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Yellowknife, NT X1A 2R3

Your file - Votre référence

Our file - Notre référence

January 7, 2002

N7-1-1781

Mr. Gordon Wray
Chairman
NWT Water Board
P.O. Box 1500
YELLOWKNIFE, NT X1A 2R3



Dear Mr. Wray:

**RE: AEC WEST LTD. - KAMIK 2D SEISMIC PROGRAM , MACKENZIE DELTA,
WINTER 2001-02 - 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 AEC West's Kamik 2D seismic program, 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: AEC West Ltd. (Calgary)
John Duckett (403-261-2569)

FEAI I.D. Reference Number: To be added

Subject Descriptors: inland waters, oil and gas, land use

Alias Project Title: AEC Kamik 2D Winter Seismic - N2001B0048

DIAND Lead RA and Screening Division: Lands Administration, North Mackenzie District Office

Lead RA Contact: Rudy Cockney, North Mackenzie District, 867-777-3361

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

Other Screening Trigger Types: IFA; NEB Geophysical Operation Authorization; Water
Licence

EA Start Date: 2001/11/05

EA Type: screening

Physical Activity as identified from Inclusion List: Use of Crown Lands in the Territories, Use of Water, Oil &
Gas Operations

Physical Work and /or Activity Being Assessed: Seismic operations, Sleigh camp operation, Fuel storage,
Water Use, Waste disposal

Phase of Project / Primary Undertaking: 2D seismic program (camp , water use, waste disposal,
fuel storage)

Multiple Activities: ☐ Yes ☒ No Indicate One: _____

Project Category Code: Point Linear Areal [Circle one]

Geographic Place Name: Tuktoyaktuk (area NW of Parsons Lake area)

EA Determination: 20-1-a

EA Determination Date: 2001/12/17

Estimated Follow-up program termination date: n/a

EA Terminated: no

2. General File Information

NWT Water Board File Number:	N7-1-1781
DIAND Land Use Permit Number:	N2001B0048
NEB File Number:	9180-A761-12
Type of Application(s):	New Land Use Permit, New Water Licence, New Geophysical Operations Authorization
Present licence/permit/lease number:	Nil
Proposed Date of Activity:	Start up December 2001 to April 2002
Other RAs or Screening Divisions:	Provided in Appendix D, CEAA EA Coordination - integrated screening is underway
Other RA Types of Approval:	Provided in Appendix D, CEAA EA Coordination
Project File Location:	North Mackenzie Office, Inuvik, NT, NEB Office, Calgary, AB, NWT Water Board, Yellowknife, NT, Inuvik, NT
DIAND District:	North Mackenzie, Inuvik

3. Proponent:

Type of proponent:	AEC West Ltd. Calgary, AB. industry
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4. Project Location:

Topographic Map Sheet Number:	107 B & 107 C
Latitude / Longitude:	68°59'00"N / 133°44'00"W south point (covers a large area) 69°17'30"N / 133°36'00"W north point
Watershed: Mackenzie delta	Drainage region: Lower Mackenzie
Street Name:	n/a
Surrounding Land Status:	Project on Private (ILA) and Crown Lands in the ISR
Special Designation:	Area falls within the Community Conservation Plans Area

5. Project Description

Project Description:

The program proposed by AEC West Ltd. entails the potential acquisition of five lines at 133 km of 2D seismic data in EL 385 to help further delineate areas of interest. The program may commence in December 2001, beginning with surveying and access route construction, and is anticipated to be complete by the middle of April 2002. The program will be on Inuvialuit 7(1)(a) and 7(1)(b) as well as Crown land.

Veri-Illuq has been contracted to conduct the seismic operations for AEC West and will provide the geophysical survey crews and equipment. The seismic crew will be housed in a 65 man sleigh camp that will be moved every few days around the project area to help minimize impact (See Proponents Project Description¹ for proposed site locations).

Fuel storage for the sleigh camp would consist of six sleighs, each holding two 7,560 L diesel fuel tanks and two sleighs each holding 1,890 L of gasoline for total volume of fuel storage of 94,500 L. If helicopters are used, approximately six barrels of fuel would also be stored at the camp.

Grey water would be put through filters and then discharged to the ground. Incinolet toilets will be used to burn human wastes and resulting ash will be disposed of in an approved landfill. Garbage will be incinerated and the non-combustibles will be disposed of at an approved landfill. Utility water for camp use will be obtained through the use of a snow melter, as well as from local lakes or streams as required. Potable water will be trucked from town and transported using a Delta Three into the camp for human consumption. Water required for access road construction would be obtained from large lakes in the program area (not from land locked lakes) and intake hoses will be screened in accordance with DFO guidelines. Total withdrawal rates are expected to be 80m³/day over the course of the project.

Access routes will be over lakes where possible; in overland areas a compact snow / ice road will be constructed. AEC West Ltd. proposes to share primary access routes with other operators in the project area. Ice profiling would be conducted throughout the program to evaluate ice conditions for safe travel.

Seismic program will use vibroseis as the primary energy source with tracked vibroseis units used on land and on those waterbodies frozen to the bottom. Those waterbodies that are too large to use stacked vibrator source points and not frozen to the bottom will use specialized casing drill rig technology for drilling dynamite source points (in accordance with DFO letter of advice dated Dec. 4, 2001). Ice profiling would be used throughout the program to determine if ice is bottom fast on seismic lines. Line surveying will be done using a combination GPS and conventional survey methods; little brush clearing is anticipated with most brush just being walked over. Line widths would be 8 m, with additional width where necessary (e.g., locations of two way traffic, snow fencing or for reason of safety). Where plowing is required, a minimum of 20 cm snow would be left on the lines to avoid disturbance to the organic layer. To the extent feasible, lines would be straight with offsets or skidding to avoid cabin locations, known heritage sites and environmentally sensitive areas. Energy source points would be positioned at 50 or 60 m intervals and receivers positioned at 25 or 30 m intervals; in areas where dynamite would be used, energy source points would be extended to 100 or 120 m. Cables would primarily be laid out and retrieved by line crew personnel supported by tracked units. Lines may also be laid out with the assistance of helicopters. The recording unit will be

¹ Inuvialuit Environmental and Geotechnical Inc., October 2001, "Project Description for the Proposed AEC West Ltd. Kamik 2D Winter 2001/2002 Seismic Program".

December 17, 2001

positioned on a Nodwell or similar vehicle and will travel down the line hooking up to the cable at appropriate locations. Where dynamite is used, a shooter would travel down the source line, connect cap leads to the shooting unit and detonate charges for recording.

What sources of information did you use?

