



August 8, 2007

Kenneth Hollingshead
National Marine Fisheries Service
Office of Protected Resources
1315 East West Hwy.
Silver Springs, MD 20910

RE: Request for Approval, Incidental Harassment Authorization to Allow Non-lethal taking of Seals in Smith Bay, Beaufort Sea, Alaska for On-ice Seismic 2008

Dear Mr. Hollingshead,

Please accept this enclosed request submitted by CGGVeritas on behalf of FEX, for Incidental Harassment Authorization (IHA), pursuant to Section 101(a) (5)(D) of the Marine Mammal Protection Act (MMPA), 16 U.S.C § 1371 (a)(5) to allow non-lethal takes of seals incidental to a proposed offshore seismic program in Smith Bay, Beaufort Sea, Alaska.

The items required to be addressed pursuant to 50 C.F.R. § 216.104, "Submission of Requests" are set forth below. They include descriptions of the specific operations to be conducted, the marine mammals occurring in the study area, proposed measures to mitigate against any potential injurious effects on Pinnipeds, and a plan to monitor any behavioral effects of the operations on those marine mammals. A public project location map is enclosed as Appendix 1.

CGGVeritas plans to acquire 3D seismic data within the months of February-May 2008 on the seice in Smith Bay on behalf of FEX. CGGVeritas requests that it be issued an Incidental Harassment Authorization (IHA) allowing non-lethal takes of Ringed Seals incidental to the planned seismic surveys in state waters of the Beaufort Sea in Smith Bay. The energy source for the proposed activity will be vibroseis. Seismic operations will be conducted utilizing 8-10 wheeled/tracked vibrators supported by Tucker Sno Cats and our Challenger 95 recording cable transport vehicles. Positioning of the cables, vibroseis and recording vehicles all use Tiger Nav technology; a specialized navigation and positioning software. The Tiger Nav system integrates with GPS and Inertial Technology with Real Time Positioning, Stake-less Source, Receiver Surveying and Vehicle Tracking.

CGGVeritas utilizes satellite imagery, existing bathymetry, and ground penetrating radar (GPR) to interpret ice integrity for proper planning. To offset any inefficiency of these systems on sea ice, CGGVeritas utilizes a grid system of drilled holes to verify and/or replace GPR data that may be questionable. To support vibroseis and recording vehicle units, an ice thickness of at least 4 feet is required.

CGGVeritas will consult with the potentially affected subsistence communities of Barrow and Nuiqsut and other stakeholder groups as described in the application to develop a plan of cooperation. CGGVeritas's joint venture partner on the North Slope is the Kuukpik Corporation.



CGGVeritas plans to work closely with the Kuukpik Corporation to develop this plan of cooperation.

If you have questions or require additional information please contact me at the numbers below or at my email address rick.trupp@cggveritas.com.

Sincerely,

Rick Trupp
Permits Coordinator

Cc: Brad Smith, National Marine Fisheries Service
Isaac Nukapigak, Kuukpik Corporation
Teresa Judkins, Alaska Eskimo Whaling Commission
Thomas Napageak, Jr., Kuukpik Subsistence Oversight Panel

**Request for the Incidental Taking of Ringed Seals during On-Ice
Seismic Operations in Smith Bay, February-May 2008**

Submitted by

**CGGVeritas
2450 Cinnabar Loop
Anchorage, AK 99507**

to

National Marine Fisheries Service
Office of Protected Resources
1315 East-West Hwy, Silver Spring, MD 20910-3282

August 6, 2007

TABLE OF CONTENTS

	Page
<i>Summary</i>	<i>1</i>
<i>I. Operations to be Conducted</i>	<i>2</i>
<i>II. Dates, Duration and Region of Activity</i>	<i>3</i>
<i>III. Species and Numbers of Marine Mammals in Area</i>	<i>3</i>
<i>IV. Status, Distribution and Seasonal Distribution of Affected Species or Stocks of Marine Mammals</i>	<i>4</i>
<i>V. Type of Incidental Take Authorization Requested</i>	<i>5</i>
<i>VI. Numbers of Marine Mammals That May be Taken</i>	<i>6</i>
<i>VII. Anticipated Impact on Species or Stocks</i>	<i>6</i>
<i>VIII. Anticipated impact of the activity on subsistence</i>	<i>7</i>
<i>IX. Anticipated Impact on Habitat</i>	<i>7</i>
<i>X. Anticipated Impact of Loss or Modification of Habitat on Marine Mammals</i>	<i>7</i>
<i>XI. Mitigation Measures</i>	<i>8</i>
<i>XII. Plan of Cooperation</i>	<i>8</i>
<i>XIII. Monitoring and Reporting Plan</i>	<i>9</i>
<i>XIV. Coordinating Research to Reduce and Evaluate Incidental Take</i>	<i>9</i>
<i>XV. Literature Resources</i>	<i>10</i>

