

**CANADA-NEWFOUNDLAND and LABRADOR OFFSHORE
PETROLEUM BOARD
CEAA SCREENING REPORT**

Part A: General Information

Screening Date	<u>June 10, 2010</u>
EA Title	Hebron 2010 Geohazard Survey Environmental Assessment
Proponent	ExxonMobil Canada Properties Suite 701, Atlantic Place 215 Water Street St. John's NL A1C 6C9
Contact	Ms. Kim Coady Environmental Lead Consultant to ExxonMobil Canada Properties
C-NLOPB File No.	7705 E996
CEAR No.	09-01-51747
Referral Date	November 24, 2009
EA Start Date	November 27, 2009
Location	Jeanne d'Arc Basin Hebron Significant Discovery Licences (SDLs) 1006, 1007, 1009, 1010, and SDL 1042

Part B: Project Information

In November 2009 ExxonMobil Canada Properties (EMCP), as Operator on behalf of the Hebron Project Proponents: EMCP, Chevron Canada Limited, Petro-Canada Hebron Partnership, Statoil Canada Ltd, and Nalcor Energy – Oil and Gas Inc. submitted a project description “*Hebron Field 2010 Geohazard Survey Program*” (EMCP 2009) to the Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB), in support of its application to conduct a geohazard survey program on significant discovery licences in the Jeanne d’Arc Basin area. The “*Hebron 2010 Geohazard Survey Environmental Assessment*” (Stantec 2010a) (herein referred to as the EA Report) submitted on March 17, 2010, provided an environmental assessment for a 7 to 12 day program within a four month period. On May 11, 2010, the C-NLOPB requested additional information from EMCP in order to satisfy the requirements of the *Canadian Environmental Assessment Act* (CEAA) and to complete the Screening Report. EMCP provided on May 20, 2010 the “*Hebron 2010 Geohazard survey Environmental Assessment Addendum*” (Stantec 2010b) as a response to this request. This report included the assessment of an

extension beyond the Hebron SDLs into the adjacent SDL 1042 by approximately 1.5 km to accommodate the survey vessels' turning radius.

In completing this Screening Report, information from the 2010 EA Report and EMCP's response to EA review comments (the Addendum), is summarized and included in the following sections.

1. Description of Project

EMCP is proposing to acquire geophysical data to determine the seabed and shallow sub-seabed conditions and assess the potential geohazards for: the planned Hebron Platform installation and subsequent drilling operations at Hebron; the installation of the associated flow line to the OLS; and potential future drilling activities at Pool 3.

The geohazard survey program includes the acquisition of data using single-beam echosounder, dual frequency (approximately 100/500kHz) side-scan sonar, chirp/pinger sub-bottom profiler, Huntec boomer/spark (or equivalent) sub-bottom profiler, magnetometer and 2D high-resolution multi-channel seismic. Environmental baseline survey requirements for these surveys include seabed Day (or equivalent) grab samples and drop camera/video equipment. Basic geological applications require an approximately 3m gravity core (optional) and large volume grab sampler (IKU or equivalent).

The data for the gravity base structure (GBS) location will be collected over an area of 1 km by 1 km on the planned centre point of the Hebron Platform (46°32.75'N; 48°29.94'W).. The program will include acquisition of large volume grab samples for physical properties and grain size.

The approximately 2 km route between the Hebron GBS location and the proposed location of the offshore loading system (OLS) will be surveyed. An additional 500 m beyond the proposed OLS location will be surveyed as a potential umbilical lay-down area..

Data over approximately 3 km x 4 km will be acquired at the Pool 3 area, east-northeast of the Hebron Platform site in SDL 1009.

The geophysical surveys will be conducted within the proposed 150 km² Project Area and includes SDLs Hebron SDL 1006, Hebron SDL 1007, Ben Nevis SDL 1009, and West Ben Nevis SDL 1010 and adjacent SDL 1042 to accommodate the vessel turning. Site survey activities will encompass an area approximately 18 km² within this area.

The temporal boundaries for the project are between May to August 2010. The duration of the surveys will be a 7 to 12 day period plus an allowance of several days for potential weather or technical delays.

2. Description of Environment

2.1 Physical Environment

A detailed description of the physical environment can be found in the "*Hebron 2010*

Geohazard Survey Program Environmental Assessment” (Stantec 2010a). Water depths range from approximately 88 to 102 m. The Grand Banks experiences predominately southwest to west wind flow throughout the year. West to northwest winds that are prevalent during the winter months begin to shift counter-clockwise during March and April, resulting in a predominant southwest wind by the summer months. As autumn approaches, the tropical-to-polar temperature gradient strengthens and the winds shift slightly, becoming predominately westerly again by late fall and into winter. The atmosphere temperature is coldest in February and warmest in August. Similarly, the sea surface temperature is warmest in August and coldest in February. Precipitation in the Jeanne d’Arc Basin occurs approximately 25 percent of the time, with the lowest frequency occurring in summer. The highest frequency of precipitation occurs in winter, primarily as snow. Average maximum significant wave heights range from near 6.2 m in July to 13.7 m in February.

The Project Area is at the extreme southern limit of the regional ice pack; however, it does lie just to the west of the path of the ice tongue that is formed by the loose pack ice being swept around the Grand Banks by the offshore branch of the Labrador Current. The number of icebergs reaching the Grand Banks each year varied from a low of zero in 1966 and 2006 to a high of 2,202 in 1984; with the average over the last 20 years between 725 and 752 icebergs. Of these, only a small proportion will pass through the Project Area. Over the last 10 years, the average annual number of icebergs sighted in the 1° grid containing Hebron has been 41. The largest number of icebergs of the previous seven years occurred in 2003, with 261 icebergs tracked.

