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Yellowknife, NT X1A 2R3

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November 23, 2001

Mr. Gordon Wray

Chairman

NWT Water Board

P.O. Box 1500

YELLOWKNIFE, NT X1A 2R3



Dear Mr. Wray:

**RE: SHELL CANADA -PROPOSED WINTER 2001 AKLAVIK SEISMIC OPERATION
AND SLEIGH CAMP, MACKENZIE DELTA
WATER LICENCE - LEVEL 1 ENVIRONMENTAL SCREENING
(TYPE "B" LICENCE)**

The Department of Indian Affairs and Northern Development (DIAND) has screened the above water licence application for water use and waste disposal as submitted by Inuvialuit Environmental & Geotechnical Inc. for Shell Canada, pursuant to Section 5 of the Canadian Environmental Assessment Act (CEAA). The Project Description has been screened by the Inuvialuit Environmental Impact Screening Committee (EISC), pursuant to the 1984 Inuvialuit Final Agreement. A joint screening was undertaken with the National Energy Board (NEB) and DIAND's North Mackenzie District Office.

DIAND has determined that this project as proposed is not likely to cause significant adverse environmental effects and concurs with EISC's similar determination as concluded in their screening decisions (regarding both the water licence application and seismic program proposal), providing that proposed mitigation measures are carried out and licence conditions adhered to. DIAND recommends that the application proceed through the regulatory process.

Incorporation of the recommended mitigative measures into the terms and conditions of the licence is required.

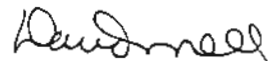
If the Board concurs with our findings, please sign the attached screening forms, advise the applicant of the CEAA recommendations in writing, and return the original forms to Water Resources Division for archiving and registration with CEAA.

.../2

Canada

If you require further information, contact me at (867) 669-2650.

Sincerely,



David Milburn
Manager
Water Resources Division

encl.

cc: D. Livingstone, Director, RR & E
North Mackenzie/Inuvik District
Environment and Conservation Division

CEAA SCREENING FORM - LEVEL I
Department of Indian Affairs and Northern Development /National Energy Board

1. Public Registry Required Information

Applicant: Shell Canada Ltd.

FEAI LD. Reference Number:*
[*A number assigned by the CEA Agency; to be inserted here upon receipt of number from Agency]

Subject Descriptors: inland waters, oil and gas

Alias Project Title:* Aklavik 2D Seismic program
[*DIAND project name]

DIAND Lead RA and Screening Division: Water Resources for the NWT Water Board

Lead RA Contact:* Greg Cook (screener for Water Board) 867-669-2656
[*Name and telephone # of Regional Manager or Screener]

Lead RA Trigger Types: CEAA Law List Regulations; Inclusion List Regulations;
Inuvialuit Final Agreement

Other Screening Trigger Types:* IFA; NEB geophysical operations authorization, Land use
[*e.g., proponent, funding, land disposition, law list approvals]

EA Start Date: 2001/09/04

EA Type: screening

Physical Activity as identified from Inclusion List: water use

Physical Work and /or Activity Being Assessed: seismic operations, sleigh camp operation

Phase of Project / Primary Undertaking: construction and operation

Multiple Activities: ☐ Yes ☒ No Indicate One: Waste disposal

Project Category Code: Point Linear Areal [Circle one]

Geographic Place Name:* Aklavik
[*e.g., nearest place name or geographic feature, see Appendix C]

EA Determination: 20-I-a

EA Determination Date: 2001/10/26

Estimated Follow-up program termination date: n/a

EA Terminated: no

2. General File Information

NWT Water Board File Number: N7-1-1773
DIAND Land Use Permit Number: N2001B0041
NEB File Number: 9180-S706-143
DFO File Number: t.b.d.
DOE File Number: t.b.d.

Type of Application(s): new water licence; new Land Use permit, new NEB geophysical operations authorization

Present licence/permit/lease number: n/a

Proposed Date of Activity: 2001/12/01

Other RAs or Screening Divisions:
-Integrated Screening underway? Provided in Appendix D, CEAA EA Coordination
YES

Other RA Types of Approval: Provided in Appendix D, CEAA EA Coordination

Project File Location(s): NWT Water Board; DIAND Water Resources Division NEB
N. Mackenzie District

DIAND District: North Mackenzie, Inuvik

3. Proponent:

Shell Canada Ltd.
400 - 4th Avenue S.W.
Calgary, AB T2P 2H5 Tel. 403- 691-3697

Type of proponent: industry

4. Project Location:

Mackenzie Delta including Richards Island

Topographic Map Sheet Number: 107 B and 107 C

Latitude / Longitude: 68° 28' 38" N to 68° 39' 00"N; and 135° 55'40"W and 135° 33'27" W

Watershed: Mackenzie River

Street Name: n/a

Surrounding Land Status: both ILA and Crown lands

Special Designation: yes, in part - NE portion of seismic line extends into the Kendall Island Bird Sanctuary

5.a) Project Description

Project Description: *Note that the Project Description received was intended to describe the project as it related to the licence in particular. Another PD was submitted to NEB and DIAND N. Mackenzie District for the seismic program.. Shell plans to conduct a 2D seismic program in two blocks, over the winter of 2001-02, one large one adjacent to Shallow Bay, another much smaller one to the north extending onto Richards Island. The program extends over both federal and ILA lands. Shell has since reduced the program size in the southwestern portion of the block adjacent to by withdrawing those portions of seismic lines inside Area 725D of the Aklavik Community Conservation plan, i.e., Line 72-42 and parts of Lines 72-34, 72-35, 72-37 and 72-38 (Shell letter dated Nov. 7, 2001 to EISC).

Water Use / Waste Disposal / Camp: The operations will be supported by a sleigh camp, operated by Arctic Oil & Gas Services, to be located on federal lands. The sleigh camp(s) may have up to 60 people on site. Water for the camp and access road preparation will be withdrawn from nearby channels of the Mackenzie River and would comply with DFO's guidelines for screen mesh size. Water will also be used for cooking, cleaning and sanitary purposes. Waste water will be treated with a "Filterboxx" snow fluent system prior to discharge from the sleigh camp, (subject to regulatory approval) into channels of the Mackenzie River. The system is designed to accept an average flow rate capacity of 12 cu. m./day. Should the water treatment system not meet the set criteria for discharge, Shell will truck it to Inuvik for disposal. Similarly, this system will treat fresh water withdrawn from the river (screened intakes) using a combination of filtering and UV light. Anticipated water requirements are up to 190 litres/person/day. Less than 75 cubic metres of water per day is expected during access construction activities. Shell will also occupy the Arctic Star barge (currently the subject of a licence amendment to relocate it to Napoiak Channel), to support seismic operations. Road construction, pending approvals, will commence in December 2001. The sleigh camp will be assembled and towed in three strings of 5 or 6 trailers each and transported to locations throughout the program area by a front end loader, or a Delta 3. Transportation will occur over the frozen channels of the Mackenzie River. The sleigh camp is expected to be adjacent to the Arctic Star, but will potentially move to two other areas as a contingency, but will always be located on frozen river channels.

Fuel: Fuel will be stored in two fuel sloops (with two 83,280 L tanks each) kept at the sleigh camp. Tanks will be double walled and bermed to 110% of capacity.

Seismic Operations: Brush mowers would be used to clear vegetation up to 5 m wide where necessary in the southern block (by Shallow Bay). Tree cutting along watercourses would be avoided wherever possible. Tracked vehicles with GPS navigation system would be used to site the lines and 75 m interval energy source points (predominately dynamite - some vibroseis possible). Shot points near or under water bodies would meet DFO requirements for set-back distances, size and depth. Drilling units would be mounted on Bombardier or Nodwell tracked carriers with shot holes drilled to 18 m depth and loaded with 10 kg of dynamite. Casing rigs would be utilized for lakes with potential for overwintering fish habitat. If required in the Kendall Island Bird Sanctuary (portion of the northern block), Shell would use vibroseis in place of dynamite as an energy source. Geophones would be laid out using tracked vehicles and/or helicopters when daylight conditions are favourable. Western Geco, contracted by Shell, would record the returning energy pulses using a recording unit positioned on a Nodwell or similar vehicle.

What sources of information did you use?*

[*Information must be on the public record]

- | | |
|--|---|
| <input type="checkbox"/> other government data | <input checked="" type="checkbox"/> CEEA public registry system |
| <input type="checkbox"/> historical maps | <input type="checkbox"/> contour maps |
| <input type="checkbox"/> scientific reports | <input checked="" type="checkbox"/> Oil and gas water licence questionnaire |
| <input checked="" type="checkbox"/> Project Description for the EISC and licence application | <input type="checkbox"/> other, specify: |

5.b) Accidents or Malfunctions that May Occur in Connection with the Project.

Vehicles could break through ice and may cause a fuel spill impacting water bodies. Land fuel spills could result in ground contamination (from mechanical failure or operator error) or ground disturbance during clean-up (multiple equipment passes in one location). Sewage spills from a waste treatment facility failure could contaminate land or water. The proponent also indicates that ignition of shallow gases could impact surrounding vegetation.