REQUEST FOR THE INCIDENTAL TAKE OF RINGED SEALS DURING ON-ICE SEISMIC WINTER OPERATIONS, FEBRUARY-MAY 2008

SUMMARY

CGGVeritas plans to acquire 3D seismic data within the months of February-May 2008 on the seice in Smith Bay on behalf of FEX. CGGVeritas requests that it be issued an Incidental Harassment Authorization (IHA) allowing non-lethal takes of Ringed Seals incidental to the planned seismic surveys in state waters of the Beaufort Sea in Smith Bay. The energy source for the proposed activity will be vibroseis. A description of seismic exploration and the specific activities that may take place during the period covered in the Incidental Harassment Authorization (IHA) application is provided below. This request is submitted pursuant to Section 101 (a) (5) (D) of the Marine Mammal Protection Act (MMPA), 16 U.S.C. § 1371 (a) (5).

The species regulated by National Marine Fisheries Service that may be present during the seismic survey period and location may include Pinnipeds (ringed seal, spotted seal and the bearded seal) that are known to occur in the area.

The items required to be addressed pursuant to 50 C.F.R. § 216.104, "Submission of Requests" are set forth below. They include descriptions of the specific operations to be conducted, the marine mammals occurring in the study area, proposed measures to mitigate against any potential injurious effects on Pinnipeds, and a plan to monitor any behavioral effects of the operations on those marine mammals.

I. OPERATIONS TO BE CONDUCTED

A detailed description of the specific activity or class of activities that can be expected to result in incidental taking of marine mammals.

Overview of the Activity

CGGVeritas plans to conduct one seismic survey in the Beaufort Sea, Smith Bay (Appendix 1). As presently scheduled, the seismic surveys will occur from ~1February 2008- 31May2008.

The seismic survey will consist of laying recording cables with geophones on the frozen sea ice; using vibroseis techniques as the source of energy to acquire the seismic data.

Seismic operations will be conducted utilizing 8-10 wheeled/tracked vibrators supported by Tucker Sno Cats and our Challenger 95 recording cable transport vehicles. A Challenger 95 or Tucker SnoCat vehicle will travel along a pre-surveyed route and lay receiver cable lines that extend between 3-10 miles long. Receiver (i.e., geophone) lines will be spaced 1,320 ft apart; a group of 3-6 geophones would be located every 220 ft along each of these lines. Ten- Fifteen receiver lines will be placed on the ground at any one time all interconnected to a recording device known as a “recorder”. Vibroseis vehicles will then move along a pre-determined route most often nearly perpendicular to the recording lines. Positioning of the cables, vibroseis and recording vehicles all use Tiger Nav technology; a specialized navigation and positioning software. The Tiger Nav system integrates with GPS and Inertial Technology with Real Time Positioning, Stake-less Source, Receiver Surveying and Vehicle Tracking. The Vibrators (usually 3-4 that travel together) move to a pre-determined GPS point location and begin vibrating in synchrony via a radio signal. The Vibrators will vibrate usually 2-4 times at each location, move up to the next location about 330 ft. and continue the vibrating technique until the end of the line. This activity will occur two lines at a time.

CGGVeritas utilizes satellite imagery, existing bathymetry, drill grids and ground penetrating radar (GPR) to interpret ice integrity for proper planning. It should be noted that while GPR data is extremely accurate on fresh water it has limitations on sea ice. To offset any inefficiency of these systems on sea ice, CGGVeritas utilizes a grid system of drilled holes to verify and/or replace GPR data that may be questionable. To support vibroseis and recording vehicle units, an ice thickness of at least 4 feet is required.

The Smith Bay program area will exist within the boundary map in Appendix 1. The survey area has yet to be defined within the permitted boundary area but the maximum extent of the on ice (offshore) area would be approximately 569.97 square kilometers.

