 - The proponent should consult with Environment and Natural Resources (ENR) of the Government of the Northwest Territories, Environment Canada and appropriate status reports, recovery strategies, action plans, and management plans to identify other appropriate mitigation measures to minimize effects to these species from the project. The proponent appears to be working with ENR to minimize the potential impact of their project on polar bears and grizzly bears.
 - The proponent has stated that it will work with ENR (and Chevron if their program proceeds) to ensure that bear sightings are reported and mitigation experience is shared. Further to this, the proponent should record the locations and frequency of all observations of Species at Risk (not just bears) and note any actions taken to avoid contact or disturbance to the species.
12. Please note that any spill of fuel or hazardous materials, adjacent to or into a water body, regardless of quantity, shall be reported immediately to the NWT 24-hour Spill Line, (867) 920-8130.
13. Environment Canada should be notified of changes in the proposed or permitted activities associated with this land use permit application.

Please do not hesitate to contact me at (867) 669-4782 or lorraine.sawdon@ec.gc.ca with any questions or comments with regards to the foregoing.

Sincerely,



Lorraine Sawdon
 Environmental Assessment
 Environmental Protection Operations Directorate

cc: **Stephen Harbicht** (Head, Assessment & Monitoring, EPOD)
Mike Fournier (Northern Environmental Assessment Coordinator, EPOD)
Wade Romanko (Environmental Emergencies Officer, EPOD)
Dave Fox (Air Issues Specialist, EPOD)
Brian Hopelle (Senior Environmental Engineer, EPOD)
Myra Robertson (Environmental Assessment Coordinator, CWS)



SEP 05 2006

FAX TRANSMISSION SHEET



Northwest
Territories Environment and Natural Resources

Policy, Legislation and Communications
Government of the Northwest Territories
5102 - 50th Avenue, 6th Floor Scotia Centre
P.O. Box 1320
Yellowknife NT X1A 2L9
Canada

Tel: (867) 920-8071
Fax: (867) 873-4021

Date: September 5, 2006
To: Christine Inglangasuk
Joint Secretariat
Fax: 1-867-777-2610

This fax contains 11 page(s), including the cover sheet.

From: Jason McNeill
Environmental Assessment Officer
Policy, Legislation and Communications
Tel: (867) 920-8071
Fax: (867) 873-4021
e-mail: jason_mcneill@gov.nt.ca

Comments:

ARI Mallik Gas Hydrate Project 09/06-01.

Thank you,

The documents accompanying this transmission contain information intended for a specific individual and purpose. The information is private, and is legally protected by law. If you are not the intended recipient, you are hereby notified that any disclosure, copying, distribution, or the taking of any action in reference to the contents of this telecopied information is strictly prohibited. If you have received this communication in error, please notify us immediately by telephone and return the original to us by mail.



Northwest
Territories Environment and Natural Resources

September 5, 2006

Christine Inglangasuk
Secretary
Environmental Impact Screening Committee
PO BOX 2120
INUVIK, NT X0E 0T0

VIA FACSIMILE

Dear Ms. Inglangasuk

**AURORA RESEARCH INSTITUTE, 09/06-01.
2006-08 Mallik Gas Hydrate Research Project**

The Department of Environment and Natural Resources (ENR) has reviewed the above program and would like to provide the following comments based on the mandated responsibilities under the *Wildlife Act*, the *Forest Management Act (FMA)* and The *Environmental Protection Act (EPA)*.

On reviewing the application ENR believes that the proposed development has the potential to affect wildlife pursuant to the *Wildlife Act*. ENR is of the opinion that if the proponent follows the methods and mitigation identified in their application along with the recommendations provided herein, that this project is not likely to have significant impacts on the environment in respect to ENR mandates.

Project Components

ENR understands this to be a two-year winter drilling and production testing program including the following activities:

- Winter road construction
- Construction of ice pads and access road at the Mallik Project site
- Drilling, completion, gas hydrate production testing and flaring of three wells
- Reinjection of produced sand and water
- Barging of service rig, construction equipment, camp, fuel and trucks to staging site on Harry Channel in September 2007
- Air support of activities

- Containment of drilling fluids and wastes for transport and disposal
- Decommissioning and reclamation

WILDLIFE

Proposed Mitigations

Table 12-2 of the Project Description, provides a comprehensive list of mitigations that the proponent and project contractors will use to minimize potential impacts to wildlife and wildlife habitat. ENR concurs with this list and aside from the recommendations listed below. Of concern, however, is the reference on Page 12-8 that ENR will, "...provide location of historic den locations and do a denning survey before Project start-up...". ENR staff has had no discussions with the proponent regarding this request.