☐ other government data
☐ historical maps
☐ scientific reports
☒ Project Description for the EISC

☒ CEAA public registry system
☐ contour maps
☒ Oil and gas water licence questionnaire
☒ other, specify: water licence application

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

Equipment through ice may result in a fuel spill (mechanical failure, operator error, thin ice), or ground disturbance on the banks of a water body (equipment tracks spinning on banks resulting in vegetation grubbing. Other 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). Wildlife encounters, such as an attack on humans (surprise encounter) or personnel shooting or injuring wildlife (responding to perceived threat or actual attack) could occur. Where dynamite is the energy source, there is potential for drilling to encounter pockets of shallow gas and result in ignition.

6.a) Description of the Environment

Ecozone : Southern Arctic

Description of Biophysical Environment

The proposed area is situated to the east of the Mackenzie delta and to the Southwest of Tuktoyaktuk. The area contains permafrost as there are numerous indications, slumping, polygon patterned ground, tundra hummocks, bare mud boils, etc.. Drainage is very poor on the land due to the permafrost and because of the low ground temperature vegetation is usually sparse. These areas are covered with Tundra type vegetation which include grasses, low lying shrubs, willows and some lichens. The area is covered with both small and large waterbodies and does contain pingos. The area is mainly made up of gently rolling topography with major slopes found around lake shores. Wildlife in the area include grizzly bear, red and cross foxes, wolves, caribou, rabbits, lemmings, ptarmigan other small fur bearers and owls. Moose have also been seen in the area near the east branch but have been seen inland as well. Potential overlap with polar bear habitat and populations also exists due to the proximity to the Beaufort Sea. In the summer, birds migrate back to the area as it is good habitat for them. These include gyrfalcons and hawks and migratory waterfowl such as loons, mallard ducks, white fronted and Canada geese. Birds that may overwinter in the area include snowy owl, golden eagle, gyrfalcon as well as rock and willow ptarmigan. In the summer whale hunting is conducted out of the Army camp & East Whitefish areas. Several fish species which are utilized by local people both for subsistence and recreation are found in the east channel and the larger lakes in the program area. For a more detailed description of the types of species found in the project area, see the Project Description.

The area does contain archaeological sites especially near the East Channel some as yet undiscovered. Most notable are Kittigazuit and Army camp. Two sites are in close proximity to the proposed seismic line locations (NhTs-9, a grave site, and TLU 5, a camp site near Kittigazuit).

The area has seen a lot of oil and gas activity in the recent past (25 years) and is presently experiencing another boom in oil and gas exploration.

December 17, 2001

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

This project is relatively close to the community of Tuktoyaktuk. Inuvik is the major supply and services point for the region having both highway access and daily jet service to the south. In recent years this general area has been used fairly intensively by local people for caribou hunting during the winter months. Fishing in the area usually occurs along the East Branch using mainly nets but there is some fishing done in the smaller lakes too. In the spring the area sees bird hunters using the area as well. In the summer the area around Kittigazuit and Army camp are utilized by hunters after beluga whales. There are cabins and camps in the above mentioned areas used by these hunters. On the edge of the program area is a NWTel communication tower with a DND Short Range Radar site in the Storm Hills. The NWTel tower is a local cellular site for the area. Right near to these two installations there is a private communications tower and buildings operated by Grubens Transport.

Government is a major employer in the area but the oil and gas industry is employing a major portion of the residents in the area during their winter operating period. The service industry i.e., hotels and grocery stores, are finding it difficult to find employees during the time when industry is operating in the region. Housing is another issue that is in high demand in Inuvik with the influx of more people arriving in the region.

What sources of information did you use?

- | | |
|--|--|
| <input checked="" type="checkbox"/> Historical Maps (expired permits and licences) | <input type="checkbox"/> GIS |
| <input checked="" 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.a) Consultation on Project

Federal Government	Contact Person	Dates Comments Received
DIAND		
Water Res.	X G. Cook, R. Jenkins, B. Reid	Dec. 06/01
	X G. Cook, Yellowknife	(TAC request for application review)
Geology		
Lands	X D. Elliott	Nov. 14/01
North Oil & Gas	X DIAND HQ	
Ec. Dev.		
Env. & Cons.		

December 17, 2001

Federal Government		Contact Person	Dates Comments Received
I&I			
D.M.			
DWRO/R.M.O.	X	S. Gallupe	Dec.3/01 (CEAA s.5 response); TAC, Dec.06/01
	X	R. Walker	Nov. 22/01 (CEAA s.5 response)
DFO/CCG	X	P. Cott, Inuvik & B. Hanna, Yellowknife	Dec. 10/01 (CEAA s.5 response)
	X	K. Barron, Inuvik	Dec. 4/01 (Advice to proponent)
DOE	X	R. Bujold, Yellowknife	Nov. 30/01 (Specialist advice provided to EISC and INAC)
	X	P. Pacholek, Yellowknife	Nov. 30/01 (CEAA s.5 response)
Health Canada			
DOT			
NRCan	X	I. Lamirande, Ottawa	NR
NEB	X	L. Van Ham, Calgary	Nov. 20/01 (CEAA s.5 notification)
	X	L. Van Ham, Calgary	Dec. 3/01 (Information request to proponent)

N.W.T. Government		Contact Person	Dates Comments Received
RWED	X	Inuvik & Yellowknife Offices	NR
Health	X	D. Fleming, Yellowknife	NR
Transportation	X	H. Green, Yellowknife	Nov. 19/01
Tourism			
MACA			
EM&PR			
PWNHC	X	B. Cameron, E.C.E., Yellowknife	Nov. 13/01 (Advice provided to EISC)
Other			

Aboriginal Groups		Contact Person	Dates Comments Received
EISC	X	L. Graf, Inuvik	Nov. 15/01 (Notification of screening)
	X	L. Graf, Inuvik	Dec. 10/01 (Screening decision)

December 17, 2001

Aboriginal Groups	Contact Person	Dates Comments Received
ILA	X H. Arends, Tuktoyaktuk	Nov. 20/01 (Notification of screening)
Gwich'in LWB		NR
FJMC	X R. Bell, Inuvik	Nov. 28/01 (Provided to EISC)
Ren. Res Comm.	Aklavik	NR
Metis Local #56	Aklavik	NR
HTC	Aklavik	NR
Band Council	Aklavik	NR
Community Corp.	Aklavik	NR
Community Corp.	Tuk	NR
HTC	X F. Pokiak, Tuk	Nov. 20/01 (provided to EISC)
Native Band	Inuvik	NR
HTC	X R. Binder, Inuvik	Nov. 29/01 (provided to EISC)
Metis Local #62	Inuvik	NR
Community Corp.	Inuvik	NR
Public/Interested Parties/Other	Contact Person	Dates Comments Received
Tuktoyaktuk Hamlet Coun.		NR
Aklavik Hamlet Council		NR
Inuvik Town Council		NR

Record of comments attached to screening Form: No, but are on file.