APPENDIX 1. Map of proposed survey area; water portion.

II. DATES, DURATION AND REGION OF ACTIVITY

The date(s) and duration of such activity and the specific geographical region where it will occur.

CGGVeritas seeks incidental take authorization for a period of four months (1February through 31 May 2008). On-ice seismic operations are ordinarily confined to this four-month period since ice is sufficiently thick (4-6 ft) to safely support the equipment. The geographic region of activity on ice encompasses an 569 -square kilometer-area extending across Smith Bay from point of entry from the west at approximately N 71° 06'00.05" W154° 30' 21.00" to the east at point of exit to land at approximately N 70° 54' 37.03" W153° 46'43.43". Water depths in most (>80%) of the area are less than 10ft (3m) but will vary from grounded ice to 3.5 fathoms over the general area based on the general bathymetry charts included in Appendix 1.

III. SPECIES AND NUMBERS OF MARINE MAMMALS IN AREA

The species and numbers of marine mammals likely to be found within the activity area.

The species regulated by National Marine Fisheries Service that may be present during the seismic survey period and location are Pinnipeds, ringed seals (*Phoca hispida*) and bearded seals (*Erignathus barbatus*).

Ringed Seals will constitute the largest number of any marine mammal species known to occupy this proposed program area although most of the activity area is marginal seal habitat, since the majority of the area is less than 3 meters deep. Few seals inhabit water less than 3 meters during winter, since water typically freezes to or near the bottom at this depth or what water is available supports few food resources (Miller et al. 1998 and Link et al.1999).

CGGVeritas will record information on any other marine mammals that are encountered during our operations. The specific characteristics of our seismic survey and the operational procedures employed during seismic surveys are such that the resulting risks are expected to be exceptionally low.

Polar Bears are known to use the program area. Veritas will request a letter of authorization from the US Fish and Wildlife Service (USFWS) for the intentional taking of polar bears.

TABLE 2. The species, geographic range, regional population sizes, and conservation status of marine mammals inhabiting the proposed seismic survey area of Smith Bay.

Species ¹	Geographic Range within reference to proposed program areas	Estimated Population size in Beaufort Sea	Status of Stock

¹ http://www.nmfs.noaa.gov/pr/PR2/Stock_Assessment_Program/individual_sars.html

Bearded Seal (Erignathus barbatus)	Broad distribution across Arctic waters and Beaufort Sea	Burns (1981) 250,000-300,000; recent 2000 preliminary survey indicates this abundance may be larger	Stable
Ringed Seal (Phoca hispida)	Beaufort Sea distribution in summer is higher to east of Flaxman Island.	No population estimates calculated for Beaufort Sea	Not considered a strategic stock

IV. STATUS, DISTRIBUTION AND SEASONAL DISTRIBUTION OF AFFECTED SPECIES OR STOCKS OF MARINE MAMMALS

A description of the status, distribution, and seasonal distribution (when applicable) of the affected species or stocks of marine mammals likely to be affected by such activities

BEARDED SEALS

Bearded Seals¹ in Alaskan waters are distributed over the continental shelf of the Bering, Chukchi and Beaufort Seas (Burns 1981). The overall summer distribution is quite broad. Recent spring surveys along the Alaska coast indicate that bearded seals are typically more abundant 20-100 nmi from shore (Bengtson et al. 2000). Bearded seals are generally associated with pack ice and only rarely use shorefast ice (Burns and Harbo 1972). Since bearded seals are normally found in broken ice that is unstable for on-ice seismic operation, bearded seals will be rarely encountered during seismic operations.

Bearded seals are not listed as “depleted” under the MMPA or listed as “threatened” or “endangered” under the ESA. The Alaska stock of bearded seals is not classified as a strategic stock.

RINGED SEALS

There is no evidence to suggest splitting the distribution of ringed seals into more than one stock even though the distribution of ringed seals is broad; only the Alaska ringed seal stock is recognized in US waters.