ENR does not conduct fall bear den surveys of specific project areas as part of normal activities but will consider a collaborative approach to collecting data to suit the needs of the proponent. We encourage the [proponent to contact our Inuvik office at their earliest convenience. It must be recognized, however, that bear den locations, is sensitive data and as such it is provided selectively.

Sec 17 of the Emergency Response Plan indicates the Wildlife Monitors will first "drive the bear away". This is not accordance with the ENR protocol. Wildlife should be driven off only if safety of personnel were an immediate issue.

On page 11-9 the proponent hints that Polar Bears will not be in the area as they head to land and are only found in areas where seals are present. Only pregnant polar bears enter a den and they do not come out. There is potential for denning in the area. Fall denning survey will only address grizzly bears denning in the area and utilized bears equipped with collars in the development area.

Forward Looking Infrared Red imagery is being used in Alaska to check for dens.
 - Currently ENR does not have anything in place to look for polar bear dens. Avoidance of areas of snow accumulation may help mitigate this issue.

Species at Risk

The federal Species at Risk Act (SARA) states that adverse effects on listed species must be identified, and regardless of significance, mitigated and monitored (s. 79). It is ENR's view that those species listed on Schedule 1, as well as those being considered for status under the Act be treated in a similar fashion consistent with the recommendations in *"The Environmental Assessment Best Practice Guide for Wildlife at Risk in Canada"*.¹

The following species are pending addition to Schedule 1 of SARA and have the potential to occur in the project area during the timing of operations:

¹ <http://www.cws-scf.ec.gc.ca/publications/AbstractTemplate.cfm?lang=e&id=1059>

- Grizzly bear, listed as Special Concern
- Polar bear, listed as Special Concern

Specific Recommendations:

On page 9-2 of the Project Description the proponent identifies that the project overlaps spatially and temporally with important grizzly and polar bear denning areas as identified in the Tuktoyaktuk Community Conservation Plan (322C and 323 C). As operations extend into spring when bears are emerging from their dens and commence in the fall (of 2007) prior to denning, there is the potential for conflict to occur. ENR makes the following species specific recommendations that are necessary, in addition to those presented by ARI, to reduce potential impacts on grizzly and polar bear, in the project area:

- If a bear is located in, at or near a den site, work in the area must halt. Staff from ENR should be notified as they will assess the site and may implement measures to ensure bears are not unduly disturbed. This may include the establishment of an exclusion zone of 300 meters around the den in which no work will be permitted. Work inside the exclusion zone will remain stalled until after den emergence.
- All field personnel who spend more than three weeks in the field a year should complete a bear safety-training course. This is both a worker safety and wildlife issue. If all field workers have bear safety training and learn how to react to bears, this will decrease the cases of bear attacks and the number of bears destroyed as nuisance wildlife. This training is also important because it will inform employees and owners on proper bear proofing methods for camps.
- Many impacts to polar and grizzly bear will be adequately mitigated with the proper handling and storage of food and food wastes as per our attached Food and Waste Management Guidelines.
- All bear sightings should be reported to the nearest local Wildlife officer at the earliest opportunity. This will allow ENR a better understanding of the location and frequency at which bears investigate camps and other developments. It will also allow greater ability to relocate bears that frequent development before they become habituated and must be destroyed as nuisance wildlife.
- Any defence of life and property (DLP) kills must be reported ASAP to ENR. Since all human caused mortalities are accounted for under the quota any DLP kills will result in a reduction of the community quota.
- In Sec 12.8 the proponent states that "bins with heavy lids" will be used. ENR suggests that the lids instead of heavy should be animal proof.

- Sec 17 of the Emergency Response Plan indicates the Wildlife Monitors will first "drive the bear away". This is not according to the ENR protocol. Wildlife should be driven off only if safety of personnel were an immediate issue.
- On page 11-9 the proponent hints that Polar Bears will not be in the area as they head to land and are only found in areas where seals are present. Only pregnant polar bears enter a den and they do not come out. There is potential for denning in the area. Fall denning survey will only address grizzly bears denning in the area and utilized bears equipped with collars in the development area.