6.a) Description of the Environment (a detailed description can be found in the Project Description)

* The overall area is within the Mackenzie Delta, a complex area of peat covered deltas and fluvial marine deposits. It is a dynamic complex of lakes and ponds, islands and tidal flats, braided channels and ox bows. Water levels vary dramatically with climatic changes and ice regimes. Dominant soils are Regosolic Static and Gleysolic Static Cryosols with some Organic Cryosols, ie soils characteristic of prolonged cryoturbation, low temperatures and low permeabilities. The area has a low Arctic eco climate, with long cold winters and short cool summers. An extensive discontinuous permafrost layer underlies the area. There is a fairly complex flora here, with a distinct succession of plants, usually initiated by flooding. In addition to the several ground species of plants, there are poplars, alders and spruce. Wildlife species include beaver, muskrat, fox, caribou, grizzly, and several species of waterfowl. Fish species include Lake trout, burbot, cisco, N. pike, inconnu and whitefish.

6.b) Description of the Socio-economic and Cultural Environment

* Aklavik and Inuvik are the closest communities, and both, especially Aklavik, have a high aboriginal or Inuvialuit population. While many area residents have employment with government or oil and gas companies, traditional activities hunting, fishing and trapping are important to the local residents. Eco tourism has grown in recent years as well. The communities offer a range of services, with Inuvik possessing most requirements. There are several Special Management Areas in the vicinity of proposed operations, which have certain restrictions.

What sources of information did you use? (Information must be on the public record)

- | | |
|---|--|
| <input type="checkbox"/> Historical Maps (expired permits and licences) | <input type="checkbox"/> GIS |
| <input type="checkbox"/> Running Maps (current permits and licences) | <input type="checkbox"/> Indian Land Registry |
| <input type="checkbox"/> Interference Maps (other land dispositions) | <input type="checkbox"/> Land Transition Management Style |
| <input type="checkbox"/> Public Registry System | <input type="checkbox"/> Other, eg NWT Data Book, A & R Plan |
| <input checked="" type="checkbox"/> Project Description for the EISC | <input type="checkbox"/> Oil & Gas Water Licence Questionnaire |

7. Consultation on Project

Federal Government		Contact Person	Dates Comments Received
DIAND			
Water Res.	✓	G. Cook, R. Jenkins, M. Wilson, B. Blais	Oct. 12, 2001; Sept 19, 2001
Geology			
Lands	x	D. Elliott	Sept. 14, 2001
Minerals			
Ec. Dev.			
Env. & Cons.			
I&I			
D.M.	✓	R. Cockney, Inuvik	Oct. 9, 2001 (LUP application)
DWRO/R.M.O.	x	S. Gallupe, R. Walker	Oct. 10, 2001
DFO/CCG	x	J. Dahl	Oct. 12, 15, 2001
	✓	B. Hanna, Yellowknife	Oct. 26, 2001 (Advice to proponent)
	✓	B. Hanna, Yellowknife	Nov. 1, 2001 (CEAA s.5 response)
DOE	x	S. Harbicht	Oct. 11, 2001
	✓	R. Bujold	Oct. 26, 2001 (Provided to EISC)
	✓	P. Pacholek	Nov. 7, 2001 (CEAA s.5 response)
Health Canada	✓	B. Woo, Edmonton	Nov. 5, 2001 (CEAA s.5 response)
DOT			
NRCan	✓	I. Lamirande, Ottawa	Nov. 6, 2001 (CEAA s.5 response)
NEB	✓	J. Korec, Calgary	Oct. 29, 2001 (CEAA s.5 notification)
	✓	J. Korec, Calgary	Oct. 30, 2001 (Info request to Shell)
N.W.T. Government			
RWED	x	Al Gibson	Oct. 16 2001
Health	x	D. Fleming	
Transportation			

N.W.T. Government	Contact Person	Dates Comments Received
Tourism		
MACA		
EM&PR		
PWNHC	✓ B. Cameron, Yellowknife	Oct. 25, 2001 (Provided to EISC)
Other		

Aboriginal Groups	Contact Person	Dates Comments Received
EISC	✓ L. Graf, Inuvik ✓ L. Graf, Inuvik	Oct. 10, 2001 (Notification of screening) Nov. 14, 2001 (EISC screening decision) Oct. 09, 2001
Inuvik Hunters & Trappers Committee	x R. Binder	Sept. 25 2001
Fisheries Joint Mgt. Committee	x R. Bell ✓ R. Bell, Inuvik	Sept. 25 2001 Oct. 26, 2001 (Provided to EISC)
Inuvialuit Land Admin.	X C. Pokiak	Oct. 04 2001

Public/Interested Parties/Other	Contact Person	Dates Comments Received
Oil & gas industry rep.	X B. Boos	

Record of comments attached to screening Form? No, but are on file -summary follows

7.b) Summary of Public Concerns (not review committee comments)

Public consultation was conducted by the proponent, and a record of these meetings etc can be found on pages 33 to 35 of the Water Licence Project Description and pages 98 to 105 of the Seismic Program Project Description.

The Fisheries Joint Management Committee (FJMC) (Oct. 25, 2001 submission to EISC) is concerned that DFO may not have the ability to meet the challenges related to accelerating hydrocarbon development activities in the Beaufort-Delta, but is pleased to learn of DFO's plans to re-deploy staff to augment the Inuvik office. The Committee notes that for winter activities, more emphasis should have been placed in the proponent's Project Description on fish overwintering requirements and where fish might be found. Big Fish River Dolly Varden stock and other species under stress were not addressed and information from recent studies was not referenced.

8.a) Detailed Description of Environmental and Cumulative Effects Identified in Tables A and B.

Environmental or cumulative environmental effect	Description
*see Project description summary and reviewers summary-water quality impairment	- risk of spills and accidents could release contaminants; improper functioning of the waste water treatment facilities could result in releases of effluent, -could impact on aquatic and fish habitat - may result in compacted vegetation from ice roads, disturbance to wildlife
-minor drawdown of waterbodies -increased traffic levels, noise	

8.b) Effects of the Environment on the Project (or in table)

In its response to an NEB information request (IR No. 1), the proponent notes that physical environmental conditions and/or weather-related project delays could result from: warm weather/slow ice formation; deep snow; lack of snow; drifted snow; and an early ice break-up. As well, the proponent notes that avoidance of sensitive terrain, such as high cutbanks, steep slopes and archaeological sites could result in project delays.

9.a) Summary of Proponent's Mitigation Measures

See attached summary from the Seismic Program Project Description (Table 23, pages 91 to 97).

Accidents and Malfunctions: In response to NEB's information request, Shell proposed the following measures to minimize the chance of a spill of fuel, vehicle fluids or wastewater or to mitigate the spill if it occurred:

- to avoid vehicles breaking through ice along roads or at crossings
 - mechanical and electronic ice profiling, and
 - compliance with transportation guidelines load size restrictions;
- compliance with designated speed limits to reduce the chance of collision and spills of fuel or material;

- use new, well-maintained vehicles;
- keep spill kits on hand to respond to small spills or leaks;
- fuel tanks would have secondary containment; and
- on-site person to inspect and maintain waste treatment system.

Shell would use automatic shut-off valves on drilling units and follow its Safe Work Procedures for drilling in shallow gas areas to prevent or mitigate ignition of shallow gases during drilling.

Effects of Environment on the Project: To counter potential project delays due to weather (slow formation of ice, deep snow, drifting snow, lack of snow, or early ice break-up), Shell's planning includes:

- a conservative project schedule with contingency for delays;
- siting lines to avoid insufficiently frozen water bodies;
- suspension of overland movement of equipment if ground rutting occurs;
- use of tracked vehicles that manoeuvre more easily than wheeled vehicles in deep snow;
- use of heli-portable techniques; and
- post-winter aerial survey to pick-up any debris previously hidden under drifted snow.

To avoid delays due to activities around sensitive terrain features (high cutbanks, steep slopes, archaeological sites, etc.), Shell extensively detailed such sites through satellite imagery and aerial surveyed truthing and consultation and designed its program accordingly.

9.b) Reviewers' Comments (regarding the licence)

DFO: Letter of Advice: avoid explosives if possible, and certainly avoid within water bodies not having bottom fast ice; water intakes should be screened to prevent entrainment of fish; avoid draw down of water bodies, but if large quantities are required, details should be provided to DFO for review; avoid use of small streams and shallow or small lakes; avoid disturbing littoral habitat by ensuring any mechanized clearing does not occur within 100 metres of any water body; access trails should follow preexisting routes if possible, to minimize vegetation and soil disturbance; remediate any banks affected before spring; use mushroom shoes or boots on bladed vehicles to minimize ground disturbance and erosion; avoid cutting of crossing approaches to water bodies unless DFO approved; use only clean snow or ice to make temporary crossings; notch any winter crossings before break up to avoid impeding stream flow; leave no debris on ice surfaces; store fuel, wastes etc at least 100 metres back from water bodies, and properly berm or contain fuels, the latter with double or secondary containment; report all spills; and have a contingency plan on site. DFO also supports DOE comments regarding the "Filterboxx" physical snow-fluent treatment being proposed; ie: any effluent discharged from the Filterboxx system must be non toxic, and a monitoring program be implemented which also monitors snow pile and meltwater quality. Treated effluent from the snow making gun shall be on and not on the channels of the Mackenzie River. The snow piles should not be immediately adjacent to water and should be bermed to enable monitoring of meltwater in spring.

-DIAND: There should be a back up plan should planned snow-fluent treatment fails to meet effluent objectives.