2.2 Biological Environment

2.2.1 Fish and Fish Habitat

A detailed description of the plankton communities for the Hebron SDL area and Jeanne d’Arc Basin area can be found in the EA Report (Stantec 2010a). Deep-water corals are found primarily below the 200m depth contour along the edge of the Continental Slope, in canyons or in channels between banks. Deep-sea corals are recognized as an important component of deep-sea ecosystems providing habitat for a variety of fish species, including commercially-important species (Gilkinson and Edinger 2009).

Fish species most likely to occur within the Project Area are those historically widespread over the Grand Banks. These species include yellowtail flounder (*Limanda ferruginea*), American plaice (*Hippoglossoides plattesoides*), Atlantic cod (*Gadus morhua*) and thorny skate (*Amblyraja radiata*). In more recent years, these species have been concentrated on the southern part of the Grand Banks. Monkfish (*Lophius americanus*), white hake (*Urophycis tenuis*), Atlantic halibut (*Hippoglossus hippoglossus*), haddock (*Melanogrammus aeglefinus*) and pollock (*Pollachius virens*) are mostly found in the warm waters of the Southwest Slope, whereas roundnose (*Coryphaenoides rupestris*) and roughhead (*Macrourus berglax*) grenadiers, Greenland halibut (*Reinhardtius hippoglossoides*) and redfish (*Sebastes spp.*) are commonly found in deeper water on the slope of the Grand Banks. Common epibenthic species in deeper areas include witch flounder (*Glyptocephalus cynoglossus*) and redfish. Pelagic, schooling species common to the Project Area are capelin (*Mallotus villosus*), Arctic cod (*Boreogadus saida*) and sand lance (*Ammodytes sp.*).

Several species of skate (up to ten) from the family Rajidae may occur on the Grand Banks, with the most abundant being the thorny skate. Thorny skate occur at depths ranging from 20 to greater than 150 m and at temperatures ranging from -1.4°C to 6.0°C. It is estimated that approximately 80 percent of the biomass reside along the southwest slope and edges of the Grand Banks. Skate rarely move more than 100 km and is considered a sedentary species. However, there are indications of seasonal migration from the plateau of the Grand Banks in winter to the edge and slope, returning in early summer. Thorny skate appear to spawn in the fall and winter. Egg cases are released in the fall and winter and hatching occurs approximately six months later. Young skates emerge from the egg case as free-swimming fish. Young of the year skate are distributed around the edge of the Grand Banks, especially to the southwest of the Banks.

Yellowtail flounder are generally concentrated near the Southeast Shoal (southern Grand Bank) where the substrate consists primarily of sand (Unit Area 3Nc, primarily), but there are occurrences on the slope region of Unit Areas 3Nd and 3Nf. Historically, their distribution has included the northern portion of the Grand Banks and, therefore, may occur within the Project Area. The species is considered sedentary and does not undergo seasonal or spawning migrations. The Southeast Shoal of the Grand Banks is considered a nursery area for yellowtail flounder. The newly settled juveniles prefer sand or mud-sand substrate. Yellowtail flounder spawn primarily on the central and southern portion of the Grand Banks, likely between April and June. Spawning yellowtail have been captured near the Project Area in May and June. Spawning typically occurs at depths less than 100 m and at water temperatures exceeding 2°C. Eggs, larvae and early juvenile stages are pelagic.

The Greenland halibut (turbot) can be found from the Gulf of Maine to Greenland in waters with temperatures ranging between -0.5°C to 6.0°C, but prefer temperatures from 0.0°C to 4.5°C. They are concentrated mainly along the northeast edge of the Grand Banks and on the northeast Newfoundland Shelf, but occur infrequently along the southeast and southwest Grand Banks slopes and into the Laurentian Channel. Large individuals have been reported at depths in excess of 1,600 m, but most Greenland halibut are caught at depths exceeding 450 m. Greenland halibut are relatively abundant within the Project Area during the fall, but are found more toward the edge of the Grand Banks in the spring. The most recent measure of the population of Greenland halibut on, and in the vicinity of the Grand Banks, indicates the exploitable biomass is currently at the lowest recorded level. Fertilized eggs are benthic but the hatched juveniles move upwards in the water column and remain at approximately 30 m below surface until they grow to approximately 70 mm in length. They move downwards in the water column as they grow bigger.

Witch flounder prefer the deeper waters off the edge of the Grand Bank, but also occur on the southwestern Grand Bank. They occur at low densities within the Project Area during the spring and fall. They are not known to undergo extensive migrations, so are likely in the area year round. The stock has recently been assessed at 5 percent of the average size of the early 1980s. Witch flounder spawn on the Grand Bank between March and June. Spawning has been reported near the Project Area in June. Eggs are pelagic and hatch in seven to eight days at 8°C.

Witch flounder larvae may be pelagic for up to a year, before settling to the seafloor. The primary prey for witch flounder are decapod crustaceans and polychaetes.

Lumpfish (*Cyclopterus lumpus*) are congregated on the St. Pierre Bank in the spring and on the northwest Grand Banks in the fall, suggesting a north-south migration. They generally occur in low abundance throughout the northern and southern portions of the Grand Banks. Lumpfish have not been observed near the Project Area during DFO spring surveys, but are present in the fall. Recently, lumpfish populations are showing an increasing trend.

There are two species of redfish that occur in the Project Area, deepwater (*Sebastes mentella*) and Acadian (*Sebastes fasciatus*). They are most abundant at depths between 100 to 700 m, along the edge and upper slope of the Continental Shelf, primarily on the outer edge of the northeast Newfoundland Shelf, the Flemish Cap, and along the Laurentian Channel slope. Redfish occurrence within the Project Area is patchy and variable, but more likely to occur in the spring than fall. Redfish are slow-growing and long-lived. Spawning on the northeastern edge of Grand Banks occurs in June at depths greater than 200 m. Live larvae, as opposed to gametes, are released from April to July over the Grand Banks. Redfish larvae have been abundant during pelagic surveys on the northern Grand Banks in August and September.