Forward Looking Infrared Red imagery is being used in Alaska to check for dens. Currently ENR does not have anything in place to look for polar bear dens. Avoidance of areas of snow accumulation may help mitigate this issue.

General Recommendations:

ENR provides the following general recommendations with respect to sufficiently minimizing potential impacts to wildlife, including species at risk:

- Harassing wildlife can lead to greater expenditures of energy on the part of the animal and a loss of fitness. This is especially important for mammals in the winter. ENR staff also consider the chasing or stalking of wildlife for photography or during Eco-tourism to be harassment. No wildlife should be disturbed, chased, or harassed by human beings on foot, in a motorized vehicle, or by aircraft.
- Although the concept of feeding small mammals and birds seems trivial it is in fact a large problem. The increase in local food supply will cause immigration to the area of other wildlife and may bring larger predators and scavengers in to the area. This may lead to nuisance wildlife that may be destroyed. The grouping together of large concentrations of animals also increases the potential for the spread of diseases. No wildlife should be purposefully encouraged to habituate to human presence (i.e. wildlife should not be fed).

Requests of the Proponent

ENR makes the following request of ARI:

- To aid in the Department's tracking of impacts to wildlife and to monitor the responses of species at risk to development activities we request that ARI provide ENRs Inuvik Regional Biologist with records of all wildlife sightings (both expected and unexpected) or sensitive areas identified during the program. Ideally this would include information on location (GPS, if possible), number and reaction of the wildlife to overflights or other project activity (if

applicable). This information would provide distribution information and be used to help plan future mitigation.

ENVIRONMENTAL PROTECTION

Flaring

It is stated in Section 5.5.4.2 Flaring, that "...production tests will follow standard practices...", however no information is supplied as to what these 'standard practices' are. It is also stated that the proposed duration of flaring is 20 days in year 1 and 77 days in year 2. This appears to be in excess of the durations detailed in the Alberta Energy and Utility Board Guide/Directive 60 - the *Upstream Petroleum Industry Flaring Guide (1999)*.

Recommendations

Please provide:

- The 'standard practices' referred to in Section 5.5.4.2 Flaring,
- The rationale and justification for the proposed flaring duration.

Incineration

It is stated in Section 5.5.5.4 Solid Waste Management that incinerator ash will be disposed of in the Inuvik landfill.

It also is stated that incinerator emissions "...are not expected to exceed Canada-wide Standards for Dioxins, Furans and Mercury,...". ENR acknowledges the commitment of the Proponent to waste segregation and this will assist in achieving compliance with the Canada-wide Standards. However, limited information is provided to support the above referenced statement regarding incinerator emissions (e.g. details of incinerator specs, and operator training program).

The Proponent states that the *NWT Used Oil and Waste Fuel Management Regulations* will be adhered to during incineration. ENR would like to note that these Regulations are applicable to disposal of those fuels only, not to the combustion of garbage.

Recommendation

- The residual ash from incineration may itself contain toxic contaminants and ~~should~~ be assessed in accordance with the *NWT Environmental Guideline for Industrial Waste Discharges* to determine the appropriate disposal method.
- Provide incinerator specifications, and assurance and details of the operator-training program required to ensure proper implementation of the applicable incineration plan.

Air Quality

The Proponent indicates in Section 11.7 Air Quality, that the use of dispersion modeling conducted for other projects in the area is acceptable, and is indicative of the likely impacts from the proposed project. However, copies of the referenced assessments are not provided for verification of project similarities.

The commitment to flaring assessment is not included in Section 11.7, Air Quality. However, Table 12-1 (Section 12.3 Valued Components) indicates that dispersion modelling will be conducted for flaring from the current project. While this statement in the Table does provide an additional level of assurance, it remains unclear whether this modelling assessment will be conducted prior to project authorization or to whom the assessment will be submitted for review.

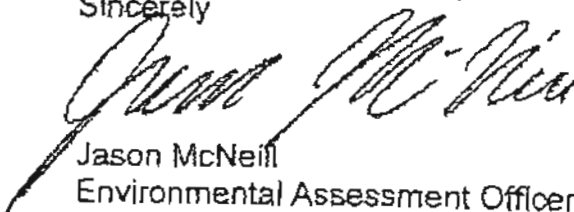
Recommendations

With respect to the following recommendations, ENR would like the opportunity to review and offer comment

- Provide the dispersion modelling assessments referenced in Section 11.7, Air Quality, and
- Provide information as to when the dispersion modelling is to be completed.