7.b) Summary of Public Concerns

Public consultation was conducted by the proponent, and a record of these meetings etc can be found on pages 98 to 100 of the Project Description.

In its submission to the EISC, the Inuvik Hunters and Trappers Committee (Nov. 29, 2001) expressed concern about ice conditions and impact to the water environment from equipment falling thru, local travel routes being blocked by banks, off line travel and the construction of proper ramps on waterbodies to prevent erosion. The Tuktoyaktuk HTC (November 20, 2001 submission to the EISC) recommended that: signs be erected along access roads for safety reasons; archaeological sites be left undisturbed; and that wildlife and environmental monitors be employed for the duration of the project.

December 17, 2001

The Fisheries Joint Management Committee (FJMC) (November 28, 2001 submission to EISC) has the same concerns expressed earlier to the EISC. The main concern being that Regulatory Agencies will be in the field this season to ensure that industry is practicing what is in their project descriptions and are following permit conditions.

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

Cumulative Effects [Taken From Project description]

Cumulative effects refers to environmental and socio-economic impacts that occur when activities or disturbances overlap in time or space. It is now recognized that the combined effects of unrelated individual projects or activities can result in aggregate effects that may be different in nature or extent from the effects of the individual activities (MacDonald 2000, Ormerod and Watkinson 2000). Potential cumulative effects pertinent to the AEC Kamik winter 2D seismic program include cumulative habitat alteration in the study region, disturbance of wildlife species causing wildlife to avoid areas, and the disturbance of resource harvesting activities during the winter 2001/2002 period.

Potential cumulative effects were assessed qualitatively by relating the proposed program to other activities in a region that encompasses all current lease holdings (see figure 3 in the Project Description). The regional cumulative effects assessment area was chosen to reflect both regional spatial requirements of some of the key VEC's and the interests of current exploration and development initiatives. The significance, extent, duration, magnitude, and residual effects criteria used in this section are defined in Section 12.0, Proposed Mitigation and Anticipated Environmental Impacts, of the Project Description.

Discussions regarding Cumulative Effects Assessment are currently ongoing with the Joint Secretariat and industry representatives, on how to best determine the cumulative impacts of development within the Mackenzie River Delta on a regional scale over a longer time frame. The EIRB and EISC are cooperating with Kavik Axys Ltd. to prepare guidelines for quantitatively assessing cumulative effects (Chernoff, Pers. Comm.).

Cumulative Effects - Past, Current, and Imminent Activities

Since the 1960s, the most extensive, industrial land use in the study region has been seismic exploration. The Joint Secretariat obtained and mapped data from the National Energy Board to depict historic seismic activity throughout the Mackenzie Delta, nearby islands and the Beaufort Sea for the period of 1965 through to 1992. Seismic activity between 1992 and 2000 has not been compiled and mapped. Last year's programs overlapping spatially with the proposed program area include AEC's Mackenzie Delta Winter 2000/2001 Seismic Program and the Explor Data's Mackenzie River Delta Seismic Program.

A quantitative means for evaluating intensity of past seismic has been developed and is summarized in Table 5 of the Project Description. The proposed program lies within a region of low intensity seismic exploration. Spatial and/or temporal overlap of past activities and planned projects of known location are shown in Figure 3 (found in the Project Description).

**Environmental or cumulative
environmental effect**

- Disturbance to terrain features (e.g., pingos, permafrost, vegetation)
- Erosion of banks and slopes, drainage disturbance
- Disturbance to wildlife, fish and habitat

-Water quality impairment

-Disturbance to existing cabins, trap lines, snowmobile trails, archaeological sites, etc.

Description

-Improper use of vehicles, snow cover build up, etc.

-Potential from equipment operation, improper crossing construction, etc.

-Equipment and vehicle activity, noise, seismic work, habitat disturbance wastes attract wildlife, detonation of charges, drawdown of source waterbodies, entrainment of fish in water intake hoses

-Potential for spills, erosion of soils into water bodies in spring if terrain improperly protected

-From operation of equipment, camps, road construction, etc.

8.b) Effects of the Environment on the Project

Largely related to weather changes or weather phenomena that could temporarily shut-down operations (too warm, too cold, thin ice, storms or blizzards). As well, the proponent notes that avoidance of sensitive terrain, such as high cutbanks, steep slopes and archaeological sites, was considered during project planning. Snow conditions (e.g., too deep, too little, blowing or drifting) have the potential to affect the project by impeding movement of equipment and vehicles and by complicating the task of garbage and other debris removal during the program and following its completion.

9.a) Summary of Proponent's Mitigation Measures

See attached Table 18, *Potential Environmental and Socio-economic Impacts, Mitigation and Residual Impacts* from the Proponent's Project Description. In response to an Information Request by the NEB, the Proponent indicated that mitigative measures outlined in DFO's Letter of Advice (December 4, 2001) would be implemented during program activities. In addition, AEC West Ltd. proposes to include a description of all mitigative measures included in the Project Description (Table 18 and elsewhere) during the project start-up meeting. AEC West Ltd. would provide for its project managers copies of the Project description with relevant sections highlighted and all permits, licences and relevant letters.

Accidents and Malfunctions

To reduce the risk of equipment breaking through ice, the proponent proposes both mechanical coring and electronic ice profiling and as well as compliance with transportation guidelines and conformance with company load limits and speed. In order to prevent fuel spills/leaking, the Proponent proposes that vehicles would be of a newer variety, be well-maintained and would have drip pans and spill kits. In addition, fuel storage would include secondary containment with 110% of the tank capacity and refueling hoses would be fitted with locking devices to prevent fuel leakage during transfer. To avoid ignition of shallow gas encountered during drilling operations, all drills are equipped with automatic shut-off valves.

Effects of Environment on the Project

The proponent has developed a conservative program schedule to allow for weather and work (e.g., sensitive terrain) delays. Detailed and extensive planning has been used to minimize the risk of delays due to sensitive terrain encounters (e.g., access was selected where slopes would be minimal or where snow ramps could otherwise be built).

The Proponent proposes to use tracked vibroseis equipment to allow for better maneuverability in deep snow conditions, and where plowing is required, dozers equipped with mushroom shoes to elevate the blades to prevent damage to the organic layer. Helicopter support would be used in the event program delays have the potential to compromise completion before spring break-up. Following program completion, the Proponent proposes to use an aerial survey of the program area to ensure all garbage and debris has been removed.