The distribution range of sand lance extends from Cape Hatteras to West Greenland, but they are most abundant on the plateau of the Grand Banks. This fish is typically found in water less than 100 m deep where substrate is predominantly comprised of sand and light gravel. Sand lance mature at two years of age and spawning occurs in winter, typically on sandy substrate in shallow water. Sand lance larvae were abundant during pelagic surveys on the northern Grand Banks in August and September. The fertilized eggs adhere to the substrate and remain there during embryonic development. Hatched larvae rise to the surface waters where they remain for a few weeks before descending to the bottom. Sand lance are semi-demersal and move out of the substrate and up into the water column to feed, often at night.

In the Newfoundland region, there are four stocks of capelin. The 3KL capelin stock is centered on the northern Grand Banks. Capelin may occur within the Project Area during spring or fall (Lilly and Sampson), but migrate to the coastal beaches of Newfoundland to spawn in June and July. After hatching, currents transport the larvae to nursery areas. The 3NO stock tends to spawn offshore usually in June and July (Carscadden *et. al.* 1989, in Carscadden *et. al.* 2001). Capelin feed on plankton, especially copepods when they are smaller and euphausiids once they mature (Carscadden *et. al.* 2001). Capelin is considered a keystone species of the Grand Banks food web.

Large pelagic fish that may occur in the Project Area include swordfish and various tuna species. No tuna species are known to spawn within the area.

2.2.2 Marine Mammals and Sea Turtles

The EA Report listed 19 species of marine mammals that are known or expected to occur in the Project Area. Most marine mammals are seasonal visitors of the Project Area and come to the Grand Banks to feed usually during the spring or summer. The Southwest Shoal and along the edge of the Shelf are areas where marine mammal prey congregate. Baleen whales that may be found in the Project Area include: humpback (*Megaptera novaeangliae*), sei (*Balaenoptera*

borealis), and minke (*Balaenoptera acutorostrata*). Toothed whales include: sperm (*Physeter macrocephalus*), Northern bottlenose (*Hyperoodon ampullatus*); long-finned pilot (*Globicephala melas*); Atlantic white-sided dolphin (*Lagenorhynchus acutus*), Risso's dolphin (*Grampus griseus*); short-beaked common dolphin (*Delphinus delphis*); striped dolphin (*Stenella coeruleoalba*), common bottlenose (*Tursiops truncatus*); and white-beaked dolphin (*Lagenorhynchus albirostris*). Seal species likely in the area are the harp (*Phoca groenlandica*), hooded (*Cystophora cristata*); grey (*Halichoerus grypus*), and harbour (*Phoca vitulina*). There are no known special feeding areas or sensitive areas for marine mammals in the Project Area. The EA report presents a summary of whale sighting data from 1947 to 2007 for the area. Humpback whales accounted for the most sightings, followed by pilot, fin, and minke, respectively.

There are three species of sea turtles that could potentially occur in the Project Area. These include the Leatherback turtle (*Dermochelys coriacea*), which is listed as endangered under SARA; the loggerhead turtle (*Caretta caretta*), and the Kemp's Ridley turtle (*Lepidochelys kempii*). Both leatherback and loggerhead sea turtles are seen with some regularity, although loggerheads to a lesser extent, off Newfoundland in summer and fall. Less is known about the distribution of Kemp's Ridley sea turtles in eastern Canada, but they are considered rare.

2.2.3 Marine Birds

The Grand Banks Shelf and Slope are rich in abundance and diversity of seabirds throughout the year. Over 27 marine bird species are known to occur in the area. These include species of *Alcidae* (Dovekie, Murres – Common (*Uria aalge*) and Thick-billed (*Uria lomvia*)), and Atlantic Puffin (*Fratercula arctica*); *Laridae* (Skuas – Great (*Stercorarius skua*) and South polar (*Stercorarius maccormichi*); Jaegers – Polmarine (*Stercorarius pomarinus*), Parasitic (*Stercorarius parasiticus*), and Long-tailed (*Stercorarius longicaudus*); Gulls – Herring (*Larus argentatus*), Iceland (*Larus glaucoides*), Lesser Black-backed (*Larus fuscus*), Glaucous (*Larus hyperboreus*), Great Black-backed (*Larus marinus*), and Ivory; Black-legged Kittiwake and Arctic Tern (*Sterna paradisaea*); *Sulidae* (Northern Gannet (*Morus bassanus*)), *Hydrobatidae* Wilson (*Oceanites oceanicus*) and Leach's (*Oceanodroma leucorhoa*) Storm Petrels; *Phalaropodinae* (Phalarope – Red (*Phalaropus fulicarius*) and Red-necked (*Phalaropus lobatus*)), and *Procellariidae* (Northern Fulmar (*Fulmaris glacialis*) and Greater (*Puffinus gravis*), Sooty (*Puffinus gyiseus*) and Manx (*Puffinus puffinus*) Shearwaters).

The abundance and distribution of marine birds within the Project Area varies considerably by season. For instance, the Northern Fulmar is common throughout the year, whereas the Greater Shearwater and Sooty Shearwater are common from June to October, and absent from January to March. Leach's Storm-Petrels are common from May to October. The Northern Gannet may occur from May to October. Red Phalarope and Red-necked Phalarope and Skuas, may occur from May to September/October, but in low numbers. The gull species may occur during the winter months. Auks such as Dovekies and Thick-billed Murre are most numerous in Newfoundland waters during the winter and migration periods. Common Murre and Atlantic Puffin are abundant breeders in Newfoundland but winter mostly south of the Project Area.