Should you have any questions regarding the above, please contact Jason McNeill, Environmental Assessment Officer at 920-8071.

Sincerely



Jason McNeill
Environmental Assessment Officer
Policy, Legislation and Communications
Environment and Natural Resources



Northwest
Territories Environment and Natural Resources

Department of Environment and Natural Resources
Bag Service #1 Inuvik, NT X0E 0T0

Bear Encounter Response Guidelines Oil and Gas Programs

I. PRINCIPLES:

1. Protection of Life and Property
2. Conservation

II. OPERATIONAL GUIDELINES:

- A. Deterrence
- B. Re-locate, if feasible
- C. Destroy

III. OPERATIONAL PROCEDURES:

Contacts:

Initial contact:

Tim Devine, Manager of Wildlife & Fisheries (867)-777-7230 (W),
(867)-777-2077 (H)
(867) 678-0101 (Cell)

Response Personnel:

The following personnel can be available for responding to problem bear situations:

Ryan Smith	Inuvik	777-7308	
Paul Voudrach	Tuktoyaktuk	977-2350	977-2335 (Fax)
Ian McLeod	Aklavik	978-2248	978-2756 (Fax)

Initial Contact:

1. The complainant should complete the attached checklist prior to calling DENR. It is critical that as much information as possible be provided at this point in order to determine the appropriate response.

IV. RESPONSE

Wildlife Monitors will be the initial responders to problem bears. It is imperative that they have a sufficient supply of approved deterrents at their disposal. All bear sightings and encounters shall be reported to the ENR office closest to the area of operation.

The potential responses will be considered in the following order:

a) Camps

1) Wildlife Monitors will employ conventional means of deterring problem bears which threaten public safety or property. This may involve chasing a bear out of the camp with a vehicle or snowmobile, or using noise makers and rubber bullets. If these methods prove ineffective, and where a helicopter is available or can be obtained in the area, the bear may be chased from camp. Pilots must be careful not to over stress the bear during this flight and must back off when the bear is a sufficient distance from the camp and keeps running in the desired location. If circumstances allow, a Renewable Resource Officer (RRO) should be contacted prior to using aircraft to deter bears. Undue harassment is illegal and must be avoided. **All incidents involving any means of deterrence should be reported to a Renewable Resource Officer as soon as possible.**

2) Should for some reason, the Wildlife Monitor be unable to deter a bear, and where the bear does not pose an immediate threat to public safety or property, the Department of Environment and Natural Resources (DENR) may send a deterrent or capture team to the site.

b) Denning bears

-If a bear is located in, at or near a den site, work in the area must halt. All employees should safely retreat from the area and report the occurrence to the Site Supervisor, Wildlife Monitor, and the Renewable Resource Officer in your area as soon as possible. Staff from DENR will be required to assess the site and may implement measures to ensure bears are not unduly disturbed. This may include the establishment of an exclusion zone of 300 meters around the den in which no work will be permitted. Work inside the exclusion zone will remain stalled until after den emergence.

c) Free ranging bears

Prior to active deterrence of free ranging bears, and where public safety or property is not in immediate danger, the Wildlife monitor will assess the situation. The monitor should determine if the bear has been disturbed from a den or if it is denning in close proximity. Bears in the vicinity of a den should not be deterred

and work should cease until DENR has assessed the site. If the Wildlife Monitor has determined that the bear is in fact free ranging, and not lingering around a den site, then active deterrence may commence.

d) Destruction of the bear

Instructions to destroy the bear will be given when deterrent actions have failed, when additional deterrent actions are not possible, and when it is determined that capture and relocation cannot be conducted or is unlikely to be successful.

The bear can be destroyed if human life or property is in imminent danger.

If a bear is killed, you will be required to:

- 1) Report the kill to DENR, as soon as possible.
- 2) Skin the bear, leaving the claws and penis (if applicable) attached, and preserve the hide by freezing or salting it and storing it in a cool place. Be generous with the salt.
- 3) Turn In the hide, the skull, and any other biological samples requested to a DENR Renewable Resource Officer.