9.b) Water Licence Application - Reviewers' Comments

Environmental Impact Screening Committee:

- in supporting the project, the EISC assumed that the company will implement the mitigation measures as outlined in the Project Description, and make all workers aware of them;
- no dynamite is to be used in shooting the seismic program, and shooting is to be finished by March 07-10 2002, as agreed to in meetings;
- no mechanized clearing of brush is to occur within 100 metres of any streams or lakes in the program area; and
- proper mitigative measures are to be carried out to avoid disturbance to archeological site #TLU-5.

DIAND

- The Inspector noted that an approved contingency plan is required by licence issuance, along with a list of spill response equipment, with locations.
- all vehicles should be equipped with absorbent materials, drip trays, shovels and disposal bags.
- The Inspector has also been advising applicants with sleigh camps, of certain conditions for "parking" these camps over frozen water bodies, noted under mitigation but which could be considered for licence conditions eg greywater may be deposited in a packed down bermed area adjacent to the camp, the camp itself can only be parked in the same spot for four to five days maximum, grease camps must be installed in the greywater system, itself posted, and when the camp has to move, all berm - contained grey water must be scraped up from the ice surface, and deposited, spread out on land 30 metres from any water course. The mobile camp should only be allowed one stop per water body. Sewage should never be deposited onto/into a water body, unless properly licensed to do so.
- an approved contingency plan is required by licence issuance, along with a list of spill response equipment, with locations.
- all vehicles should be equipped with absorbent materials, drip trays, shovels and disposal bags.
- Water Resources staff agreed that the use of explosives within water bodies that do not have bottom fast ice should be avoided, which will also reduce the potential for sedimentation, and the Emergency Response Plan is lacking in information, and should be revised, eg to include location of spill equipment, training for employees, environmental mapping of sensitive areas where spills could occur etc. met Dec. 3 - 5, 2001 decision made that no significant negative impact on the environment or Inuvialuit harvesting would occur.

Inuvik Hunters and Trappers Committee:

- sufficient ice in place for vehicle travel;
- local travel routes disturbed by work (e.g., snow banks) should be cut down to allow locals to travel without difficulty;
- off line travel should be stopped; and
- ramps on waterbodies should be constructed properly to prevent erosion.

Tuktoyaktuk Hunters and Trappers Committee:

- signs should be erected along access roads, for safety reasons.
- avoid disturbing any archeological sites that may be in the area.
- separate wildlife and environmental monitors must be hired for the duration of the project.

Environment Canada:

- deleterious substances shall not be deposited in any waterbody;
- fuel supply vehicles or bowsters equipped with adequate spill kit to contain spills and that drip pans be used at all fuel transfer sites;
- the Proponent should ensure that chemicals, fuel and waste do not enter project area waters and that sediment is not deposited in any definable waterbody; bank disturbance must be minimized, disturbed areas stabilized and erosion control measures implemented at all crossings; and
- the Proponent is encouraged to participate in the completion of the Cumulative Effects Assessment and Management Framework.

Prince of Wales Northern Heritage Centre:

- proponent to remain at least 30 m from the boundaries of all known archaeological sites.
- proponent should proceed with caution in all operations as the area exhibits a high potential for locating new archaeological sites;
- proponent to conduct a summer follow-up study to assess potential impacts to heritage resources as a result of winter activities; and
- two sites identified in application should be marked out with flagging on the ground by a qualified archaeologist and the flagging removed at the end of the program.

Department of Fisheries and Oceans:

- use of explosives within water bodies that do not have bottom-fast ice should be avoided.
- DFO must be satisfied that all conditions specified in the June 13, 2001 DFO letter have been met before any seismic activity is undertaken in water bodies not frozen to bottom;
- all charges deployed below liquid water bodies should be buried a minimum 15 m below the lakebed;
- only charges of 2 kg or less must be used in below liquid water bodies;
- access routes should follow existing linear disturbances;
- mechanical clearing should not occur within 100 m of any stream or lake to protect bank stability.
- avoid soil compaction and retain riparian vegetation;
- use of streams and small or shallow lakes as a water source is not recommended;
- water intakes should be properly screened to prevent the entrainment of fish (refer to the DFO *Freshwater Intake End-of-Pipe Fish Screen Guideline*);
- mushroom shoes or boots should be used on the blades of vehicles to minimize ground disturbance;
- use of snow ramp, constructed of clean snow or ice, rather than bank cutting is recommended for crossing approaches;
- winter crossings should not impede water flow and should be v-notched or otherwise removed prior to spring breakup;
- reclamation should include bank stabilization and revegetation as required;
- maintenance procedures and vehicle refueling should be controlled to prevent the entry of petroleum products, or other deleterious material into the water;
- all wastes, drill cuttings, sewage and wastewater contaminants should be located more than 100 m from water bodies and be sufficiently contained (e.g., bermed) to ensure they do not enter water

December 17, 2001

- bodies;
- fuel storage should have secondary containment;
- no material should be left on the ice where there is potential for that material to enter the water during breakup;
- a spill contingency plan should be available and implemented; and
- all spills should be reported to the 24-Hour Spill Line and the NEB.

Recommendations to the Board:

- review and approve the attached joint federal CEAA screening, which concurs with the EISC determination rendered earlier.

9.c) INAC Land Administration Terms & Conditions

The Following Conditions Should Be Considered as Mitigation Measures to Help in Preventing or Restoring Environmental Damage.

**RECOMMENDED CONDITIONS ANNEXED TO AND FORMING PART
OF LAND USE PERMIT NUMBER N2001B0048**

31 (1) (a) - LOCATION AND AREA

- | | | |
|------|--|--------------------------------------|
| 1.1 | The Permittee shall not conduct this land use operation on any lands not designated in the accepted application, unless otherwise authorized in writing by the Engineer. | PLANS |
| 1.2 | The Permittee shall not conduct any part of the land use operation within three hundred (300) metres of any privately owned land or structure, unless otherwise authorized in writing by the Engineer. | PRIVATE
PROPERTY |
| 1.3 | (a) The Permittee shall offset vehicle travel in areas without a snow covered surface. | OFFSET
VEHICLE
TRAVEL |
| | (b) The Permittee shall confine the line to a maximum width of Eight (8) metres, unless otherwise authorized in writing by a Land Use Inspector. | |
| 1.4 | The Permittee shall not construct parallel lines or roads unless authorized by the Engineer. | PARALLEL
ROADS |
| 1.7 | The Permittee shall remove from Territorial Lands, all scrap material discarded machinery and parts, barrels and kegs, buildings and building material. | REMOVE WASTE
MATERIAL |
| 1.11 | The Permittee shall locate all lines, trails and rights-of-way to be constructed parallel to streams | PARALLELING |

December 17, 2001

a minimum of thirty (30) metres from any stream except at crossings, unless otherwise authorized in writing by a Land Use Inspector.