-DOE: all fuel containment facilities should have secondary containment, with other hazardous materials stored such that they cannot be released to the environment; all activities carried out within the Kendall Island Bird sanctuary (n. portion of seismic in part) will need a CWS permit. Based on earlier demonstrations of the snow-fluent system in Inuvik, (similar to this Filterboxx system), some problems occurred, including 100% mortality of trout in the bioassay. DOE recommends that any effluent discharged from this new system be non-toxic, and a monitoring program be implemented which also monitors snow pile and meltwater quality, and discharge from the snow-making gun shall be on land and not on the channels of the Mackenzie river. Snow piles should not be immediately adjacent to water and should be bermed to enable monitoring of melt water in Spring.

RWED: recommends use of an incinerator for burning of combustibles.

-Rather than assuming treated sewage not meeting discharge criteria can be trucked to Inuvik, (which, along with disposal of non-combustibles, will need the community's permission) adequate sewage holding capacity should be provided at the camp to prevent disposal of raw sewage onto land.

- **Inuvik Hunters and Trappers Committee** (to EISC): noted a number of vehicles went through the ice last year around the delta, are concerned about spills and pollution, so need a good contingency plan and available resources to deal with; noted the number of camps in the area which should be avoided to prevent impacts; avoid blockage of streams crossed; and some concern was expressed about possible project extensions into April, which potential impacts on migrating birds etc. There should also be wildlife monitors on site.

- **Fisheries Joint Management Committee**:(to EISC)..for several applications

-recommend the use of local environmental monitors, plus the establishment of a central data base on fish and water body incident reports from environmental monitors; recommend heightened inspections during initial deployment of new explosive use technologies, concern with drawdown of area water bodies, especially small ones, from road, camp construction etc, so recommend that actual drawdowns be monitored by DFO. With all the activities going on, they want assurances that all work complies with various government regulations and guidelines.

10. Significance

After taking into account the above mitigation measures, are any of the adverse environmental effects significant?

☐ Yes ☒ No

If yes, identify which one(s) and proceed to 11; if no, proceed to #12

11. Likelihood of Occurrence

Of the identified adverse significant environmental effects in #10 are any likely to occur?

☐ Yes ☒ No

If yes, which one(s)?

12. CEAA Determination /Recommendation

- ☒ Section 20 (1)(a) - Project may proceed as it is not likely to cause significant adverse environmental effects
- ☐ Section 20 (1)(b) - Project may not proceed as it is likely to cause significant adverse environmental effects that cannot be justified.
- ☐ Section 20 (1)(c)(i) - Project must be referred to the Minister of Environment as it is uncertain whether the project is likely to cause significant adverse environmental effects.
- ☐ Section 20 (1)(c)(ii) - Project must be referred to the Minister of Environment as it is likely to cause significant adverse environmental effects.
- ☐ Section 20 (1)(c)(iii) - Project must be referred to the Minister of Environment as public concerns warrant the reference.

13. Consultation on Screening Report

Public consultation on screening report deemed necessary? ☐ Yes ☒ No

Deadline for comments on screening report n/a

Public Comments Received on Screening Report? ☐ Yes ☒ No

(Attach Comments to screening file.)

14. Follow-up Program

None required under CEAA. Regular licence, land use and operation inspections should suffice to identify any problems needing attention. In addition, the Inuvialuit will have Wildlife and Environmental Monitors (from local HTC and ILA, respectively) on the project site to ensure that their concerns are addressed.

Monitoring of Shell's operations include:

- regular program inspections and a post-program inspection performed by Shell;
- monitoring for overpressures from dynamite detonations below lakebeds;
- supporting RWED surveys of the caribou herd and of grizzly bear denning;
- sampling/determining physical and chemical properties and bathymetry of lakes; and
- regular monitoring of wastewater discharges.

Program follow-up would include:

- removal of debris, signage, lath, flagging, and cap leads;
- documentation of blowouts, craters, apparent non-conforming off-line travel, and disturbance of archaeological sites;
- survey of water courses to ensure no vegetation remains in the water;
- survey for and repair of surface disturbance on seismic lines;
- remediation of problem areas; and
- provision of final reports as necessary to INAC, EISC, Water Board, and NEB.

15. **Authorization**

Prepared By (screener): Date

Approved By: Date
Decision Maker (e.g., Regional Manager, engineer, etc.)

DIAND Land Administration (N.Mackenzie district)

Reviewed By: Date

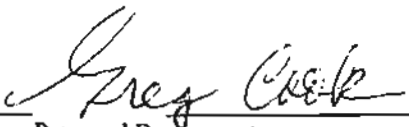
Approved By: Date
Decision Maker (e.g., Regional Manager, engineer, etc.)

National Energy Board

Reviewed By: J. Korec, P.Geol.
Environmental Assessment Officer Date

Approved By: T. M. Baker
Chief Conservation Officer Date

16. **Water Board Authorization (Lead RA)**


Prepared By (screener): Date
Oct. 26, 2001


Approved By: Date
Dec 13, 2001

Appendices

Appendix A: Subject Descriptors

Choose from this list and insert as a "Subject Descriptor"

agriculture
buildings
communications
defence
energy
forestry
industry
inland waters
mining
oceans
oil and gas
parks
transportation

Appendix B: Geographic Place Name

see list provided in Guide

APPENDIX C: Screening Checklist and Cumulative Effects Checklist (Tables A, B and Cumulative Effects)

APPENDIX D : CEAA EA Coordination

Table A. Identification of Project Components and Environmental Effects

Identify all components of the project under screening and their potential adverse environmental effects

Project Components

(✓ check all the items appropriate to this project)

- ☒ access road
 - ☒ construction
 - ☒ abandonment/removal
 - ☐ modification e.g., widening, straightening
- ☒ automobile, aircraft or vessel movement
- ☒ blasting
- ☒ building
- ☐ burning
- ☐ burying
- ☐ channelling
- ☐ cut and fill
- ☐ cutting of trees or removal of vegetation
- ☐ dams and impoundments
 - ☐ construction
 - ☐ abandonment/removal
 - ☐ modification
- ☐ ditch construction
- ☒ drainage alteration
- ☐ drilling other than geoscientific
- ☐ ecological surveys
- ☐ excavation;
- ☒ explosive storage
- ☒ fuel storage
- ☒ garbage
 - ☐ disposal of hazardous waste
 - ☒ disposal of sewage
 - ☒ waste generation
- ☐ geoscientific sampling
 - ☐ trenching
 - ☐ diamond drill
 - ☐ borehole core sampling
 - ☐ bulk soil sampling
- ☐ gravel
- ☐ hydrological testing
- ☒ site restoration
 - ☐ fertilization
 - ☐ grubbing
 - ☐ planting/seeding
 - ☐ reforestation
 - ☐ scarify
 - ☒ spraying
 - ☐ recontouring
- ☐ slash and burn
- ☐ soil testing
- ☐ topsoil, overburden or soil
 - ☐ fill
 - ☐ disposal
 - ☐ removal
 - ☐ storage
- ☐ stream crossing/bridging
- ☐ tunnelling/underground

☐ other, explain _____

☒ accidents or malfunctions (Check if there is a possibility for malfunctions and accidents with this project). Describe. ☐ risk of spills, etc ...

☒ effects of environment on project (e.g., beaver dams). Describe. ☐ see section 8.b

Project Effects

(✓ check all the items appropriate to this project)

Biophysical Environment

1. ☒ deposit into surface water
2. ☐ deposit into ground water
3. ☒ change in surface water flow
4. ☐ change in ground water flow
5. ☐ change in water temperature
6. ☐ change in drainage pattern
7. ☐ change in air quality
8. ☐ change in air flow
9. ☐ micro-climate change
10. ☒ ice fog
11. ☒ change in ambient noise levels
12. ☐ change in slope stability
13. ☒ change in soil structure
14. ☐ alteration of permafrost regime
15. ☐ destabilization/erosion
16. ☒ soil compaction
17. ☐ loss of access to non-renewable resource
18. ☐ depletion of non-renewable resource
19. ☐ removal of rare/endangered plant species
20. ☐ introduction of species
21. ☒ toxin/heavy metal accumulation
22. ☐ removal of rare/endangered wildlife species
23. ☐ change in wildlife health
24. ☒ impact to large mammals
25. ☒ impact to small mammals
26. ☒ impact to fish
27. ☒ impact to birds
28. ☐ impact to other wildlife
29. ☐ impact in a calving, nesting or spawning area
30. ☐ removal of wildlife buffer zone
31. ☒ change in wildlife habitat/ecosystem
32. ☐ other, explain _____

Directly-related Socio-economic and Cultural Environment

33. ☒ impact to trappers
34. ☒ impact to hunting
35. ☐ impact to outfitters
36. ☐ recreational or back country use
37. ☒ impact to fishing
38. ☒ impact to First Nation traditional use
39. ☒ impact to community
40. ☒ impact to industry
41. ☐ impact to community health
42. ☐ change in work force economics
43. ☐ change in housing or infrastructure
44. ☐ change in regional transportation
45. ☐ other, explain _____
46. ☒ impact to traditional use area
47. ☐ impact to historical site or cultural landmark
48. ☒ impact to local aesthetics
49. ☐ impact to archaeological or historical site
50. ☐ other, explain _____

Table B. Identification of Other Resource Uses And Their Environmental Effects

Identify relevant past, current and future (pending applications) physical works and activities and their potential adverse environmental effects.