As per the NWT Wildlife Act, no person may retain any part of a bear killed in defence of life or property.

V. FOLLOW-UP

After response measures are completed, the situation will be reviewed with the camp operator and corrective actions identified. These may include a wide array of actions aimed at avoiding future bear problems and ensuring that the operator is made aware of legal obligations. The need for conservation and the vulnerability of bear populations to over harvest is to be stressed.



AURORA COLLEGE

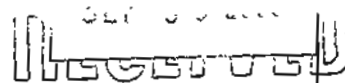
AURORA RESEARCH INSTITUTE

Inuvik Research Centre · South Slave Research Centre

191 Mackenzie Road, P.O. Box 1450

Inuvik, NT X0E 0T0

Phone: 867-777-3298 Fax: 867-777-4264 Email: licence@nwtresearch.com



to: 6 September, 2006

Aldvik Hunters and Trappers Committee	8679762815
Gwich'in Land Use Planning Board	8677777970
Deh Cho First Nations	8678952038
Inuvik Hunters and Trappers Committee	8677772476
Niilat Gwich'in Renewable Resource Council	8677776651
Fort Good Hope Renewable Resource Council	8675982437
Tulita Renewable Resource Council	8675883726
Norman Wells Renewable Resource Council	8675872545
Denendeh Resource Committee	8676952865
Jean Marie River First Nation	8678092002
Pehdzeh Ki First Nation	8675813229
Environmental Impact Screening Committee - c/o Joint Secretariat	8677772810
Inuvialuit Land Administration	8679777101
Gwich'in Renewable Resource Board	8677776601
Gwich'in Land Administration	8677777919
Sahtu Renewable Resource Board	8676883324
Gwich'in Social and Cultural Institute	8677775994
Tuktoyaktuk Hunters and Trappers Committee	8679772433
Ehliat Gwich'in Renewable Resource Council	8679782937
Gwich'ya Gwich'in Renewable Resource Council	8679533302
Tatlit Gwich'in Renewable Resource Council	8679522212

to: Withdrawal of Scientific Research Licence Application no. 391 P.I.: Laura Rempel (Department of Fisheries and Oceans, Vancouver)- *Testing the Reference Condition Approach to Biomonitoring in the Mackenzie Basin*

sender: Karen Heikkila, ARI

**YOU SHOULD RECEIVE 2 PAGE(S), INCLUDING THIS COVER SHEET.
IF YOU DO NOT RECEIVE ALL THE PAGES, PLEASE CALL (867) 777-3298**

Please be advised that Scientific Research Licence Application no. 391 has been **withdrawn**. For your information, attached is a copy of the e-mail sent to the Aurora Research Institute by the Principal Investigator, Laura Rempel, requesting withdrawal of the research licence application.

Comments or questions about the proposed project should be directed to Laura Rempel (604-666-7918).

Many thanks,

Karen Heikkila
Manager, Scientific Services

Original to be sent by mail? Yes/No Yes

The documents accompanying this transmission contain information intended for a specific individual or purpose. The information is private and legally protected by law. If you are not the intended recipient, you are hereby notified that any disclosure, copying, distribution, or the taking of any action in reference to the contents of this telecopied information is strictly prohibited. If you have received this communication in error, please notify us immediately by telephone and return the original to us by regular mail.

aren Heikkila

From: Rempel@DFO-MPO.GC.CA

Sent: Friday, September 01, 2006 4:34 PM

To: kheikkila@auroracollege.nt.ca

Subject: License Application #391

aren,

In writing to withdraw our license application #391 entitled "Testing the Reference Condition Approach to Biomonitoring in the Mackenzie Basin". This application was submitted to your office in error. I sincerely apologize for this inconvenience as I know you have spent considerable time assisting myself and Alasdair Beattie in the consultation process. We will continue independently to consult with local communities on this project as we recognize the important contribution their input makes. Please feel free to contact me or our Western Arctic Area Office (Andrea Cyr or Fred Taptuna) if you have further queries on this subject. Your understanding in this matter is greatly appreciated.

Sincerely,

Aura Rempel, Ph.D.

Research Scientist | Chercheur Scientifique

(604) 666-7918 | fax/télécopieur (604) 666-0417

rempea@dfo-mpo.gc.ca

Fisheries and Oceans Canada | Pêches et Océans Canada

Arctic Science Division | Recherche sur l'Arctique

Central & Arctic Region | Région du Centre et de l'Arctique

3rd flr - 401 Burrard St, Vancouver BC, V6C 3S4

Government of Canada | Gouvernement du Canada

This document is confidential and its disclosure is prohibited by law.