31 (1) (b) - TIME

- 2.1 The Permittee's Field Supervisor shall contact or meet with a Land Use Inspector at the Inuvik Office of the Department of Indian Affairs and Northern Development, telephone number (867)777-3361, at least forty-eight (48) hours prior to the commencement of this land use operation.
- 2.2 The Permittee shall advise a Land Use Inspector at least ten (10) days prior to the completion of the land use operation of (a) his plan for removal or storage of equipment and materials, and (b) when final clean-up and restoration of the land used will be completed.
- 2.3 The Permittee shall submit an approved progress report to the Engineer every seven (7) days during this land use operation.
- 2.5 The Permittee shall not conduct any overland movement of equipment or vehicles before 0800 hours local time on November 15, unless otherwise authorized in writing by a Land Use Inspector.
- 2.6 The Permittee shall not conduct any overland movement of equipment and vehicles after 0800 hours local time on April 15, unless otherwise authorized in writing by a Land Use Inspector.
- 2.7 The Permittee shall not conduct any overland movement of equipment and vehicles between April 15 and November 15, unless otherwise authorized by a Land Use Inspector.
- 2.9 The Engineer, for the purpose of this operation, designates April 15, as spring break-up.
- 2.10 The Permittee shall remove all ice bridges prior to spring break-up or completion of the land use operation, unless otherwise approved in writing by a Land Use Inspector.
- 2.11 The Permittee shall remove all snow fills from stream crossings prior to spring break-up or completion of the land use operation, unless otherwise approved in writing by a Land Use Inspector.
- 2.15 The Permittee shall commence and foster revegetation on the land used, as directed by a Land Use Inspector, within one (1) year of the completion of the land use operation.

STREAMS

CONTACT INSPECTOR

REPORTS BEFORE REMOVAL

PROGRESS

START-UP DATE

SHUT-DOWN DATE

SHUT-DOWN PERIOD

SPRING BREAK-UP

REMOVE ICE BRIDGE

REMOVE SNOW FILLS

RE-ESTABLISH VEGETATION

December 17, 2001

2.16 The Permittee shall complete all clean-up and restoration of the lands used prior to the expiry date of this Permit.

CLEAN-UP

2.17 The Engineer reserves the right to impose closure of any area to the Permittee in periods when dangers to natural resources are severe.

CLOSURE

31 (1) (c) - EQUIPMENT

3.1 The Permittee shall not use any equipment except of the type, size, and number that is listed in the accepted application, unless otherwise authorized in writing by a Land Use Inspector.

**ONLY
APPROVED
EQUIPMENT**

3.2 The Permittee shall equip bulldozer blades used in this operation with "mushroom" type shoes or a similar type of device which shall be extended twenty(20) centimetres below the cutting edge of the blade.

**BULLDOZER
BLADES
AND SHOES**

3.3 The Permittee shall use a forced-air fuel-fired incinerator to incinerate all combustible garbage and debris

INCINERATORS

31 (1) (d) - METHODS AND TECHNIQUES

4.1 The Permittee shall scout proposed lines and routes to select the best location for crossing streams and avoiding terrain obstacles prior to the movement of any vehicle that exerts pressure on the ground in excess of 35 kPa.

**DETOURS AND
CROSSINGS**

4.2 The Permittee shall construct and maintain winter roads with a minimum of fifteen (15) centimetres packed clean snow at all times during this land use operation. If this cannot be done, then the Permittee shall construct Ice Roads in a manner approved by a Land Use Inspector.

**SNOW ROADS/
ICE ROADS**

4.4 The Permittee shall plug all bore holes as the land use operation progresses.

PLUG HOLES

4.5 The Permittee shall refill and restore bore hole craters as the land use operation progresses.

**REFILL
CRATERS**

4.6 The Permittee shall remove all wire from the land as the land use operation progresses.

REMOVE WIRE

4.13 The Permittee shall not store material on the

STORAGE ON

surface ice of streams, channels, lakes or any other waterbodies.
(Except at camps and designated staging areas)

ICE

**31 (1) (e) - TYPE, LOCATION, CAPACITY
AND OPERATION OF FACILITIES**

5.6 The Permittee shall mark all seismic lines at least once every one and a half (1.5) kilometres with a permanent marker indicating the Land Use Permit number or in a manner approved by a Land Use Inspector.

MARKERS/
SEISMIC LINES

5.7 The Permittee shall ensure that the land use area is kept clean and tidy at all times.

CLEAN
WORK AREA

**31 (1) (f) - CONTROL OR PREVENTION OF FLOODING,
EROSION AND SUBSIDENCE OF LAND**

6.2 The Permittee shall remove any obstruction to natural drainage caused by any part of this land use operation.

NATURAL
DRAINAGE

6.4 The Permittee shall not use any material other than water in the construction of ice bridges.

ICE BRIDGE
MATERIAL

6.5 The Permittee shall not allow any ice bridge to hinder the flow of water in any stream.

ICE BRIDGE

6.17 The Permittee shall not move any equipment or vehicles unless the ground surface is in a state capable of fully supporting the equipment or vehicles without rutting or gouging.

VEHICLE
MOVEMENT
FREEZE-UP

6.18 The Permittee shall suspend overland travel of equipment or vehicles if rutting occurs.

SUSPEND
OVER-LAND
TRAVEL

6.19 The permittee shall apply grass seed and fertilizer to areas Designated in writing by a Land Use inspector.

REPLANT
DESIGNATED
AREAS

6.20 The Permittee shall detour around all sand hills, unless otherwise authorized in writing by a Land Use Inspector.

AVOID
SAND HILLS

**31 (1) (g) - USE, STORAGE, HANDLING AND DISPOSAL
OF CHEMICAL OR TOXIC MATERIAL**

7.8 The Permittee shall burn all garbage and debris at least daily.

GARBAGE
DISPOSAL

7.10 The Permittee shall remove all noncombustible garbage and debris from the land use area to a disposal site approved in writing by a Land Use Inspector.

REMOVE
GARBAGE

7.12 The Permittee shall dispose of all combustible waste petroleum products by incineration or removal.

**WASTE
PETROLEUM
DISPOSAL**

7.15 The Permittee shall report all spills immediately in accordance with instructions contained in "Spill Report" form N.W.T. 1086 (10/79). 24 hour Spill Report Line (867) 920-8130.