Other Resource Uses

(✓ check all the items appropriate to this project)

Effects from other Resource Uses

(✓ check all the items appropriate to the scope of this project)

- agriculture
- __ forestry
 __ commercial
 __ domestic
- _x_ fishing
- _x_ hunting/subsistence
- __ urbanization
 __ commercial / residential (cottages)
 __ built structures
 __ infrastructure
- __ mining
 __ exploration
 __ open pits
 __ underground
- __ quarries
- _x_ transportation/communications
 x roads / trails
 x channels / canal
 __ telephone lines, satellite dishes, cables
 __ beacons
- __ solid waste disposal
- __ energy project
 __ hydro
 __ pipeline
 __ transmission line
- _x_ other water licenses, permits, leases
- _x_ land claims
 x selected
 x withdrawn
 x special management
 __ heritage sites
 __ cultural sites
- __ other private lands held under tenure
- _x_ recreational
- _x_ trapping
- __ mineral processing
- __ airport
- __ recreation
- _x_ other heritage sites (archeological)
- __ other, explain _____

Biophysical Environment

1. _x_ deposit into surface water
2. __ deposit into ground water
3. __ change in surface water flow
4. __ change in ground water flow
5. __ change in water temperature
6. __ change in drainage pattern
7. _x_ change in air quality
8. __ change in air flow
9. __ micro-climate change
10. _x_ ice fog
11. X_ change in ambient noise levels
12. __ change in slope stability
13. __ change in soil structure
14. _x_ alteration of permafrost regime
15. _x_ destabilization/erosion
16. _x_ soil compaction
17. __ loss of access to non-renewable resource
18. __ depletion of non-renewable resource
19. __ removal of rare/endangered plant species
20. __ introduction of species
21. _x_ toxin/heavy metal accumulation
22. __ removal of rare/endangered wildlife species
23. __ change in wildlife health
24. _x_ impact to large mammals
25. _x_ impact to small mammals
26. _x_ impact to fish
27. _x_ impact to birds
28. _x_ impact to other wildlife
29. __ impact in a calving, nesting or spawning area
30. __ removal of wildlife buffer zone
31. _x_ change in wildlife habitat/ecosystem
32. __ other, explain _____

Directly-related Socio-economic and Cultural Environment

33. _x_ impact to trappers
34. _x_ impact to hunting
35. __ impact to outfitters
36. __ recreational or back country use
37. _x_ impact to fishing
38. _x_ impact to First Nation traditional use
39. _x_ impact to community
40. _x_ impact to industry
41. __ impact to community health
42. _x_ change in work force or community economics
43. __ change in housing or infrastructure
44. __ change in regional transportation
45. __ other, explain _____
46. _x_ impact to traditional use area
47. __ impact to historical site or cultural landmark
48. _x_ impact to local aesthetics
49. _x_ impact to archaeological or historical site
50. __ other, explain _____

Cumulative Environmental Effects

Based on a comparison of effects identified in Tables A and Table B

Matching
Number(s)

Description of cumulative environmental effects

None were specifically identified by reviewers, although it has been noted that with all the hydrocarbon exploration activity in the region, past and present, a more regional look at such potential impacts may be worthwhile. It was noted that the Inuvialuit through the EISC EIRB, oil and gas companies, and Kavik Axys Consulting, are in the process of finalizing a cumulative effects assessment of the region, along with guidelines for both the proponent and regulators to follow. The proponent undertook a cumulative effects assessment as noted in the Project Description, (for the water licence only), with further discussion to appear in the PD for the seismic work there.

The proponent felt that the incremental increase of impacts from their operations here would be restricted to: minor drawdown of water bodies; increased traffic levels; minor alteration to underlying vegetation; while any cumulative effects related to water were considered local and short term in nature, "given the water regime in the area." Overall, the residual cumulative effects from this project are predicted to be low in magnitude and local in extent, something some reviewers felt might be difficult to defend, (but cumulative effects were not identified)

APPENDIX D: CEAA EA Coordination

CEAA Section 5 Notification

Pursuant to section 5 of the CEAA Federal Coordination Regulations, potential responsible authorities (RAs) and federal authorities (FAs) were requested on October 29, 2001 to review the proposed project and, pursuant to subsection 6(1) of the CEAA Federal Coordination Regulations, inform the lead RA by November 9, 2001 whether they are a responsible authority or could provide specialist advice.

The responses are provided in the following table:

Role of Federal Departments/Agencies

Department/Agency (District)	Responsible Authority	Specialist Department	No Involvement
Canadian Coast Guard (Sarnia)			X
Environment Canada (Yellowknife)	X		
Fisheries and Oceans (Yellowknife)	X		
Health Canada (Edmonton)		X	
Indian and Northern Affairs (Inuvik)	X		
National Energy Board (Calgary)	X		
Natural Resources Canada (Ottawa)		X	
NWT Water Board	Lead RA		

Federal Approvals [delete any that do not apply]

Environment Canada:	<i>Migratory Birds Convention Act</i> Migratory Bird Sanctuary Permit
Fisheries and Oceans:	<i>Fisheries Act</i> Section 32 Authorization
INAC:	<i>Territorials Lands Act</i> Land Use Permit
National Energy Board:	<i>Canada Oil and Gas Operations Act</i> 5(1)(b) Authorization
NWT Water Board:	<i>NWT Waters Act</i> Class B Water Licence

Section 8 Requirements of the CEAA Federal Coordination Regulations

With respect to section 8 of the FCR, the RAs prepared a joint determination of the scope of the project, the factors to be considered, and the scope of those factors as follows:

A. Scope of the Project

2. Undertaking in relation to the physical work or physical activity triggering the CEAA.

The RAs consider the principal project to be the proposed geophysical operations related to hydrocarbon exploration in the Mackenzie Delta area, Northwest Territories. To support this activity, camps are required.

3. Other associated physical works or physical activities that must be undertaken to carry out the project.

The RAs note that for the project to proceed to completion, the physical works and activities listed in Table A above would need to be undertaken.

4. Other undertakings in relation to the physical works and activities identified in items (1) and (2) above.

No further hydrocarbon exploration-related activities have been identified in relation to the physical works and activities for the proposed Project. Any additional hydrocarbon exploration activities would be subject to future examination under the *NWT Waters Act*, *Canada Oil and Gas Operations Act*, *Migratory Birds Convention Act*, *Fisheries Act*, and/or *Territorial Lands Act* and, consequently, under the CEEA.

B. Factors to be Assessed

The factors considered within the scope of an environmental assessment are those set out in subsection 16(1) of the CEEA.

C. Scope of the Factors to be Assessed

The following spatial and temporal boundaries, as defined in the Inuvialuit Environmental and Geotechnical Inc. Project Description¹ for the Project, are suggested.

1. Spatial Boundaries

- | | |
|--------------|--|
| Local: | Impacts would be limited to the seismic rights-of-way and camps; |
| Subregional: | Impacts might extend beyond the limits of the rights-of-way and camps, but would be limited to within 1 to 50 km of the rights-of-way and camps; and |
| Regional: | Impacts might extend beyond 50 km from the rights-of-way and camps to the entire region. |

2. Temporal Boundaries

- | | |
|--------------|--|
| Immediate: | Impact duration would be limited to less than two days; |
| Short-term: | Impact duration would be longer than two days but less than one year; |
| Medium-term: | Impact duration would be more than one year but less than ten years; and |
| Long-term: | Impact duration would extend ten years or longer. |

Section 9 Requirements of the CEEA Coordination Regulations

The RAs agreed to a CEEA determination date of November 26, 2001 for taking a course of action under subsection 20(1). Each RA for this joint screening made its own independent CEEA determination.

¹Inuvialuit Environmental and Geotechnical Inc., August 2001, "Project Description for the Proposed Shell Canada Ltd. Winter 2001/2002 Aklavik 2D Seismic Program Water Licence Application" and September 2001, "Project Description for the Proposed Shell Canada Ltd. Winter 2001/2002 Aklavik 2D Seismic Program".

TABLE 23
POTENTIAL ENVIRONMENTAL AND SOCIO-ECONOMIC IMPACTS, MITIGATION AND RESIDUAL IMPACTS

Excerpts from Project Description

Shell Aklavik 2D

1773

Concern/Impact	Mitigative Measures	Areal Extent	Magnitude	Duration	Frequency	Probability	Confidence	Reversibility	Residual Impact Balance	Residual Impact Significance
1. Permafrost and Permafrost Features										
1.1 Disturbance of permafrost	<p>1 A minimum of 20 cm of snow will be left on all access trails, and low ground pressure vehicles (tracks) will be used to mitigate permafrost disturbance.</p> <p>2 The project will be completed under frozen ground conditions.</p> <p>3 Vehicle movement will be restricted in the event of thaw or soft ground conditions.</p> <p>4 An Environmental Monitor will be present to identify sensitive areas and assist in mitigation.</p> <p>5 Line locations will avoid environmentally sensitive areas in keeping with all regulations.</p>	Local	Low	Short-term	Occasional	Low	High	Reversible in short-term	Neutral	Not significant
1.2 Pings	1 All pings will be avoided by a minimum of 150 m.	Local	Low	N/A	N/A	N/A	High	N/A	Neutral	Not significant
2. Terrain and Soils										
2.1 Disturbance to the soil profile (i.e. soil loss, compaction, rutting)	<p>1 Program will be completed under frozen ground conditions limiting soil disturbance caused by uprooting.</p> <p>2 Any inadvertent surface disturbance will be repaired immediately.</p> <p>3 Blasting will be restricted to isolated areas (shot hole) and will be conducted in accordance with all relevant regulations and safety guidelines. All explosive detonations will be confined and contained underground.</p> <p>4 Access routes and trails will be limited to seismic rights-of-way and ice access routes wherever possible.</p> <p>5 Any soil or organic material displaced during operations will be replaced and compacted.</p> <p>6 Tracked and low-pressure tire vehicles will be used to minimize surface disturbance.</p> <p>7 Equipment will utilize seismic lines for lumerounds to minimize the amount of surface disturbance.</p>	Local	Low	Medium Term	Occasional	Low	High	Reversible in medium-term	Neutral	Not significant