FAX MESSAGE



Prairie and Northern Region
5204 - 50th Avenue, Suite 301
Yellowknife, NT X1A 1E2

COPY	
BOARD	6
G. W.	1
E. A.	1
W. RES.	3/2/06
NMDO	1
FILE	1817

DATE: November 17, 2006

Lorraine Sawdon

TO: Simon Toogood

Environmental Assessment

NWT Water Board

Environment Canada

PHONE:

PHONE: (867) 669-4782

FAX: (867) 765-0114

FAX: (867) 873-8185

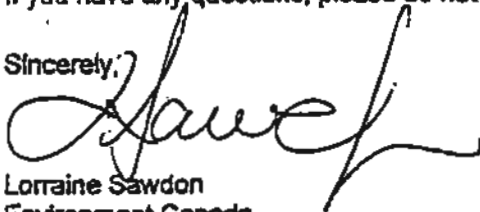
Number of pages including cover: 5

Subject:

Please find enclosed Environment Canada's comments regarding the 2006-2008 Mallik Gas Hydrate Production Research Project water licence application.

If you have any questions, please do not hesitate to contact me at (867) 669-4782 or at lorraine.sawdon@ec.gac.ca

Sincerely,


Lorraine Sawdon
Environment Canada





Environmental Protection Operations Directorate
Suite 301, 5204 - 50th Avenue
Yellowknife, NT X1A 1E2
tel: (867) 669-4700

November 17, 2006

Our File: 4709 002 039

Northwest Territories Water Board
2nd Floor Goga Cho Building
P.O. Box 1326
Yellowknife, NT
X1A 2N9

Attention: Mr. Simon Toogood

Re: Water Licence Application for 2006-2008 Mallik Gas Hydrate Production Research Project

Environment Canada (EC) has reviewed the following documents submitted by the Aurora Research Institute to the NEB between Oct. 13 and Nov. 3, 2006: Response to Information Requests and supporting attachments, Response to the EISC. GNWT-ENR's letter to the Technical Advisory Committee (TAC) was also reviewed.

The responses and supporting documentation have addressed many, but not all of EC's concerns. Comments and recommendations to best address the remaining concerns are contained herein.

1. Air Quality

A) In the document "Mallik Gas Hydrate Production Research Project", National Energy Board Information Request No.1 - Responses, Submission 2, the proponents have detailed the composition of the gas to be flared and provided modelling predictions of air quality impacts.

A dispersion model, U.S. Environmental Protection Agency SCREEN3, was used to conduct a simple screening assessment. In this assessment, it was assumed; that the terrain around 2L-38 was flat, the gas flow rate was 28 300m³/d and the flare stack was 24 metres high. Further, it is expected that there will be negligible H₂S and SO₂ emissions as gas composition indicates the gas is sweet. Finally, NO₂, CO, and PM_{2.5} emissions were modelled and found to be well below applicable ambient air quality objectives; the maximum predicted one-hour average at ground-level concentrations was one order of magnitude below applicable guidelines.

After review of the modelling predictions, Environment Canada has concluded that flaring will not exceed ambient air quality guidelines.

B) In GNWT - ENR's letter to the TAC, GNWT raised concerns regarding incineration. The proponent has indicated that a high temperature incinerator will be used and the Canada Wide Standards for Dioxins and Furans and the Canada Wide Standards for Mercury Emissions are not expected to be exceeded. GNWT - ENR has recommended that:

- “4. The Proponent follow and comply with the Canada-wide Standards for Dioxins and Furan and Canada-wide Standards for Mercury Emission with respect to incineration.
- a. If burning of camp/solid waste is the only alternative available, the proponent should ensure that the amount of waste burned is reduced as much as possible. The objective should be to ensure that only food waste and food-contaminated waste is burned (the use of paper, cardboard and clean wood as supplementary fuel is acceptable).
 - b. The incineration of solid/camp waste should include the use of appropriate incineration technology that strives to meet compliance with the Canada Wide Standards (CWS's) (e.g. controlled air, dual chamber with sufficient air mix, residence time and temperature to maximize combustion of waste gases)....”