Most of the information available up to 2000 was collected by the Canadian Wildlife Service (CWS) through PIROP (Programme intégré de recherches sur les oiseaux pélagiques). The EA

Report provides a summary of the data from bird observations undertaken from offshore installations and during seismic programs.

2.2.4 Commercial Fisheries

The Project Area is within North Atlantic Fisheries Organization (NAFO) Unit Area 3Lt. The domestic harvest within the Project Area and adjacent NAFO subareas (3Li, 3Lr and 3Lh) consist primarily of northern shrimp (*Pandalus borealis*) and snow crab (*Chionoecetes opilio*) (>99 percent). The snow crab fishery takes place between spring and summer, with May having the highest landings. Within the Project Area (3Lt), there are no recorded northern shrimp landings. However, northern shrimp accounts for approximately 44 percent of the total harvest from the adjacent NAFO areas (3Li, 3Lr and 3Lh). Landings occur year round, peaking in July before declining to a low in September, followed by a second peak in December. Crab is harvested with fixed gear – crab pots, whereas shrimp are harvested using mobile shrimp trawls.

2.2.5 Species at Risk

There are a number of Species at Risk, as defined under Schedule 1 of the *Species at Risk Act* (SARA), that are likely to be in the Project Area. The following table identifies the species likely to be present and their SARA and Committee on the Status of Endangered Wildlife in Canada (COSEWIC) listing.

Species	SARA Status	COSEWIC Status (Date of most recent status report)
Blue whale (<i>Balaenoptera musculus</i>)	Schedule 1 - Endangered	Endangered (May 2002)
Leatherback sea turtle (<i>Dermochelys coriacea</i>)	Schedule 1 - Endangered	Endangered (May 2001)
Ivory Gull (<i>Pagophila eburnea</i>)	Schedule 1 – Endangered	Endangered (April 2006)
Northern wolffish (<i>Anarhichas denticulatus</i>)	Schedule 1 – Threatened	Threatened (May 2001)
Spotted wolffish (<i>Anarhichas minor</i>)	Schedule 1 - Threatened	Threatened (May 2001)
Atlantic (Striped) wolffish (<i>Anarhichas lupus</i>)	Schedule 1 – Special Concern	Special Concern (November 2000)
Fin whale (<i>Balaenoptera physalus</i>)	Schedule 1 – Special Concern	Special Concern (May 2005)
Harbour porpoise (<i>Phocoena phocoena</i>)	Schedule 2 - Threatened	Special Concern (April 2006)
Sowerby's beaked whale (<i>Mesoplodon bidens</i>)	Schedule 3 – Special Concern	Special Concern (November 2006)

Species	SARA Status	COSEWIC Status (Date of most recent status report)
Atlantic Cod (<i>Gadus morhua</i>) (NL Population)		Endangered (April 2010)
Porbeagle shark (<i>Lamna nasus</i>)		Endangered (May 2004)
White shark (<i>Carcharodon carcharias</i>)		Endangered (April 2006)
Roundnose Grenadier (<i>Coryphaenoides rupestris</i>)		Endangered (November 2008)
American Plaice (<i>Hippoglossoides plattesoides</i>)(NL Population)		Threatened (April 2009)
Shortfin Mako shark (<i>Isurus oxyrinchus</i>)		Threatened (April 2006)
Cusk (<i>Brosme brosme</i>)		Threatened (May 2003)
Blue shark (<i>Prionace glauca</i>)		Special Concern (April 2006)
American Eel (<i>Anguilla rostrata</i>)		Special Concern (April 2006)
Roughhead Grenadier (<i>Macrourus berglax</i>)		Special Concern (April 2007)
Killer Whale (<i>Orcinus orca</i>)		Special Concern (November 2008)

The blue whale is currently listed as endangered on Schedule 1 of SARA. A final Recovery Strategy was recently published for the Northwest Atlantic population of blue whales (Beauchamp et al. 2009). The Recovery Strategy targets the identification of critical habitat for the blue whale by 2014. There was only one sighting of a blue whale reported in the DFO cetacean sightings database within the borders of the Project Area and there was a single possible blue whale sighting during seismic monitoring programs in the Jeanne d'Arc Basin. Blue whales are regular occupants of the Gulf of St. Lawrence, where at least 308 individuals have been uniquely identified. In general, the available monitoring results suggest that baleen whales are typically less abundant on the Grand Banks in late fall vs. summer, and it is possible that blue whales occur in the Project Area but at low densities.

Population estimates of Leatherback turtles are between 26,000 and 43,000 species worldwide. Leatherbacks are often observed off Nova Scotia and Newfoundland from June to October, with peak occurrence in August and September. They migrate into Canadian waters to feed, particularly in productive shelf and slope areas, where jellyfish and other soft-bodied invertebrates on which leatherbacks feed is concentrated. The leatherback sea turtle's

distribution is closely related to the distribution of jellyfish (*Cyanea* spp. and *Aurelia* spp.), which is the leatherback's primary food source. Leatherbacks were sighted in the Jeanne d'Arc Basin in mid-August 2006 near the White Rose licence area. Three leatherbacks were sighted during summer and fall monitoring programs in the Jeanne d'Arc Basin in June 2008. Leatherback sea turtles are expected to occur in low densities within the Project Area during summer and fall, particularly from July to September. A Recovery Strategy for leatherback sea turtles is available. The Recovery Strategy specifies measures that can be implemented to promote the recovery goal of achieving the long-term viability of the leatherback turtle populations frequenting Atlantic Canadian waters.

The Ivory Gull is a rare species that is associated with polar pack ice at all times of the year. It may appear in low numbers in the Project Area although there have been no sightings in or near the Project Area during seismic monitoring programs. Ivory Gulls may appear in low numbers within the Project Area when pack ice reaches the northern Grand Banks in late winter (February to April).