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Table 23 cont'd

Concern/Impact	Mitigative Measures	Arenal Extent	Magnitude	Duration	Frequency	Probability	Confidence	Reversibility	Residual Impact Balance	Residual Impact Significance
2.2 Disturbance to erosion prone banks and slopes.	1. Snow/ice ramps will be constructed on lake and riverbank slopes to prevent equipment disturbance and erosion. 2. Sensitive areas will be avoided by using detours. 3. Equipment operators will be instructed to not disturb the organic mat, and all access will be clearly marked to reduce the possibility of inadvertent surface disturbance. 4. If surfaces are disturbed in an area where drainage or erosion is a possibility, such as channels, lakes or oxbows, erosion control measures will be employed.	Local	Low	Short-term	Occasional	Low	High	Reversible in short-term	Neutral	Not significant
2.3 Disturbance to drainage	1. Snow bridges or ice roads will be constructed across drainages or waterbodies. Only clean snow and/or ice will be used for drainage crossings. 2. Drainages will be left free of debris. 3. Snow fills/ramps/ice bridges will be removed by V-notching upon completion of seismic operations and prior to break-up.	Local	Low	Short-term	Occasional	Low	High	Reversible in short-term	Neutral	Not significant
3. Vegetation										
3.1 Loss of vegetation communities	1. Shrubby vegetation on seismic lines will be sheared with brushcutters rather than cleared to accommodate natural regeneration and leave root systems in tact. 2. Right-of-way widths for source and receiver lines will be restricted to 5-6 m. 3. Disturbed areas will be stabilized. 4. Tracked and low-pressure tire vehicles will be used to minimize disturbance to vegetation root zones.	Local	Low	Medium Term	Occasional	Low	High	Reversible in medium term	Neutral	Not significant
3.2 Potential disturbance to rare, sensitive or unique plant species or vegetation communities	1. Seismic operations will occur in winter, coinciding with the dormant period for herbaceous plants. 2. Natural re-vegetation of rights-of-way will be promoted by avoiding disturbance of root zone.	Local	Low	Medium Term	Accidental	Low	High	Reversible in medium term	Neutral	Not significant
4. Wildlife										
4.1 Disturbance to wildlife	Regular (daily) garbage pickup will be undertaken to remove materials (e.g. metals, plastics) that may be a potential hazard to wildlife.									

Table 23 t'd

Concern/Impact	Mitigative Measures	Areal Extent	Magnitude	Duration	Frequency	Probability	Confidence	Reversibility	Residual Impact Balance	Residual Impact Significance
4.1 Disturbance to wildlife cont'd	<p>2 All activity will be restricted to access routes, camps and seismic rights-of-way.</p> <p>3 Invaluit Environmental/Wildlife Monitors will be employed to assess potential wildlife conflicts in the area of operations.</p> <p>4 Aircraft will maintain a ceiling of 300 m in areas of wildlife concentration (i.e. caribou herd) during ferrying trips.</p>									
4.2 Disturbance of wildlife migration	<p>1 Seismic operations will be completed prior to the arrival of the majority of migratory bird species (mid-May) and after mating of caribou in October.</p> <p>2 Seismic operations will be completed expeditiously to minimize impacts to resident wildlife.</p> <p>3 Invaluit Environmental/Wildlife Monitors will be employed to assess potential wildlife conflicts in the area of operations.</p> <p>4 Any windrows created by snow removal on the lines will be alternated every 500 m to provide unimpeded wildlife movement.</p>	Sub-Regional	Low	Immediate to Short term	Isolated	Low	High	Reversible in short-term	Neutral	Not significant
4.3 Attraction of nuisance animals	<p>1 Kitchen wastes will be incinerated.</p> <p>2 Camp wastes will be incinerated daily.</p> <p>3 Wildlife will not be harassed or fed.</p>	Local	Low	Immediate to Short term	Occasional	Low	High	Reversible in short-term	Neutral	Not significant
4.4 Encroachment on endangered species or important wildlife habitats	<p>1 Environmental/Wildlife Monitors will scout ahead of equipment in order to avoid potential conflicts with denning bears. Local RWED biologists and officers will be notified if a bear is encountered. Lines will avoid bear dens.</p>	Local	Low	Immediate to Short term	Accidental	Low	High	Reversible in short-term	Neutral	Not significant
5. Aquatic Resources										
5.1 Erosion of stream banks and destabilization of slopes	<p>1 Snow ramps will be designed to minimize erosion and/or destabilization of slopes.</p> <p>2 Detours will be utilized to avoid any steep slopes where activity may increase the erosion potential.</p> <p>3 Clean ice bridges will be constructed if ice thickness tests reveal that ice cannot support equipment loads.</p> <p>4 If the surface is disturbed in an area such as channels or lakes where drainage or erosion is a possibility, control measures may include using earth breaks or cross ditches.</p>	Local	Low	Short-term	Occasional	Low	High	Reversible in short-term	Neutral	Not significant

Table 2.5 cont'd

Concern/Impact	Mitigative Measures	Areal Extent	Magnitude	Duration	Frequency	Probability	Confidence	Reversibility	Residual Impact Balance	Residual Impact Significance
5.1 Erosion of stream banks and destabilization of slopes cont'd	<p>5 Channel crossings will be made at a level location wherever possible. Crossings will be routed in advance and will be constructed at 90 degree angles.</p> <p>6 When access routes parallel lakes or streams, the access will be more than 30 m from a waterbody, where feasible.</p>									
5.2 Disturbance to Fish or Fish Habitat	<p>1 Waste materials and debris will not be disposed of in or on waterbodies.</p> <p>2 No hazardous materials will be stored on any ice surface of a waterbody or within 30 m of such a waterbody.</p> <p>3 Water intake from waterbodies will utilize screens on intake hoses to prevent disturbance to stream or lake bottoms and to prevent the entrainment of fish.</p> <p>4 Water sources and fisheries will not be affected by drawdown.</p> <p>5 Dynamite shot holes on land will not be initiated within 50 m of any waterbody not frozen to bottom.</p> <p>6 Charges will be set to a minimum depth below lakebed as recommended by DFO (Wright and Floppy 1998). Because the proposed technology is new, burial depths outlined in the guidelines will be exceeded to provide a conservative margin of safety.</p> <p>7 Shot hole depth will be measured before charges are placed and re-measured once the shot is placed at depth in the shot hole. The measurements will be taken and recorded in a consistent, standardized manner.</p> <p>8 Charge depth will be measured from the point where consolidated materials are encountered.</p> <p>9 If required, charges will be weighted above the charge to ensure negative buoyancy.</p> <p>10 Charges will be followed with a material to ensure that charges stay in place and to provide a buffer above the charge in the event of a life belt hole (a hole that has not collapsed).</p>	Local	Low	Immediate	Accidental	Low	High	Reversible in short-term	Neutral	Not significant
	<p>11 The drillers employed in the program will be trained in all of the above best practices.</p> <p>12 Shell field personnel will provide direct supervision of shot hole drilling in lakebeds to ensure that charges are placed in depth and drilled at a specified width and depth.</p>									

Table 23 cont'd

Concern/Impact	Mitigative Measures	Areal Extent	Magnitude	Duration	Frequency	Probability	Confidence	Reversibility	Residual Impact Balance	Residual Impact Significance
5.2 Disturbance to Fish or Fish Habitat cont'd	<p>13 Drill cuttings will be disposed of in drill holes or a minimum of 30 m away from waterbodies.</p> <p>14 Disturbance to creek banks will be minimized by piling and packing snow at banks of creek crossings. The right-of-way width may be decreased at stream crossings to preserve riparian habitat.</p>									
5.3 Introduction of oil, fuel or other pollutant to waterbody	<p>1 Liquid fuels and oils will be stored in a closed system during transportation.</p> <p>2 Fuel storage will include secondary containment.</p> <p>3 The fuel transport truck and storage sumps will be fitted with Com-locks to prevent fuel leakage and spill during transfer.</p> <p>4 Access routes will be on ice channels and down the lines. When access routes parallel lakes or streams, the access will be more than 30 m from the waterbody to prevent deleterious material from entering the waterbody and to prevent disturbance of banks that can result in sedimentation.</p> <p>5 Any deleterious material that accidentally falls into a waterbody will be removed.</p> <p>6 In the event of a spill, the Fuel Spill Contingency Plan will be followed (Appendix A).</p> <p>7 Spills will be reported to Shell's Environmental, Health and Safety Coordinator, ILA and INAC. All accidental spills will be reported to the NWT Emergency Spill Response Line (867-920-8130), ILA, INAC and to John Korce, the Environmental Assessment Officer with the National Energy Board (403-292-6614).</p> <p>9 Personnel will be trained in spill response procedures and equipment use.</p>	Regional	Moderate	Immediate to Medium term	Accidental	Low	High	Reversible in medium-term	Neutral	Not significant
5.4 Snow fills/ramps/bridges can act as dams during break-up resulting in impacts to channels and banks	<p>1 Snow fills/ramps/ice bridges will be removed by V-notching upon completion of seismic operations and prior to break-up.</p>	Local	Low	Short term	Isolated	Low	High	Reversible in short-term	Neutral	Not significant