Environment Canada agrees with GNWT – ENR. Environment Canada recommends that the Proponent should follow and comply with the Canada Wide Standards for Dioxins and Furans, and the Canada Wide Standards for Mercury Emissions with respect to incineration. In order for these guidelines to be met, at a minimum, the incinerator must have a dual chamber, forced air, and allow for sufficient residence time and temperature to maximize combustion.

2. Sump Encroachment

In the document “Mallik Gas Hydrate Production Research Project”, National Energy Board Information Request No.1 – Responses, Submission 2, and supporting documents, the proponents have provided justification for the location of the drilling rig in proximity to the sump and conducted an impact analysis.

Environment Canada's Concerns:

The purpose of sumps is to contain waste materials. The reports submitted with the Response to IR No.1 – Submission 2, suggest that sump 2L-38 may be in the first stages of containment failure. If the material contained within the sump is migrating, the proponent should take all measures to prevent the deposit of any deleterious materials into waters frequented by fish in order to comply with the *Fisheries Act*. Environment Canada strongly recommends that the proponents practice adaptive management and take corrective actions to maintain the sump throughout the life of the project. EC requests that the proponents make a commitment to this effect.

It has been noted in two documents (Response to IR No.1 – Submission 2, and September 15, 2006 Mallik Site Survey) that core sample results are based on one core sample from each sump located in the Mallik site and one core sample from a control site up-gradient where potential contaminant migration is not likely to occur. Environment Canada does not believe that one sample from each sump and one control site provides enough detail or confidence in results, to evaluate the Mallik sites. Environment Canada requests the proponent make a commitment to conduct a more rigorous site evaluation (including revegetation and drainage patterns). This may be included in the sump monitoring program.

The proponents have submitted documents that have detailed soil characterization data and interpretation and site layout/contouring, but have provided little information on the thermal regime. Further data is required to accurately represent the thermal regime of the sump. This is important information for the understanding of the extreme temperatures and thermal cycling that the material contained may experience. Environment Canada recommends that further investigation of the thermal regime experienced by the sump 2L-38 should be included in the sump monitoring program.

After review of the documents submitted in the initial application and the responses to ~~FR~~ No. 1, flaring impacts on the sump seems likely. Environment Canada acknowledges that further mitigation measures (use of rig matting) has been committed to by the proponents. Environment Canada recommends that monitoring of the thermal impacts on the sump, and provision of details regarding potential remedial measures should the flaring negatively impact soil and/or sump stability, should be required conditions in the licence.

Environment Canada commends the proponents for their initiative and commitments to the proposed re-contouring of the sumps and a seven year monitoring program. After review, Environment Canada agrees that the monitoring program, consisting of EM surveys in years 2007, 2009 and 2011 as well as the installation of four, 9 metre deep thermistors is reasonable. However, adaptive management may be required. If monitoring reveals failure mechanisms, Environment Canada strongly recommends that the proponents take further corrective actions and requests that the proponents make a commitment to this effect. Environment Canada recommends that effective engineered re-contouring be a required condition of the licence.

The guidelines "*Protocol for the Monitoring of Drilling-Waste Disposal Sumps, Inuvialuit Settlement Region, Northwest Territories*" (NWTWB, 2005) are intended to act as a living document to develop and improve the monitoring of drilling waste sumps. This project presents a prime opportunity for the proponents (in conjunction with academia and government) to contribute to the advancement of the monitoring of sumps. As outlined by Aurora College, this project could assist in advancing our knowledge in the areas of; assessment of naturally emplaced salts and clarification of background versus disturbed salinity, ground thermal studies and effects of elevation and snow cover, training opportunities on sump monitoring techniques and use of natural plant species for sump re-vegetation.

Please do not hesitate to contact me at (867) 669-4782 or lorraine.sawdon@ec.gc.ca with any questions or comments with regards to the foregoing.

Sincerely,



Lorraine Sawdon
Environmental Assessment
Environmental Protection Operations Directorate

cc: Stephen Harbicht (Head, Assessment & Monitoring, EPOD)
Mike Fournier (Northern Environmental Assessment Coordinator, EPOD)
Dave Fox (Air Issues Specialist, EPOD)
Brian Hepelle (Senior Environmental Engineer, EPOD)
Myra Robertson (Environmental Assessment Coordinator, CWS)