**REPORT
CHEMICAL
AND
PETROLEUM
SPILLS**

7.17 The Permittee shall dispose of all sewage and grey water in a manner approved by a Land Use Inspector.

**SEWAGE
DISPOSAL**

31 (1) (h) - WILDLIFE AND FISHERIES HABITAT

8.1 The Permittee shall not unnecessarily damage wildlife habitat in conducting this land use operation.

**HABITAT
DAMAGE**

8.3 The Permittee shall not obstruct the movement of fish while conducting this land use operation.

**FREE FISH
MOVEMENT**

8.6 The Permittee shall not destroy or damage beaver dams.

**BEAVER
DAMS**

8.7 The Permittee shall not destroy or damage muskrat lodges.

**MUSKRAT
LODGES**

8.8 The Permittee shall not detonate explosives within thirty (30) metres of any body of water which is not completely frozen to the bottom, or as stated in the Department of Fisheries and Oceans Explosives Letter of Advice dated Dec. 4, 2001.

**EXPLOSIVES
WATER**

8.11 Your operation is in an area where bears may be encountered. Proper food handling and garbage disposal procedures will lessen the likelihood of bears being attracted to your operation. Information about the latest bear detection and deterrent techniques can be obtained from the Department of Resources, Wildlife and Economic Development at (867) 777-7308.

**BEAR/MAN
CONFLICT**

**31 (1) (i) - OBJECTS AND PLACES OF RECREATIONAL,
SCENIC AND ECOLOGICAL VALUE**

9.3 The Permittee shall not operate any machinery or one hundred and fifty (150) metres of the base of a pingo.

PINGOS

9.4 The Permittee shall not feed wildlife.

**NO FEEDING
WILDLIFE**

December 17, 2001

31 (1) (k) - PETROLEUM FUEL STORAGE

- | | | |
|-------|--|-------------------------|
| 11.2 | The Permittee shall not place any petroleum fuel storage containers within thirty (30) metres of the normal high water mark of any stream where possible. | FUEL BY
STREAM |
| 11.3 | The Permittee shall locate mobile fuel facilities on land when stationary for any period of time exceeding twelve (12) hours. | FUEL
ON LAND |
| 11.4 | The Permittee shall not allow petroleum products to spread to surrounding lands or into water bodies. | FUEL
CONTAINMENT |
| 11.6 | The Permittee shall construct a dyke around each stationary fuel container or group of stationary fuel containers where any one container has a capacity exceeding 4 000 litres. | DYKE FUEL
CONTAINERS |
| 11.8 | The volume of the dyked area shall be ten per cent (10%) greater than the capacity of the largest fuel container placed therein. | CAPACITY |
| 11.10 | The Permittee shall:

(a) Examine all fuel storage containers for leaks a minimum of twice every day.

(b) Repair all leaks immediately. | CHECK
FOR LEAKS |
| 11.12 | The Permittee shall not use bladders for storing and/or transporting petroleum products. | BLADDERS
PROHIBITED |
| 11.15 | The Permittee shall seal all container outlets except the outlet currently in use. | SEAL OUTLET |
| 11.16 | The Permittee shall mark all fuel containers with the Permittee's name. This includes 45 gallon drums. | MARK
CONTAINERS |

31 (1) (l) - DEBRIS AND BRUSH DISPOSAL

- | | | |
|------|---|------------------------------|
| 12.9 | The Permittee shall complete total disposal of all debris and brush cleared prior to the expiry date of the Permit. | BRUSH
DISPOSAL
/TIMING |
|------|---|------------------------------|

**31 (1) (m) - MATTERS NOT INCONSISTENT
WITH THE REGULATIONS**

- | | | |
|-------|---|-------------------------------|
| 13.5 | The Permittee shall display a copy of this Permit in a conspicuous place in each campsite established to carry out this land use operation. | DISPLAY
PERMIT |
| 13.7 | The Permittee shall provide in writing to the Engineer, at least forty-eight (48) hours prior to commencement of this land use operation, the following information:

(a) person, or persons, in charge of the field operation to whom notices, orders, and reports may be served;

(b) alternates;

(c) all the indirect methods for contacting the above person(s). | IDENTIFY
AGENT |
| 13.9 | The Permittee shall, while preparing the access road, make every effort to avoid covering or destroying traps or snares that may be found along these routes. | TRAPS
PROTECTION |
| 13.10 | The Permittee shall restore any trails used by trappers or hunters along access routes by slashing any and all trees that may fall across these paths or trails and by removing any other obstructions such as snow piles or debris that may be pushed across the trails. | TRAILS
RESTORATION |
| 13.12 | The Permittee shall submit to the Engineer a contingency plan, for chemical and petroleum spills, for use during the construction and operation of the winter road. | CONTINGENCY
PLAN |

Recommended Mitigation Measures Supplementary to Permit Conditions

Fuel Storage

- Fuel sloops located within 30 m of a water body should be parked within an impermeable dyke. This can be constructed of snow/ice material and will reduce the likelihood of a spill penetrating the ground and migrating into the water. Should equipment need access inside the dyked area for refueling, the opening should be on the uphill side.
- Refueling operations occurring outside an area described above should include a haz-mat/ drip tray under the tank receptacle.

Equipment

- All equipment parked or may be parked for four (4) hours or more, should have a haz-mat/drip tray under it, or be sufficiently diapered (leaky equipment should be repaired immediately).
- Low impact wheeled vehicles should be limited to properly constructed snow/ice roads. There should be no use of these vehicles on seismic lines.

Operational

- No burning of plastics

December 17, 2001

- Waste oil should be recycled
- Seismic lines crossing river channels thirty (30) meters or greater in width should be stopped short of the channel leaving a buffer (where possible) between the end of the line and the channels. Equipment crossing channels should be at designated intervals of one (1) km or more and their approaches should be doglegged.
- Sleigh camps discharging gray water to the ground should do so into a snow/ice berm which can be broken up and spread on land when the camp moves next
- On those upland areas, ie. Parsons Lake, Storm Hills, Caribou Hills, where dynamite is used as the seismic source, charges should be 15 kg or less at 18 meters depth to prevent excessive cratering. Other configurations of hole depth/ charge size may be acceptable as well.

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

14. Follow-up Program

Monitoring During Operations:

AEC West Ltd. indicates in its Project Description and in a subsequent response to Information Request by the NEB that:

- the company performs regular inspections during operations and upon completion;
- an HTC assigned Wildlife Monitor would observe wildlife in the program area and try to prevent wildlife interactions;
- the Inuvialuit Land Administration (ILA) assigned Environmental Monitor and the Party Manager would be responsible for ensuring that AEC West Ltd. complies/conforms with mitigative requirements;
- all wastewater would be regularly monitored for compliance with NWT guidelines;
- regulators conduct regular inspections and communicate with the operator to address any issues;
- the company would monitor the impacts to vegetation from equipment travel and impacts to wildlife;
- soil and vegetation impacts would be remediated;
- various government agencies would be provided with monitoring results;
- the company supports RWED's research to monitor movements of the Bluenose West/Cape Bathurst caribou herd and RWED's grizzly bear denning survey to assess effects of exploration activities; and
- the company participates in a regional assessment of physical and chemical lake samples to provide background on potential effects of seismic operations on fish and fish habitat.