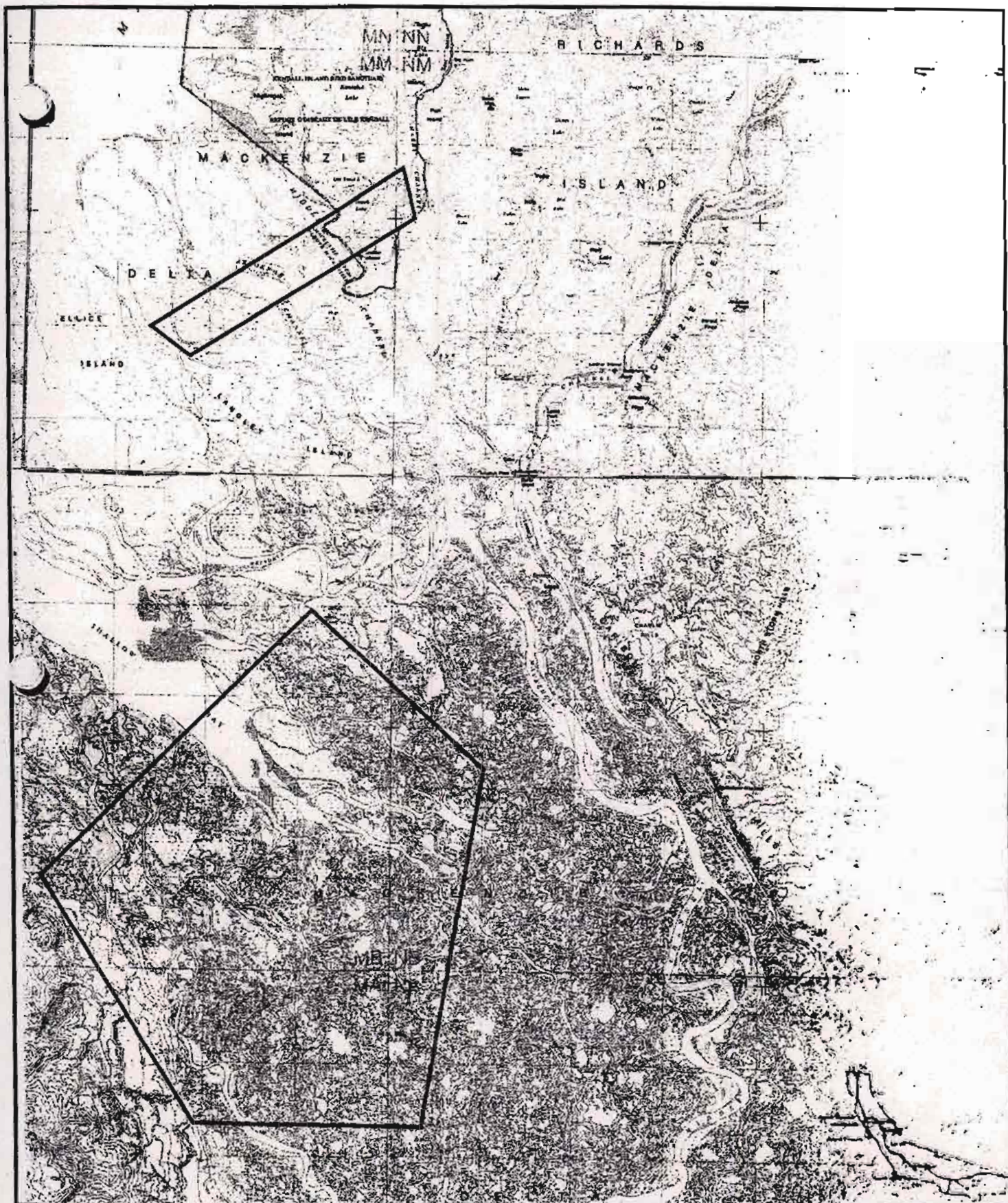
Table 23 cont'd

Concern/Impact	Mitigative Measures	Areal Extent	Magnitude	Duration	Frequency	Probability	Confidence	Reversibility	Residual Impact Balance	Residual Impact Significance
5.2 Disturbance to Fish or Fish Habitat cont'd	<p>13 Drill cuttings will be disposed of in drill holes to a minimum of 30 m away from waterbodies.</p> <p>14 Disturbance to creek banks will be minimized by piling and packing snow at banks of creek crossings. The right-of-way width may be decreased at stream crossings to preserve riparian habitat.</p>									
5.3 Introduction of oil, fuel or other pollutant to waterbody	<p>1 Liquid fuels and oils will be stored in a closed system during transportation.</p> <p>2 Fuel storage will include secondary containment.</p> <p>3 The fuel transport truck and storage sumps will be fitted with Com-locks to prevent fuel leakage and spill during transfer.</p> <p>4 Access routes will be on ice channels and down the lines. When access routes parallel lakes or streams, the access will be more than 30 m from the waterbody to prevent deleterious material from entering the waterbody and to prevent disturbance of banks that can result in sedimentation.</p> <p>5 Any deleterious material that accidentally falls into a waterbody will be removed.</p> <p>6 In the event of a spill, the Fuel Spill Contingency Plan will be followed (Appendix A).</p> <p>7 Spills will be reported to Shell's Environmental, Health and Safety Coordinator, ILA and INAC. All accidental spills will be reported to the NWT Emergency Spill Response Line (867-920-8130), ILA, INAC and to John Konec, the Environmental Assessment Officer with the National Energy Board (403-292-6614).</p> <p>9 Personnel will be trained in spill response procedures and equipment use.</p>	Regional	Moderate	Immediate to Medium term	Accidental	Low	High	Reversible in medium-term	Neutral	Not significant
5.4 Snow fills/ramps/bridges can act as dams during break-up resulting in impacts to channels and banks	<p>1 Snow filter/temporary bridges will be removed by Marching upon completion of seismic operations and prior to break-up.</p>	Local	Low	Short-term	Infrequent	Low	High	Reversible in short-term	Neutral	Not significant

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Table 23. It'd

Concern/Impact	Mitigative Measures	Areal Extent	Magnitude	Duration	Frequency	Probability	Confidence	Reversibility	Residual Impact Balance	Residual Impact Significance
10. Abandonment and Restoration	<ol style="list-style-type: none"> 1 All equipment and materials will be removed from area immediately following project completion. 2 Equipment will be removed before spring break up to prevent permafrost and organic mat disturbance. 3 All garbage will be incinerated or transported to an approved waste management facility. No waste will be left at a campsite. 	Local	Low	Short term	Isolated	Low	High	Reversible in short-term	Neutral	Not significant




Regional Location of Shell Canada Ltd.
Winter 2001/2002 Seismic Program



Sources: Topographic Map of Mackenzie Delta,
NWT 107C and Aklavik, NWT 107B

LEGEND

 General Location of
Seismic Program



5026-01

August 2001

Figure 1

ENVIRONMENTAL IMPACT SCREENING COMMITTEE

1773

MAIL ROOM
SALLE DE COURIER

14 November 2001

305892

2001 NOV 20 A 8:51

Submission Number: 10/01-02

REG / ONE

Marcel Hamonic
Senior Staff Geologist
Shell Canada Ltd.
400 4th Avenue SW
Calgary AB T2P 0J4

EISC re
seismic
component

Mr. Hamonic:

RE: Shell Canada Ltd. (Hamonic), Winter 2001/2002 Aklavik 2D Seismic Program

On 13 November 2001, the Environmental Impact Screening Committee (EISC) screened the above-noted project description. Based on the information provided and an amending letter dated 7 November 2001, the EISC decided that the development will have no significant negative impact on the environment or Inuvialuit wildlife harvesting in the Inuvialuit Settlement Region [IFA Section 11.(13)(a)]. A copy of the decision has been attached.

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

For greater certainty, the EISC's decision was based in part on confirmation from Shell Canada, in a letter dated 7 November, that the company was withdrawing from the project description seismic line 72-42 and those portions of lines 72-34, 72-35, 72-37 and 72-38 that are inside Area 725D described in the Aklavik Inuvialuit Community Conservation Plan (June 2000).

On 2 October the Inuvialuit Land Administration requested that the Environmental Impact Screening Committee conduct an environmental screening of the above-noted development pursuant to subsection 11.(1)(c) of the *Inuvialuit Final Agreement*. Therefore the EISC's decision pertains to those portions of the development located on both crown and private lands within the Inuvialuit Settlement Region.

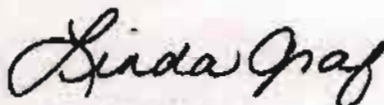
Comments on your proposed program were submitted to the EISC by the Fisheries Joint Management Committee, the Department of Fisheries and Oceans, Environment Canada, and the Prince of Wales Northern Heritage Centre. They are being forwarded to you for your consideration. In addition, the Aklavik Hunters and Trappers Committee suggested that when using dynamite as the primary energy source that those involved should be made aware of emergency plans, and that consultation should be done with camps owners in the area.