The likelihood of wolffish occurring in the Project Area is unknown, but assumed to be likely. Northern wolffish spawn in September and the fish remain near their eggs to guard them. They are known to be located at depths ranging from 150 to 600 m, but have been found in the shallower areas. Spotted wolffish occur at depths greater than 450 m and spawn during late summer and early autumn. Atlantic wolffish can be found at depths up to 350 m, but is typically found further south than the northern or striped species. A decline in abundance of all three wolffish species has occurred throughout Newfoundland waters. However, the decline has been greater in the more northern areas (Divisions 2J, 3K and northern 3L) than in the southern areas (southern 3L, 3N, 3O) for all three species. Distribution maps based on spring and fall research vessel surveys between 1992 and 2000 indicate that spotted and striped wolffish occur in the general region of the Project Area, more so during the fall. A Recovery Strategy for northern and spotted wolffishes and a Management Plan for Atlantic wolffish have been developed to increase the population levels and distribution of the northern, spotted and Atlantic wolffish in eastern Canada.

The fin whale is one of the most frequently observed cetacean species in Continental Shelf waters of the Northwest Atlantic, from the mid-United States to eastern Canada. Of the identified baleen whales, fin whales were the second most commonly sighted species, after humpback whales, in the Jeanne d'Arc Basin during seismic monitoring programs from 2005 to 2008. There was at least one sighting each year from May to October. There have also been several fin whale sightings within the Project Area or west of the Jeanne d'Arc Basin in 2005, and six other sightings in 2008. According to the DFO cetacean sightings database, the fin whale was the second most frequently sighted species in the Project Area; with 80 sightings of 162 individuals.

2.2.6 Special Areas

The Project Area is within an area currently being considered as part of an Integrated Management Plan for the Placentia Bay Grand Banks Large Ocean Management Area (PBGB LOMA) and falls within Canada's Newfoundland-Labrador Shelves Marine Ecoregion. This is relevant as the biogeographic classification system is used for: i) assessing and reporting on

ecosystem status and trends; and ii) spatial planning for the conservation of ecosystem properties and management of human activities. As part of this plan, DFO has identified Ecologically and Biologically Significant Areas (EBSAs) that may require special management measures. None of the EBSAs overlap with the Project Area. There are no Marine Protected Areas (MPAs) within or immediately adjacent to the Project Area. The Northeast Shelf and Slope is the EBSA nearest the Project Area and is on the northeastern Grand Bank starting at the Nose of the Bank, from 48°W to 50°W, and from the edge of the shelf to the 1,000 m depth contour. The Project Area is on the shelf, in approximately 100 m of water and approximately 50 nm from the 200 m depth contour.

The NAFO Ecosystem Working Group has proposed a number of candidate Vulnerable Marine Ecosystems (VMEs) that include areas thought to support vulnerable species, communities or habitats, none of which are included in the Project Area.

2.3 Vessel Traffic and Research Surveys

Vessel traffic with respect to fishing vessels is discussed in terms of amount of commercial fishing activity. Information regarding DFO vessel research surveys is provided in the EA Report. For the 2010 survey season, DFO research surveys in 3L overlap with parts of the Project Area. Spring surveys are typically scheduled from April to July with a capelin survey in May 2010. EMCP has indicated that they will consult with DFO regarding the exact timing and location of their research survey activities to avoid any potential conflict with research surveys that may be operating in the area.

Part C: Environmental Assessment Process

3. Procedures

On November 24, 2009, EMCP submitted a project description “*Hebron Field 2010 Geohazard Survey Program*” (ExxonMobil 2009) to the C-NLOPB, in support of its application to conduct a geohazard survey. Pursuant to Section 12.2(2) of the *Canadian Environmental Assessment Act* (CEA Act), and the *Regulations Respecting the Coordination by Federal Authorities of Environmental Assessment Procedures and Requirements*, the C-NLOPB assumed the role of the Federal Environmental Assessment Coordinator (FEAC) for the screening. Input was sought from federal and provincial regulatory agencies and interested stakeholders respecting the scope of project and environmental assessment review.

A Federal Coordination Regulations (FCR) notification was sent on November 27, 2009 regarding EMCP’s proposed program. DFO and EC responded that they would participate as a Federal Authority (FA) in the EA review.

On December 22, 2009, the C-NLOPB notified EMCP that a screening level of assessment was required and the proponent was provided with a Scoping Document.

The EA Report (Stantec 2010a) was submitted by EMCP on March 18, 2010. The C-NLOPB, as RA, forwarded the EA Report on March 18, 2010 to DFO, Environmental Canada (EC), Department of National Defence (DND), and the provincial Departments of Fisheries and Aquaculture, Natural Resources, and Environment and Conservation. The Fish, Food, and

Allied Workers Union (FFAW) and One Ocean were provided a copy of the EA Report to review. Comments received up to and including May 7, 2010 were considered by the RAs in completing this screening report. Comments were received from DFO, EC, DND, NLDFA and the FFAW.

It is the obligation of the C-NLOPB to consider which physical works and undertakings in relation to the proposed project fall within the scope of the Project. First, there are no physical works that should be included in the scope of the Project. Second, if the Project were to proceed, as set out in the application and supporting EA report, it would constitute a single project for the purposes of section 15(2) of CEAA. For the purposes of subsection 15(3) of CEAA, the C-NLOPB's scoping exercise is complete because an assessment was conducted in respect of every construction, operation, modification, decommissioning, abandonment, or other undertaking proposed by EMCP that is likely to be carried out in relation to their proposed Project.