Ringed seals² are year-round residents in the Beaufort Sea. They are the most abundant and widely distributed species of marine mammal in the Beaufort Sea (Frost et al. 1988). During winter and spring, ringed seals inhabit landfast ice and offshore pack ice. In the Beaufort Sea, the density of summer distribution is higher to the east than to the west of Flaxman Island as reported by Frost and Lowry (1999). No population estimates have been calculated for the Beaufort Sea but crude population estimates

² http://www.nmfs.noaa.gov/pr/PR2/Stock_Assessment_Program/individual_sars.html

of entire Alaska stock is 3.3 -3.6 million (Frost et al.1988) and densities of ringed seals in 1998 west of Flaxman island averaged (.81 seals/km²)versus east of Flaxman at (1.19 seals/km²).

These species as well as other marine mammal species in the Beaufort Sea appear to have stable to increasing populations, which is a condition indicative of a healthy ecosystem. The Alaska stock of Ringed seals is not classified as a strategic stock. Ringed seals are not listed as “depleted” under the MMPA or listed as “threatened” or “endangered” under the ESA.

V. TYPE OF INCIDENTAL TAKE AUTHORIZATION REQUESTED

The type of incidental taking authorization that is being requested (i.e., takes by harassment only, takes by harassment, injury and/or death), and the method of incidental taking.
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CGGVeritas is requesting authorization for incidental taking by harassment (Level B as defined in 50 CFR 216.3) of small numbers of ringed and bearded seals during on-ice seismic activity during the winter 2007. The activity includes the use of vibroseis energy source to collect seismic data. This activity is not likely to result in physical injuries to, and/or death of, any individual seal. Seals are expected to avoid the immediate area around the on-ice seismic operations. Given the level of vibroseis sounds and the tendency of ringed seals to avoid the immediate area around on-ice seismic operations, seals are not expected to be subject to potential hearing damage from exposure to underwater or in-air sounds from that operation. No intentional taking of any marine mammal is planned at any time during the seismic data collection operation.

VI. NUMBERS OF MARINE MAMMALS THAT MAY BE TAKEN

By age, sex, and reproductive condition (if possible), the number of marine mammals (by species) that may be taken by each type of taking identified in [section V], and the number of times such takings by each type of taking are likely to occur.

CGGVeritas estimates that there will be a negligible amount of marine mammals that may be taken as a result of our seismic surveys that may be subject to Level B harassment, as defined in 50 CFR, 216.3;

“Level B Harassment means any act of pursuit, torment, or annoyance which has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering but which does not have the potential to injure a marine mammal or marine mammal stock in the wild”.

CGGVeritas estimates that the following chart may depict the negligible effect and possible level B take of marine mammals based on area of survey and timing of the proposed programs.

Species ³	Estimated Population size in Beaufort Sea	Possible Level B Harassment Take
Bearded Seal	Burns (1981) 250,000-300,000	<10
Ringed Seal	~1.5 million	<74*

(*Take for this area will be estimated for ringed seals using observed density (13/100km²) reported by Moulton et al. (2001) for water depths between 0 to 3 m in the Northstar project area, which is the only source of a density estimate stratified by water depth for the Beaufort Sea.)

CGGVeritas feels these numbers reflect an overestimation of the number of potential incidental harassment takes with an aggressive marine mammal monitoring approach. Due to the projected period of activity and to the location of the proposed seismic activity in waters generally too shallow and distant from the edge of the pack ice for most marine mammals of concern, the number of potential harassment takings is estimated to be small. In addition, no take by injury and/or by death is anticipated, and the potential for temporary or permanent hearing impairment will be avoided through incorporation of the mitigation measures described in the authorization.

VII. ANTICIPATED IMPACT ON SPECIES OR STOCKS

The anticipated impact of the activity upon the species or stock of marine mammal.

The majority of the seismic lines will be on ice over shallow water where ringed seals are absent or present in very low abundance. Over 80% of the activity area is near shore and/or in water less than 3 m deep, which is generally considered poor seal habitat. Moulton et al. (2001) reported that only 6% of 660 ringed seals observed on ice in the Northstar project area were in water between 0-3 m deep.

Seismic operators will avoid moderate and large pressure ridges, where seal and pupping lairs are likely to be most numerous, for reasons of safety and because of normal operational constraints.

The proposed activity is not expected to have any habitat-related effects that could cause significant or long-term consequences for individual ringed seals or their populations, since operations at the various sites will be limited in duration.

VIII. ANTICIPATED IMPACT OF THE ACTIVITY ON SUBSISTENCE

The anticipated impact of the activity on the availability of the species or stocks of marine mammals for subsistence uses.