In addition, I wish to raise a matter mentioned in Shell Canada's letter of 7 November. I understand that Shell Canada is seeking clarification from the Aklavik Hunters and Trappers Committee and other participants of the 2000 Inuvialuit Community Conservation Plan review of whether hydrocarbon activity is excluded throughout Site 725D. In the letter it states that "[s]hould the advice from the Aklavik HTC be that the restriction applies only to the Yukon portion of the Site, Shell Canada Limited requests the flexibility to resubmit for approval the application for acquisition of the withdrawn seismic lines..."

I wish to inform you that, although the Aklavik Hunters and Trappers Committee clearly should be one of the first groups that you speak to regarding Site 725D, no one party can alter the areas or recommendations described in the Inuvialuit Community Conservation Plans. The documents are signed by the President or Chair of the relevant Hunters and Trappers Committee, and the Chairs of the Inuvialuit Game Council, the Wildlife Management Advisory Council (NWT), the Wildlife Management Advisory Council (North Slope) and the Fisheries Joint Management Committee. In addition to these groups, the review workshops involved representatives from the Inuvialuit Land Administration and various government agencies.

Please contact me if you have any questions.

Sincerely,



Linda Graf
Secretary

cc: Hans Arends, ILA, Tuktoyaktuk
Dennis Arey, Aklavik HTC
Terry Baker, NEB, Calgary
Bob Bell, FJMC, Inuvik
Richard Binder, Inuvik HTC
Larry Carpenter, WMAC(NWT), Inuvik
Rudy Cockney, DIAND, Inuvik
Paul Latour, CWS, Yellowknife
Frank Pokiak, Tuktoyaktuk HTC
Duane Smith, IGC, Inuvik

Encl. (6)

EISC Decision

Letter from Shell, Dated 7 November 2001

Letter from PWNHC, Dated 25 October 2001

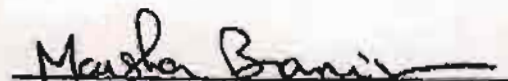



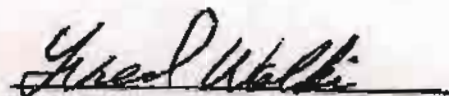
Letter from DFO, Dated 26 October 2001

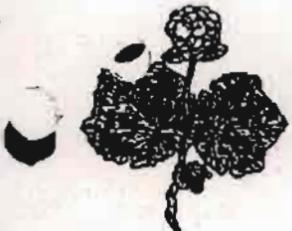
Letter from Environment Canada, Dated 26 October 2001

Letter from FJMC, Dated 26 October 2001

**ENVIRONMENTAL IMPACT SCREENING COMMITTEE****SUBMISSION NUMBER: 10/01-02****NAME OF PROPONENT:** Shell Canada Ltd., Marcel Hamonic**PROJECT DESCRIPTION:** *Winter 2001/2002 Aklavik 2D Seismic Program***DECISION OF THE SCREENING PANEL (circled):**

- ① The development will have no such significant negative impact and may proceed without further environmental impact assessment and review under the Inuvialuit Final Agreement. [IFA s. 11. (13) (a)]
2. The development could have significant negative environmental impact and is subject to assessment and review under the Inuvialuit Final Agreement. [IFA s. 11. (13) (b)]
3. 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. (13) (c)]

Signed on the 13 day of November, 2001.
William Klassen, Chair
Johnny Lemme, Canada Member
Marsha Branigan, GNWT Member
Chuck Hubert, YTG Member
Billy Day, Inuvialuit Member
Alex Kaglik, Inuvialuit Member
Fred Wolki, Inuvialuit Member

Decision re licence**ENVIRONMENTAL IMPACT SCREENING COMMITTEE**

9 October 2001

Submission Number: 08/01-06

Gary Deren
Senior Seismic supervisor
shell Canada Ltd.
400-4th Avenue SW
Calgary AB T2P 0J4

Mr. Deren:

RE: Shell Canada (Deren), *Winter 2001/2002 Aklavik 2D Seismic Program Water Licence Application*

During a meeting held 26 - 28 September 2001, the Environmental Impact Screening Committee (EISC) screened the above-noted project description. Based on the information provided, the EISC decided that the development will have no significant negative impact on the environment or Inuvialuit wildlife harvesting in the Inuvialuit Settlement Region [IFA Section 11.(13)(a)] A copy of the decision has been attached.

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

Comments on your proposed seismic program were submitted to the EISC by the Inuvik HTC and the Fisheries Joint Management Committee. They are being forwarded to you for your consideration. I note that you have already received a copy of the correspondence from the Inuvik HTC. However, it has been attached for the benefit of those copied on this letter.

Please feel free to contact me if you have any questions.

Sincerely,

Linda Graf

Linda Graf
Secretary

cc: Hans Arends, ILA, Tuktoyaktuk
Dennis Arey, Aklavik HTC
Richard Binder, Inuvik HTC
Greg Cook, Water Resources, DIAND, Yellowknife
Pete Cott, DFO, Yellowknife
Gordon Wray, N.W.T. Water Board, Yellowknife

Encl. (3) EISC Decision
Letter from Inuvik HTC, Dated 25 September 2001
Letter from FJMC, Dated 25 September 2001

**ENVIRONMENTAL IMPACT SCREENING COMMITTEE**

SUBMISSION NUMBER: 08/01-06

NAME OF PROPONENT: Shell Canada Ltd., Gary Deren

PROJECT DESCRIPTION: Winter 2001/2002 Aklavik 2D Seismic Program Water Licence Application

DECISION OF THE SCREENING PANEL (circled):

1. The development will have no such significant negative impact and may proceed without further environmental impact assessment and review under the Inuvialuit Final Agreement. [IFA s. 11. (13) (a)]
2. The development could have significant negative environmental impact and is subject to assessment and review under the Inuvialuit Final Agreement. [IFA s. 11. (13) (b)]
3. 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. (13) (c)]

Signed on the 27 day of September, 2001.

William Klassen, Chair

Johnny Lennie, Canada Member

Marsha Branigan, GNWT Member

Billy Day, Inuvialuit Member

Alex Kaglik, Inuvialuit Member

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Imports/Mitigation

**PROJECT DESCRIPTION
FOR THE PROPOSED SHELL CANADA LTD.
WINTER 2001/2002 AKLAVIK 2D SEISMIC PROGRAM
WATER LICENCE APPLICATION**

Prepared for:

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also been identified as burbot overwintering habitat (Sekerak et al. 1992). In late winter and early spring, burbot move into tributary rivers before continuing on to deeper water in the summer, including the fresh or brackish waters of Kugmallit Bay (TCCP 2000).

Northern Pike (*Esox lucius*)

The northern pike is primarily a freshwater fish, found in the warm waters of shallow lakes and bays or quiet rivers. Northern pike are found throughout the Mackenzie Drainage area and likely most of the Eastern Coastal Drainage area. In addition, pike frequent the brackish coastal waters near the mouths of rivers off Tuktoyaktuk Peninsula and Richards Island (Martell et al. 1984). Northern pike spawn in the spring following ice melt, about mid June to early July. Spawning mainly occurs in heavily vegetated marshes, lakes and river floodplains (Scott and Crossman 1973). Following spawning, pike generally remain in shallow, warm waters for the duration of summer. Mature pike feed mainly on small fish, including small pike, and on small mammals and invertebrates. Pike move out of shallow waters to wintering habitats during the period between mid August and freeze-up, often concentrating at the mouths of creeks in November and December. They require deep channels and lakes for overwintering (Martell et al. 1984), such as West Channel (Sekerak et al. 1992), located within the vicinity of the main program area.

Shell 2D Seismic - Akbari

12.0 PROPOSED MITIGATION AND ANTICIPATED ENVIRONMENTAL IMPACTS

Shell's 2D winter seismic program has been designed to acquire geophysical data, while mitigating impacts to the environment and land users. Shell is proposing to withdraw water from channels of the Mackenzie River for camp use and for access preparation. For the purposes of this water licence application, predicted effects on aquatic resources are the focal point with a more complete assessment of the entire program to be submitted in September 2001. Table 10 identifies any potential environmental impacts that may arise from the water withdrawal, recommended mitigative measures to avoid or mitigate the potential impacts, and the significance of the residual impacts.

Shell's proposed program is localized and will be conducted during the winter months, thereby minimizing most potential impacts associated with water withdrawal. However, the potential exists for certain environmental impacts identified through ongoing public consultation and a review of existing literature and maps. Potential environmental impacts resulting from the construction of the camp may include: minor water withdrawal from waterbodies; disturbance of

fish due to water withdrawal; temporary alteration of vegetation that may destabilize riparian zones at the water access point; and potential leakage or spills associated with camp equipment.

Less than 15 m³ of water will be withdrawn on a daily basis for camp purposes. Less than 75 m³ will be withdrawn for access preparation. All intake lines will be fitted with mesh screens, in accordance with DFO's *Freshwater Intake End-of-Pipe Fish Screen Guideline*, to avoid the entrainment of fish and to prevent damage to channel bottoms.

The water access point is vulnerable to trampling of the herbaceous layer. During spring melt these sensitive areas may be more prone to erosion. Maintaining vegetation in riparian zones is essential for preventing erosion. Access to water will occur at a level location to minimize disturbance. Frozen ground conditions, snow cover and tracked vehicles will minimize impacts to vegetation communities and associated stream banks.