3.1 Scope of Project

EMCP is proposing a geohazard survey program within SDLs Hebron SDL 1006, Hebron SDL 1007, Ben Nevis SDL 1009, West Ben Nevis SDL 110, and approximately 1.5 km of adjacent SDL 1042 for the survey vessel's turning radius. The proposed survey area in the Jeanne d'Arc Basin is bounded by the following corner coordinates: 668,444E, 5,158,333N; 695,700E, 5,166,218N; 706,444E, 5,161,544N; 704,712E, 5,157,691N; and 690,968E, 5,155,512N. The Project Area is approximately 150 km² with activities encompassing an area approximately 18 km². The data acquired will be used to determine the seabed and shallow sub-seabed conditions and assess the potential geohazards for the: planned Hebron Platform installation and subsequent drilling operations at Hebron; installation of the associated flow line to the OLS; and potential future drilling activities at Pool 3. The geohazard survey program includes the acquisition of data using single-beam echosounder, multibeam echosounder, dual frequency (approximately 100 / 500 kHz) side-scan sonar, chirp / pingr sub-bottom profiler, Hunttec boomer / sparker (or equivalent) sub-bottom profiler, magnetometer and 2D high-resolution multi-channel seismic. Environmental baseline survey requirements for these surveys include seabed Day (or equivalent) grab samples and drop camera/video equipment. Basic geological applications require an approximately 3 m gravity core (optional) and large volume grab sampler (IKU or equivalent). The temporal scope of the project is from May to August 2010.

The 2D seismic data will be acquired using multi-channel seismic equipment including an airgun array sound source and receiver. High-resolution, multi-channel seismic data will be acquired using a 4 x 40 inch³ or 4x20 inch³ airgun array (80 to 160 inch³ total). It will be collected using an airgun array source with a maximum 10 Bar-metres (244.6 dB) peak-to-peak output and a maximum 2,000 psi operating pressure. The total length of the streamer will be 700 m towed at a depth of 2.5 m. The side-scan sonar is a simultaneous dual frequency (105 kHz and 390 kHz) system with peak-to-peak source levels of 228 kB re 1µPa @ 1m for 105 kHz and 222 dB re 1µPa @ 1m for 290 kHz. The sub-bottom profiling operations will use a Hunttec Deep Tow System (DTS) towed approximately 150 m behind the vessel at approximately 50 m above the seabed. Geophysical surveying operations will require a dual frequency single beam echosounder and a multibeam echo-sounder.

3.2 Boundaries

The boundaries of the Project are defined in the EA Report as follows.

<i>Boundary</i>	Description
<i>Temporal</i>	May to August 2010
<i>Project Area</i>	Defined by SDLs (Hebron SDL 1006, Hebron SDL 1007, Ben Nevis SDL 1009, West Ben Nevis SDL 1010, and SDL 1042).
<i>Affected Area</i>	Varies according to specific vertical and horizontal distributions and sensitivities of each VEC of interest. Defined as the area within which effects (physical or important behavioural ones) have been reported to occur;
<i>Regional Area</i>	The area extending beyond the Project Area boundary including all of the Grand Banks

There may be an area of influence from the sound array. However, depending on the marine species present, this area of influence will vary in size. Hearing thresholds have been determined for a number of species (seals and odontocetes), but the threshold is not known for others (baleen whales). The sound that is actually received by the marine species depends on the energy released from the source and its propagation (and loss) through the water column. Therefore, the hearing ability of the species and background noise will affect the amount of noise from an airgun array detected.

3.3 Scope of Assessment

For the purpose of meeting the requirements of the CEAA, the factors that were considered to be within the scope of the environmental assessment are those set out in subsection 16(1) of the CEAA and those listed in the “*ExxonMobil Canada Properties Hebron Field 2010 Geohazard Survey Program Scoping Document*” (C-NLOPB 2009).

4. Consultation

4.1 Consultation carried out by EMCP

EMCP consulted with DFO, EC, One Ocean, the FFAW, the Canadian Parks and Wilderness Society, and the Natural History Society. All consultations were held to inform the stakeholders about the proposed program and to identify issues or concerns which should be considered in the EA Report. The results of those consultation sessions, and issues identified are documented in the EA Report. It was noted during the review of the EA Report that the largest single allocation in the 3LNO area for yellowtail is to Ocean Choice International (OCI) and they had not consulted. This was done by EMCP and reported in the EA Addendum. It was determined that there would not be any spatial overlap between the OCI fishing activities and the geohazard program.

The C-NLOPB is satisfied that the consultations carried out by EMCP and reported on in the EA Report and Addendum during the preparation of the EA included all elements of the Project. The RA is not aware of any public concerns with respect to the environmental effects of the project, and does not require that further consultations be undertaken for the 2010 field season.

4.2 Consultation with other Federal Authorities and other Government Departments

Comments on the EA Report were received from DFO, EC, DND, Newfoundland and Labrador Department of Fisheries and Aquaculture (NL DFA), and the FFAW.

Comments on the EA report were submitted by DFO on May 6, 2010 and focussed on clarification of information provided in the EA, marine mammal observations and effective consultation. *DFO was satisfied with the response provided by EMCP.*

DND replied on April 22, 2010 and requested that the proponent promulgate actual work locations as per Navigation to Ship notices (NOTSHIPS). *It is the intent of EMCP to provide work locations as part of the NOTSHIPS.*

Environment Canada responded on May 7, 2010 and requested that the proponent collect seabird data. *EMCP confirmed that data would be collected and provided to the CWS.*

NL DFA responded on April 28, 2010 and requested continuing consultations with fish harvesters to ensure minimal impacts to fishing operations by employing appropriate mitigation measures. *EMCP confirmed that a Fisheries Liaison Officer (FLO) would be onboard the survey vessel.*

The FFAW submitted comments on April 29, 2010 concerning the use of a FLO during the program. *EMCP confirmed that a FLO would be onboard the survey vessel.*

Comments were provided to EMCP on May 11, 2010 to be addressed before a Screening Report could be completed. The response to review comments was provided by EMCP on May 20, 2010 in the form of an Addendum and forwarded by the C-NLOPB to reviewers.