To ensure the protection of fish and their habitats the Department of Fisheries and Oceans requires the operators to perform the following monitoring:

- Test their drilling equipment at the onset of the project to ensure that, in Arctic environments, it can successfully drill and deploy charges at depth required by DFO.
- Randomly monitor charges detonated in waterbodies not frozen to the bottom to ensure that blasts are not exceeding DFO's 100 kPa overpressure threshold.
- Verify and record all burial depth and substrate types encountered to ensure that charges are buried to depths required by DFO, below the consolidated substrate layer.

Post-program Follow-up:

No follow-up program is required by DIAND or NWT Water Board. Regular licence and land use inspections should suffice to identify any problems needing attention. However, AEC West Ltd. indicates that, along with its contractor, it would conduct a follow-up inspection focusing on :

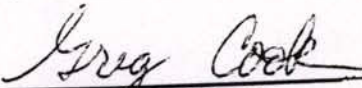
- removal of debris from the program area;
- removal of signage, lath, flagging;
- surveying water crossings for deposits of vegetation;
- surveying of lines and camps for surface disturbance;
- documenting off-line travel; and
- documenting disturbance of archaeological sites; and
- would remediate any problems discovered.

December 17, 2001


AEC West Ltd.
Kamik Winter 2D Seismic Program

15. Authorization

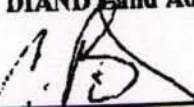
NWT Water Board


Reviewed By: G. Cook
Environmental Assessment Coordinator

Dec. 17, 2001
Date


Approved By: G. Wray
Chairman
DIAND Land Administration (Lead RA)

Jan 18, 2002
Date

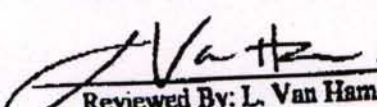

Prepared By: R. Walker, RMO

December 17, 2001
Date



Approved By: R. Cockney
District manager

December 17, 2001
Date

National Energy Board

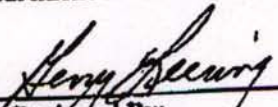

Reviewed By: L. Van Ham, M.E. Des
Environmental Specialist

December 18, 2001
Date

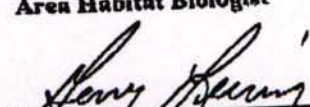

Approved By: T. M. Baker
Chief Conservation Officer

December 18, 2001
Date

Department of Fisheries and Oceans


Reviewed By:
Pete Cott
Area Habitat Biologist

December 18, 2001
Date


Approved By:
Pete Cott
Area Habitat Biologist

December 18, 2001
Date

APPENDICES

Appendix A: Subject Descriptors

Choose (one or more) from this list and insert as a "Subject Descriptor"

agriculture	<input checked="" type="checkbox"/> inland waters
buildings	<input checked="" type="checkbox"/> land use
communications	
defence	
energy	
forestry	
industry	
inland waters	
mining	
oceans	
<input checked="" type="checkbox"/> oil and gas	
parks	
transportation	

Appendix B: Geographic Place Name

Tuktoyaktuk

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

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)

- | | |
|---|--|
| <input checked="" type="checkbox"/> access road | <input type="checkbox"/> scarify |
| <input checked="" type="checkbox"/> construction (winter ice roads) | <input type="checkbox"/> spraying |
| <input checked="" type="checkbox"/> abandonment/removal | <input type="checkbox"/> recontouring |
| <input type="checkbox"/> modification e.g., widening, straightening | <input type="checkbox"/> slash and burn |
| <input checked="" type="checkbox"/> automobile, aircraft or vessel movement | <input type="checkbox"/> soil testing |
| <input checked="" type="checkbox"/> blasting | <input type="checkbox"/> topsoil, overburden or soil |
| <input type="checkbox"/> building | <input type="checkbox"/> fill |
| <input type="checkbox"/> burning | <input type="checkbox"/> disposal |
| <input type="checkbox"/> burying | <input type="checkbox"/> removal |
| <input type="checkbox"/> channelling | <input type="checkbox"/> storage |
| <input type="checkbox"/> cut and fill | <input checked="" type="checkbox"/> stream crossing/bridging (Temp. Winter) |
| <input type="checkbox"/> cutting of trees or removal of vegetation | <input type="checkbox"/> tunnelling/underground |
| <input type="checkbox"/> dams and impoundments | <input type="checkbox"/> other, |
| <input type="checkbox"/> construction | explain _____ |
| <input type="checkbox"/> abandonment/removal | |
| <input type="checkbox"/> modification | <input checked="" type="checkbox"/> accidents or malfunctions. Describe: risk of |
| <input type="checkbox"/> ditch construction | spills; ignition of shallow gas during drilling; |
| <input type="checkbox"/> drainage alteration | vehicles thru ice; cratering using explosives. |
| <input checked="" type="checkbox"/> drilling other than geoscientific | |
| <input type="checkbox"/> ecological surveys | <input checked="" type="checkbox"/> effects of environment on project (e.g., |
| <input type="checkbox"/> excavation; | beaver dams). Describe: Cold weather or lack of |
| <input checked="" type="checkbox"/> explosive storage | snow slows down progress on project and |
| <input checked="" type="checkbox"/> fuel storage | promotes equipment failure (e.g., hoses snap in |
| <input checked="" type="checkbox"/> garbage | cold or puncture by willows); warm weather |
| <input type="checkbox"/> disposal of hazardous waste | delays project; more access road construction |
| <input checked="" type="checkbox"/> disposal of sewage | using water due to lack of snow; blowing or |
| <input checked="" type="checkbox"/> waste generation | drifting snow hampering garbage/debris removal. |
| <input type="checkbox"/> geoscientific sampling | |
| <input type="checkbox"/> trenching | |
| <input type="checkbox"/> diamond drill | |
| <input type="checkbox"/> borehole core sampling | |
| <input type="checkbox"/> bulk soil sampling | |
| <input type="checkbox"/> gravel | |
| <input type="checkbox"/> hydrological testing | |
| <input checked="" type="checkbox"/> site restoration | |
| <input type="checkbox"/> fertilization | |
| <input type="checkbox"/> grubbing | |
| <input checked="" type="checkbox"/> planting/seeding | |
| <input type="checkbox"/> reforestation | |

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 (temporary)

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 (minimal)
34. ☐ impact to hunting
35. ☐ impact to outfitters
36. ☐ recreational or back country use
37. ☒ impact to fishing (minimal)
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 Reindeer herding in area _____

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 Permafrost research sites _____

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)