Pumps, generators and other machinery will be maintained to reduce risks of potential leaks. Fuel will not be stored within 100 m of a waterbody, where feasible, and secondary containment will be employed to prevent fuel escape. Refuelling and servicing of machinery will also be limited to a minimum of 100 m from waterbodies, where feasible. Spills will be recovered immediately with the location, type of pollutant and volume unrecovered recorded, and treated in-situ where appropriate. In addition, personnel will be trained in spill response procedures and equipment use.

Wastewater produced by the camp will be treated with the Filterboxx treatment system to comply with discharge guidelines.

The assessment criteria and definitions used in assessing the significance of each potential impact are provided in Table 9. It is predicted that the implementation of the proposed mitigative measures by Shell and their contractors will ensure that no significant residual impacts will occur as a result of the project.

TABLE 9

SIGNIFICANCE CRITERIA

AREAL EXTENT

Local:	Impacts are limited to the seismic rights-of-way and camp.
Subregional:	Impacts may extend beyond the limits of the rights-of-way and camp, but are limited to within 1 km of the rights-of-way and camp.
Regional:	Impacts may extend beyond 1 km from the rights-of-way and camp.

MAGNITUDE

Negligible:	No discernible impact.
Low:	Impacts would be restricted to a few individuals or only slightly affect the resource or parties involved; factors related to species' population levels would not be affected.
Moderate:	Impacts would affect many individuals or noticeably affect the resource or parties involved; factors related to a species' population levels would be affected to a degree that a change within natural limits of variability will occur; impacts would be socially tolerated.
High:	Impacts would affect numerous individuals or affect the resources or parties involved in a significant manner; factors affecting species' population levels would be altered to a degree that a change beyond natural limits of variability will occur.

DURATION

Immediate:	Impact duration is limited to less than two days.
Short-term:	Impact duration is longer than two days but less than one year.
Medium-term:	Impact duration is one year or longer but less than ten years.
Long-term:	Impact duration extends ten years or longer.

FREQUENCY OF OCCURRENCE

Isolated:	Occurrence confined to specified period.
Accidental:	Occurs rarely over assessment period (i.e., life of the project).
Occasional:	Occurs intermittently and sporadically over assessment period.
Periodic:	Occurs intermittently but repeatedly over assessment period.
Continuous:	Occurs continually over assessment period.

PROBABILITY OF OCCURRENCE

Low:	Unlikely.
High:	Likely.

LEVEL OF CONFIDENCE

Low:	Based on incomplete understanding of cause-effect relationships and incomplete data pertinent to project area.
Moderate:	Based on good understanding of cause-effect relationships using data from elsewhere or incompletely understood cause-effect relationships using data pertinent to project area.
High:	Based on good understanding of cause-effect relationships and data pertinent to project area.

PERMANENCE OR REVERSABILITY

Reversible in short-term:	Impact can be reversed in less than one year.
Reversible in medium-term:	Impact can be reversed in 1 year or more, but less than 10 years.
Reversible in long-term:	Impact can be reversed in 10 years or more.
Irreversible:	Impact is permanent.

Table 9 Cont'd

RESIDUAL IMPACT BALANCE

Positive:	Net benefit or gain to the resource or affected party.
Neutral:	Neither a positive nor negative impact; or positive and negative impacts are balanced.
Negative:	Net loss to the resource or detriment to the affected party.

RESIDUAL IMPACT SIGNIFICANCE

Significant Adverse Effect:	High probability of permanent or long-term residual effect of high magnitude on ecological, social, or economic sustainability that cannot be technically or economically mitigated or compensated.
Significant Positive Effect:	High probability of permanent or long-term positive residual effect of high magnitude on ecological, biological, social, or economic sustainability.
Unknown:	Potential significance cannot be defined with existing information or knowledge.
Not Significant Adverse Effect:	All other negative effects.
Not Significant Positive Effect:	All other positive effects.

TABLE 10

POTENTIAL ENVIRONMENTAL AND SOCIO-ECONOMIC IMPACTS, MITIGATION AND RESIDUAL IMPACTS

Concern/Impact	Mitigative Measures	Areal Extent	Magnitude	Duration	Frequency	Probability	Confidence	Reversibility	Residual Impact Balance	Residual Impact Significance
1. Terrain and Soils										
1.1 Disturbance to erosion prone banks and slopes.	.1 Snow/ice ramps will be constructed on riverbank slopes to prevent equipment disturbance and erosion. .2 Sensitive areas will be avoided by using detours. .3 If surfaces are disturbed in an area where drainage or erosion is a possibility, such as channels, lakes or oxbows, erosion control measures may include utilizing salvaged slash as rollback. .4 Drainages will be left free of debris.	Local	Low	Short term	Occasional	Low	High	Reversible in short term	Neutral	Not significant
1.2 Disturbance to drainage	.1 Drainages will be left free of debris.	Local	Low	Short term	Accidental	Low	High	Reversible in short term	Neutral	Not significant
2. Aquatic Resources										
2.1 Erosion of stream banks and destabilization of slopes	.1 Snow ramps will be designed to minimize erosion and/or destabilization of slopes. .2 Detours will be utilized to avoid any steep slopes where activity may increase the erosion potential. .3 Tracked units and dozers will be equipped with mushroom shoes to reduce the possibility of surface disturbance. .4 Clean ice bridges will be constructed if ice thickness tests reveal that ice cannot support equipment loads.	Local	Low	Short term	Accidental	Low	High	Reversible in short term	Neutral	Not significant
2.2 Erosion of stream banks and destabilization of slopes	.1 If the surface is disturbed in an area such as channels or lakes where drainage or erosion is a possibility, control measures may include using earth breaks or cross ditches. Slash may also be used as rollback for erosion control. .2 Channel crossings will be made at a level location wherever possible. Crossings will be scouted in advance and will be constructed at 90 degree angles .3 When access routes parallel lakes or streams, the access will be more than 10 m from a waterbody where feasible	Local	Low	Short term	Accidental	Low	High	Reversible in short term	Neutral	Not significant

TABLE 10 Cont'd

Concern/Impact	Mitigative Measures	Areal Extent	Magnitude	Duration	Frequency	Probability	Confidence	Reversibility	Residual Impact Balance	Residual Impact Significance
2.3 Disturbance to fish or fish habitat	<p>1 Waste materials and debris will not be disposed of in or on waterbodies.</p> <p>2 Fuel will be stored in double walled tanks and will be bermed. Secondary containment will provide 110% of the capacity of the largest tank.</p> <p>3 Water intake from waterbodies will utilize screens on intake hoses to prevent disturbance to stream or lake bottoms and to prevent the entrainment of fish. Shell and its contractors will comply with the DFO <i>Freshwater Intake End-of Pipe Fish Screen Guideline</i>.</p> <p>4 Water use will not exceed 100 m³ per day.</p>	Local	Low	Immediate	Accidental	Low	High	Reversible in short term	Neutral	Not significant
2.4 Introduction of oil, fuel or other pollutant to waterbody	<p>1 Liquid fuels and oils will be stored in a closed system during transportation.</p> <p>2 Where fuel is stored within 100 m of a waterbody, secondary containment will be employed to prevent fuel escape.</p> <p>3 Refueling hoses will be fitted with locking fuel nozzles to prevent fuel leakage and spill during transfer.</p> <p>4 Access routes will be on ice channels and down the lines. When access routes parallel lakes or streams, the access will be more than 30 m from the waterbody to prevent deleterious material from entering the waterbody and to prevent disturbance of banks that can result in sedimentation.</p> <p>5 Any deleterious material that accidentally falls into a waterbody will be removed.</p>	Regional	Moderate	Immediate to medium term	Isolated	Low	High	Reversible in medium term	Neutral	Not significant
2.5 Introduction of oil, fuel or other pollutant to waterbody	<p>1 In the event of a spill, the Fuel Spill Contingency Plan will be followed (Appendix A).</p> <p>2 Spills will immediately be reported to Shell's Environmental, Health and Safety Coordinator, and the I.L.A. All accidental spills will be reported to the NWT Emergency Spill Response Line (867-920-8130), I.L.A., INAC and to John Kores, the Environmental Assessment Officer with the National Energy Board (403-292-6614).</p> <p>3 Shell and their contractors will be trained in spill response procedures and equipment use.</p>	Regional	Moderate	Immediate to medium term	Isolated	Low	High	Reversible in medium term	Neutral	Not significant

TABLE 30 Cont'd

Concern/Impact	Mitigative Measures	Areal Extent	Magnitude	Duration	Frequency	Probability	Confidence	Reversibility	Residual Impact Balance	Residual Impact Significance
2.6 Snow fills/ramps/bridges can act as dams during break-up resulting in impacts to channels and banks	.1 Snow fills/ramps/ice bridges will be removed by V-notching upon completion of seismic operations and prior to break-up.	Local	Low	Short term	Accidental	Low	High	Reversible in short term	Neutral	Not significant
3. Health or Environmentally Threatening Emergency										
	.1 In the event of an emergency, Shell's Emergency Response Plan will be implemented (Appendix A).	N/A	N/A	N/A	Isolated	Low	High	N/A	Neutral	N/A
4. Abandonment and Restoration										
	.1 All equipment and materials will be removed from area immediately following project completion, prior to spring break up. .2 All garbage will be transported to an approved waste management facility. No waste will be left in the program area.	Local	Low	Short term	Isolated	Low	High	Reversible in short term	Neutral	Not significant