5 Environmental Effects Analysis

5.1 Methodology

The C-NLOPB reviewed the environmental effects analysis presented by EMCP in the EA Report. A valued ecosystem component (VEC)-based assessment based on the interaction of project activities on the identified VECs, was used in assessing environmental effects, including cumulative effects and accidental events. The environmental assessment methodology and approach used by the Proponent is acceptable to the C-NLOPB. The following environmental effects analysis uses the information presented by the proponent in the EA Report (Stantec 2010a) and Addendum and takes into consideration mitigation proposed by the Proponent and those required by the C-NLOPB, to assess the potential for residual environmental effects.

The potential adverse environmental effects, including cumulative effects, were assessed with respect to:

- magnitude of impact
- scale of impact (geographic extent);
- duration and frequency;

- reversibility; and
- ecological, socio-cultural and economic context, and

after taking mitigation measures into account,

- significance of residual effect.

The potential effect significance of residual effects, including cumulative effect, for each VEC is rated in this environmental screening report as follows.

0 = No Detectable Adverse Effect

1 = Detectable Effect, Not Significant

2 = Detectable Effect, Significant

3 = Detectable Effect, Unknown

These ratings, along with the likelihood of the effect are considered in determining overall significance of residual effects.

In the EA Report, EMCP presented information regarding the potential effects of geohazard activities on marine fish, fish habitat, marine mammals and sea turtles, marine birds, commercial fisheries, species at risk, and sensitive areas. Information regarding hearing effects in fish, sound detection and behavioural changes in invertebrates, and behavioural and disturbance effects in marine mammals was also presented. Upon review of the information and review of the mitigations proposed by EMCP, the effects assessment is as follows.

5.2 Valued Ecosystem Components/Potential Environmental Effects

5.2.1 Fish and Fish Habitat

1

The EA reports that studies to date on the effects on eggs, larvae and plankton indicate that the damage is minimal and the effects were not different than the experimental controls.

Mathematical modelling by Saetre and Ona 1996, as reported in Stantec 2010a indicate that mortality effects on eggs and larvae are comparable to natural mortality, and can be considered insignificant. Payne et al. (2009) found no evidence of acute mortalities in monkfish larvae exposed to seismic.

In the natural environment, fish show avoidance responses and swim away as the array ramps up or as the survey slowly approaches. The airgun will be ramped-up, thereby allowing fish in the area to leave. Studies referenced in the EA Report indicated that fish mortality did not result from exposure to seismic sound sources. Stress responses (physiological effects) to seismic exposure occur in fish but are temporary. Studies to determine effects on the auditory thresholds of fish have shown that the temporary threshold shift (TTS) can occur in fish exposed to seismic, under certain conditions. However, in the studies referenced by Stantec (2010a) hearing sensitivity recovered within 14 days of exposure. Behavioural responses to seismic have been documented in a number of studies and reported in the EA Report. In general, fish show startle response and change in direction and speed of swimming. In some studies looking at the effects on commercial catch rates, the change in swimming direction accounted for a decrease catch rate. Some studies show that this effect was temporary, whereas other studies report that fish behaviour was altered for a number of days. The temporary nature of these responses varies

depending on the fish species and the sound source.

EMCP will use the lowest sound source in the airgun array that gives the best data. The vessel will follow the ramp up procedures as outlined in the Geophysical, Geological, Environmental and Geotechnical Program Guidelines (C-NLOPB 2008).

It is predicted that effects on the various life stages of marine fish and fish habitat will be of low magnitude, <1 km² to 100 km² geographic extent, a frequency of <11 events/year, <1 month in duration, and reversible. Taking avoidance behaviour into account, any potential effect (behavioural and physical) to marine fish is considered to be low. Therefore, the overall effect on fish and fish habitat is **not significant**.

5.2.2 Commercial Fishing and DFO Vessel Research Surveys

1

Potential interactions with this VEC include potential for a decrease in catch rates, interference with fishing gear and potential impact on DFO research survey trawls.

The sound emission effects from air guns may be related to changes in catch rates resulting from noise-induced behavioural changes, scaring and vertical redistribution, of fish and interference with fishing activities due to direct gear or vessel conflicts. The fishery related to the Project Area is currently restricted to fixed gear snow crab fishing. Between 2006 and 2008, there was one location within the Project Area, and two locations within 10 to 20 km to the west-southwest, that had snow crab catches, so the potential for effects on fish harvesting based on recent fish harvesting practices is limited. However, the potential for effects on fish harvesting will depend on the location of the surveying activities in relation to these fishing areas for any given season. If the survey work is situated away from these fishing areas, the likelihood of any effects on commercial harvesting will be greatly reduced. The EA Report identifies studies that have been conducted to examine and quantify seismic effects from air guns on fish catches. These studies have demonstrated reduced catches during seismic survey as compared with catches before the shooting began. The reduced catches were explained by behavioral changes such as vertical redistribution and fish moving away from areas of seismic activity. Results of a 2009 study indicated that 3D seismic shot over larger areas did not have significant changes in trawl (gillnet) and longline catches, but fish clearly reacted to the seismic survey sounds by changing swimming activity, catch rates rose or fell. Snow crab, being relatively sedentary benthic species, are not likely able to quickly disperse and thus catch rates are not as likely to be affected.

There is potential therefore for interaction between seismic operations (streamers) and fishing gear, especially fixed gear such as gillnets. EMCP have indicated that a number of mitigations, consistent with those outlined in the Geophysical, Geological, Environmental and Geotechnical Program Guidelines (C-NLOPB 2008), will be implemented. These include, avoidance of heavily fished areas, use of a FLO at sea, a single point of contact (SPOC), communication with fishers (notice to mariners); vessels (notice to shipping), communication with DFO regarding research vessels, and a fisheries damage compensation program.