___ other heritage sites

___ other, explain: _____

___ agriculture

___ forestry

___ commercial

___ domestic

X fishing

X hunting/subsistence

___ urbanization

___ commercial / residential (cottages)

___ built structures

___ infrastructure

___ mining

___ exploration

___ open pits

___ underground

___ quarries

___ transportation/communications

___ 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

___ selected

___ withdrawn

___ special management

___ heritage sites

___ cultural sites

___ other private lands held under tenure

___ recreational

___ trapping

___ mineral processing

___ airport

___ recreation

Effects from other Resource Uses
(this project) appropriate to the scope of

50. other, explain _____

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 or community 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

Cumulative Environmental Effects (Based on a comparison of effects identified in Tables A and B)

Matching Number(s)	Description of cumulative environmental effects
3 & 6	Change in surface water flow - caused by the buildup of ice and overland access routes may cause surface water flow to change course. This will be temporary as it will only affect the area for this upcoming spring 2002.
7	Change in air quality caused by the running of diesel and gas engines for the duration of the projects. Emissions from generators, trucks, Nodwells and other heavy equipment may cause air quality problems in the region. Although in the past these types of operations did not cause any known air quality issues.
10 & 11	Ice fog and change in ambient noise levels - During cold weather engine emissions will hang in the air and cause ice fog. Multiply this by several similar projects and the effect becomes worse. Noise levels will increase due to the number of vehicles and equipment being used in the wilderness area.
14 & 15	Alteration of permafrost regime and destabilization / erosion could occur if permit conditions and proposed operating procedures were not followed. Again this would be multiplied by the numerous programs.
24 & 25 & 26 & 27	Impact to large and small mammals, impact to fish and birds - this is certain to occur with development in a wilderness area. This effect will probably displace mammals, fish and birds for a temporary period of time. Although once the wildlife becomes familiar with the presence of people they will start returning to the area.
31	Change in wildlife habitat / ecosystem - this will occur on each program area due to the minimal disturbance of the vegetation. This will cause new and perhaps different vegetation growth in the future thus changing the habitat.

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 November 20, 2001 to review the proposed project and, pursuant to subsection 6(1) of the CEAA Federal Coordination Regulations, inform the lead RA by November 30, 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
Environment Canada (Yellowknife)		X	
Fisheries and Oceans (Inuvik, Yellowknife)	X		
Health Canada (Edmonton)		X	
Indian and Northern Affairs (Inuvik)	Lead RA		
National Energy Board (Calgary)	X		
Natural Resources Canada (Ottawa)			No Response

NWT Water Board	X		
-----------------	---	--	--

Federal Approvals

INAC: Territorial Lands Act Land Use Permit
National Energy Board: Canada Oil and Gas Operations Act 5(1)(b) Authorization
NWT Water Board: NWT Waters Act Type B Water Licence
DFO: Fisheries Act s.32 Authorization

Section 8 Requirements of the CEAA Federal Coordination Regulations

With respect to section 8 of the Fed. Coordination Regs, 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

1. 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 Tuktoyaktuk area, Northwest Territories.

2. 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 following physical works and activities would need to be undertaken:

- proposed access route options - Parson's Lake Road/Pete's Creek access, South Parsons access (Pole Road) and access between 2D seismic lines via AEC West's 2000/2001 Mackenzie Delta program seismic lines;
- construction of access on lakes, waterbodies and overland areas;
- use of D6 Cats, water trucks, ice profiler unit and other equipment to construct access routes;
- construction of ice/snow ramps at high banks (greater than 1 m) to prevent erosion and equipment disturbance;
- possible water withdrawal from large water bodies to flood and thicken ice on the routes and ramps;
- total water withdrawal of about 80 m³ / day over the course of the project for camp use and ice road construction and maintenance;
- use of electric toilets that eliminate sewage through incineration and disposal of inert ash at an approved landfill site;
- disposal of sleigh camp grey water to ground surface;
- use of a low ground pressure tracked Nodwell survey unit or snowmobile to set out the lines and pack snow; minimal vegetation clearing will be required;
- surveying of 5 lines (8 m widths), totalling 133 linear km using GPS and conventional methods on track-mounted vehicles;
- use of crew personnel supported by tracked units as primary mode of cable layout and retrieval; or, assistance of helicopter support if required to meet schedule;
- use of tracked vibroseis equipment as the primary energy source with energy source points positioned at 50 or 60 m intervals and receivers positioned at 25 or 30 m intervals;
- use of dynamite and a specialized casing drill technology (retrievable drill bit or knock-off drill bit casing systems depending on substrate) on larger waterbodies where data can not be collected using the vibroseis equipment with energy source points positioned at 100 or 120 m intervals;
- use of geophones to record the returning energy response;

- use of a recording unit (doghouse) positioned on a Nodwell or similar vehicle to travel down the line and record information collected by the geophones (connects to cable at appropriate locations); or for dynamite recordings, use of a shooter to travel down source line, connect cap leads to the shooting unit and detonate the charges for recording;
- set up and use of a 65-person, 3-string sleigh camp;
- storage of fuel in six individual sleighs (each holding two, 7,560 litre diesel fuel tanks) and in two individual sleighs (each holding 1,890 litres of gasoline) with total volume of fuel storage of 94,500 litres and a potential for 6 barrels of fuel storage if helicopter support is utilized; and
- on-going and post-project restoration and reclamation as required.

3. **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 AEC West Project. Any additional hydrocarbon exploration activities would be subject to future examination under the COGOA and possibly the *Territorial Lands Act*, *Northwest Territories Waters Act*, *Fisheries Act* and, consequently, under the CEAA.

B. Factors to be Assessed

The factors to be considered within the scope of an environmental assessment would be those set out in subsection 16(1) of the CEAA.

C. Scope of the Factors to be Assessed

The following spatial and temporal boundaries, as defined in the Inuvialuit Environmental and Geotechnical Inc. Project Description² for the Project, are suggested.

1. **Spatial Boundaries**

- | | |
|--------------|---|
| Local: | Impacts would be 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 to 50 km of the rights-of-way and camp; and |
| Regional: | Impacts may extend beyond 50 km from the rights-of-way and camp 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 one year or longer but less than ten years; and |
| Long-term: | Impact duration would extend ten years or longer. |

D. Proposed Process and Time Line

The RAs agreed to a CEAA determination date of December 17, 2001 for taking a course of action under subsection 20(1). Each RA for this joint screening made its own independent CEAA determination.

²

Inuvialuit Environmental and Geotechnical Inc., October 2001, "Project Description for the Proposed AEC West Ltd. Kamik 2D Winter 2001/2002 Seismic Program."

Attachment 1 - Proponent's Mitigation Measures

See attached Table 18 from the Project Description.