CGGVeritas will maintain active dialogue with our Kuukpik Joint Venture partners with respect to subsistence use and conflict.

Most of the anticipated program area is within 3-4 miles of the coast on the proposed survey therefore in speaking with traditional users, it is not thought to hinder subsistence harvest greatly during the timing of the programs. Nuiqsut and Barrow are the closest communities to the area of the proposed activity.

IX. ANTICIPATED IMPACT ON HABITAT

The anticipated impact of the activity upon the habitat of the marine mammal populations, and the likelihood of restoration of the affected habitat.

The anticipated impact of the seismic program represents only a small fraction of the pinniped habitat of the Beaufort Sea and any impacts, although very negligible would be localized and temporary.

X. ANTICIPATED IMPACT OF LOSS OR MODIFICATION OF HABITAT ON MARINE MAMMALS

The anticipated impact of the loss or modification of the habitat on the marine mammal populations involved.

The effects of the planned activity on ringed and bearded seals and their habitats are expected to be negligible, as described above. In a recent survey, Harrison Bay 2006, and in the Colville River Delta 2007, using the same seismic technique, crew and approach, there appeared to be no obvious signs of disturbance noted where survey lines had been staked out and some vehicle traffic had occurred. Lairs and breathing holes were found on or adjacent to these lines or in close proximity to them. Few lairs had been abandoned by seals, and these only in response to attempted or successful fox predation of seal pups in their birth lairs. (Smith, EMS 2006, 2007).

Predation by arctic foxes appeared to be quite high in the area surveyed on the Harrison Bay program this past year, and is known to affect the annual recruitment of ringed seal populations in other areas (Smith

1976, Hammill and Smith 1991). The relatively small number of rutting male holes and structures found in the area might thus reflect the fact that many of the post partum (therefore estrus and breedable) females had left the area after their pups had been killed.

XI. MITIGATION MEASURES

All activities will be conducted as far as practicable from any observed ringed or bearded seal lair and no energy source will be placed over a ringed or bearded seal lair. After pre-program ice check activities take place, the survey crew will mark the existing routes of recording cable layout and source (vibroseis) points. Any locations of seal structures will be recorded and marked with 150m exclusion/setback distances from any existing routes. Few, if any seals may inhabit the area on our proposed survey as based on bathymetry; it appears that water depths in all locations of the survey will be shallower than 3m.

The area of sea ice beyond the three meter depth contour of Smith Bay may support a viable population of breeding ringed seals. Ringed Seal Habitat will be determined by using the bathymetry map, drill grids and ground penetrating radar (GPR) to interpret that contour. If in fact, drilled ice surveying reveals areas of the program that lie in waters greater than 3m, and if that area will be acquired, then the technique below will be incorporated into our program. All waters over 3 meters ice checked will be surveyed by a dog team as was used on our Harrison Bay program.

Techniques used on our Harrison Bay program 2006:

1. Areas north of the three meter depth contour in Smith Bay will be surveyed for the subnivean seal structures using two experienced dogs running together. The dogs will run ahead of a snow machine manned by a handler, following the stake- marked lines of the seismic prospect, which will be oriented in a N-S (true) direction, and spaced approximately 0.25 miles apart. Each survey line outside the three meter contour will be run once.
2. All structures located by the dogs will be probed with a steel rod to determine their size and whether the breathing hole is open (lair is active) or frozen (lair is abandoned).
3. The lairs will be then categorized according to their size, structure, and odor as birth lairs, resting lairs, resting lairs of rutting males, breathing holes or breathing holes of rutting males.

XII. PLAN OF COOPERATION

A Statement that applicant has notified and provided the affected subsistence community with a draft plan of cooperation; *CGGVeritas will be working with village of Nuiqsut and the Kuukpik Subsistence Oversight Panel to develop a proposed plan for circulation prior to our community meetings. CGGVeritas will also be working with the Alaska Eskimo Whaling Commission, the North Slope Borough Wildlife Department and Planning Department during this process. The Inupiat Community of the Arctic Slope (ICAS) and the Native Village of Barrow(NVB) will receive a visit to address each board of our activities.*

A Schedule for meeting with the affected subsistence communities to discuss proposed activities and to resolve potential conflicts regarding any aspects of either the operation or the plan of cooperation; *CGGVeritas will conduct community meetings in Nuiqsut, Barrow during the month of November and December to hear comments from the community.*

A description of what measures the applicant has taken and/or will take to ensure that proposed activities will not interfere with subsistence whaling or sealing; *CGGVeritas will be using subsistence representatives to help with monitoring prior to operations and during our operations as subsistence observers.*

What plans the applicant has to continue to meet with affected communities, both prior to and while conducting activity, to resolve conflicts and to notify the communities of any changes in the operation; *Subsistence representative/Observers on the crew will be responsible for communicating directly with village co-ops and the Kuukpik Corporation.*

XIII. MONITORING AND REPORTING PLAN

The suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species, the level of taking or impacts on populations of marine mammals that are expected to be present while conducting activities and suggested means of minimizing burdens by coordinating such reporting requirements with other schemes already applicable to persons conducting such activity. Monitoring plans should include a description of the survey techniques that would be used to determine the movement and activity of marine mammals near the activity site(s) including migration and other habitat uses, such as feeding...

The seismic contractor will employ subsistence representation/observers on the crew as well as employ an experienced dog handler for operations beyond the 3 m bathymetry contour for ringed seal habitat identification in order to implement the proposed mitigation methods that require real-time surveying and to satisfy the anticipated monitoring requirements of the Incidental Harassment Authorization. Marine Mammal sightings of Pinnipeds or Polar Bears will be recorded and reported to the appropriate agencies.

Reporting

A report will be submitted to permit holders within 90 days at the end of the program closure.

XIV. COORDINATING RESEARCH TO REDUCE AND EVALUATE INCIDENTAL TAKE

Suggested means of learning of, encouraging, and coordinating research opportunities, plans, and activities relating to reducing such incidental taking and evaluating its effects.

CGGVeritas will share/coordinate with other parties that may have interest in the area and/or be conducting marine mammal studies in the same region during the proposed seismic survey.

XV. LITERATURE RESOURCES

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Bengtson, J.L., P.L. Boveng, L.M. Hiruki-Raring, K.L. Laidre, C. Pungowiyi and M.A. Simpkins. 2000. Abundance and distribution of ringed seals (*Phoca hispida*) in the coastal Chukchi Sea. p. 149-160 In A.L. Lopez and D. P. DeMaster. Marine Mammal Protection Act and Endangered Species Act Implementation Program 1999. AFSC Processed Rep. 2000-11, Alaska Fish. Sci. Cent., Seattle, WA.

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Miller, G.W., R.E. Elliott and W.J. Richardson. 1998. Whales. p. 5-1 to 5-109 In: W.J. Richardson (ed.), *Marine mammal and acoustical monitoring of Western Geophysical's open-water seismic program in the*

Alaskan Beaufort Sea, 1998. LGL Rep. TA2230-3. Rep. from LGL Ltd., King City, Ont., and Greeneridge Sciences Inc., Santa Barbara, CA, for Western Geophysical, Houston, TX, and U.S. Nat. Mar. Fish. Serv., Anchorage, AK, and Silver Spring, MD. 390 p.

Moulton, V.D., R.E. Elliot, and M.T. Williams. 2001. Fixed-wing aerial surveys of seals near BP's Northstar and Liberty sites, 2001. Pages 4-1 to 4-31. W.R. Richardson and M.T. Williams, eds. Monitoring of ringed seals, sounds, and vibrations during construction of BP's Northstar oil development, Alaskan Beaufort Sea, winter and spring 2000-2001: 90-day report. Rep. from LGL., King City, Ont., and Greeneridge Sciences Inc., Santa Barbara, CA, for BP Exploration (Alaska) Inc., Anchorage, AK, and National Marine Fisheries Service, Anchorage, AK, and Silver Springs, MD.

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Smith, Thomas G. 2006, "Surveys in the fast-ice habitat of the ringed seal, *Phoca hispida*, in Harrison Bay Alaska, during April-May 2006", Eco Marine Corporation.

Smith, Thomas G. 2007, "Surveys in the fast-ice habitat of the ringed seal, *Phoca hispida*, off the Colville River Delta, Beaufort Sea Alaska, during March-April 2007", Eco Marine Corporation.

APPENDIX 1 – MAP OF PROPOSED OFFSHORE ON ICE SEISMIC PROGRAM