To avoid potential conflict with DFO Research surveys, EMCP will maintain communications with DFO personnel to keep up-to-date on the timing of planned research surveys. EMCP will

request a 1 nautical mile (nm) Closest Point of Approach from all vessels. The vessel will avoid heavily fished areas during transit to the Project Area.

It is predicted that the geohazard program will have a negligible to low effect, with a geographic extent not greater than 100 km², a frequency of <11 events/year, of short duration (< 1 month), and reversible. Considering mitigations, impacts to commercial fishery and research surveys are not likely and **not significant**.

5.2.3 Marine Mammals and Sea Turtles

1

A potential effect of the proposed operation upon marine mammals and sea turtles, which may be present in the area, is that of sound pulses from the survey equipment. The EA Report describes the numbers and the species of cetaceans that have been observed in or which are considered likely to frequent, the Regional Area. The EA Report provides an impact assessment, based on available data on the effects of seismic on marine mammals.

Baleen whales are likely to hear low-frequency sounds (like airgun pulses and pile driving) farther away than can small toothed whales and, at closer distances, these sounds may seem more prominent to baleen than to toothed whales.

Possible types of non-auditory physiological effects or injuries that could theoretically occur in marine mammals exposed to strong underwater sound might include stress, neurological effects, bubble formation, and other types of organ or tissue damage. However, studies examining such effects are limited. If any such effects do occur, they would probably be limited to unusual situations. Those could include cases when animals are exposed at close range for unusually long periods, or when the sound is strongly channeled with less-than-normal propagation loss, or when dispersal of the animals is constrained (e.g. shorelines, shallows). In summary, very little is known about the potential for seismic survey (and geohazard survey) sounds to cause either auditory impairment or other non-auditory physical effects in marine mammals or sea turtles.

Dolphins and porpoises are often seen by observers, occasionally at close distances (*e.g.*, bow-riding). However, some studies show avoidance. Belugas summering in the Beaufort Sea tended to avoid waters out to 10 to 20 km from an operating seismic vessel. In contrast, recent studies (Stantec 2010a) show little evidence of reactions by sperm whales to airgun pulses, contrary to earlier indications.

Visual monitoring from seismic vessels has shown only slight, if any, avoidance of airguns by pinnipeds, and only slight, if any, changes in behaviour. These studies indicate that pinnipeds frequently do not avoid the area within a few hundred metres of an operating airgun array. However, limited telemetry work suggests that avoidance and other behavioural reactions may be stronger than evident to date from visual studies.

The reduction in the effective communication or echolocation distance, known as masking, is unlikely to be a significant issue for marine mammals exposed to the pulsed sounds from seismic and geohazard surveys. In summary, short-term avoidance behaviour is not likely to cause any negative effects on the well being of marine mammals. In general, there seems to be a tendency

for most baleen and toothed whales to show some limited avoidance of seismic vessels operating large airgun systems. Seals appear less likely to avoid seismic vessels operating airgun arrays.

The limited available data indicate that sea turtles will hear airgun sounds. Based on available data, it is likely that sea turtles will exhibit behavioural changes and/or avoidance within an area of unknown size near a seismic vessel. Seismic operations in or near areas where turtles concentrate are likely to have the greatest effect. There are no specific data that demonstrate the consequences to sea turtles if seismic operations do occur in important areas at important times of year. Sea turtle mortality has not been documented to occur as a result of exposure to seismic surveys.

There are a number of mitigations which, when applied, can reduce impacts to marine mammals and sea turtles in the vicinity of a seismic survey (e.g., ramping up of airguns, use of observers, shut-down procedures). EMCP will have three Marine Mammal Observers (MMOs) on board, including a FLO trained as an MMO. The marine monitoring protocols, as outlined in the ESRF Report #156 Recommended Seabird and Marine Mammal Observation Protocols for Atlantic Canada (2004) will be followed. The EA Report lists a number of mitigations that will be implemented during the seismic program, which are consistent with the mitigations recommended in Appendix 2 of “*The Geophysical, Geological, Environmental and Geotechnical Program Guidelines*” (C-NLOPB 2008) including:

- *Ramp-up of the airgun array over a minimum of 20 minutes*
- *Monitoring by a dedicated environmental/MMO during daylight hours that the airgun array is active;*
- *Shutdown of the airgun array when an endangered or threatened marine mammal or sea turtle is sighted within the 500 m safety zone;*
- *Delay of ramp-up if any marine mammal or sea turtle is sighted within the 500 m safety zone; and*
- *Using ramp-up procedures outside daylight hours, or in periods of low visibility, when visual observations may not be practicable.*

It is uncertain how many toothed and baleen whales may occur in the Project Area at various times of the year. It is uncertain how many seals may occur in the Project Area during the period when geohazard activities are most likely to occur (summer). The Jeanne d’Arc Basin, including the Project Area, is not a breeding area for sea turtles, it is not known or thought to be an important feeding area, and thus, high concentrations of sea turtles are unlikely. The effects on marine mammals and sea turtles are predicted to be of negligible to low magnitude, up to 100 km² geographic extent, a frequency of less than 11 events/year, <1 month duration, and reversible. With the application of mitigation measures, the likelihood of effects occurring is low and **not significant**.

5.2.4 Marine Birds

1

The EA reports that most species of marine birds that are expected to occur in the Project Area feed at less than 1m from the surface of the ocean. The only group of marine birds that spends considerable time submerged underwater is the Alcidae (Dovekie, Common Murre, Thick-billed Murre, Razorbill, Black Guillemot and Atlantic Puffin). The effects of seismic sound on Alcidae

are unknown. The hearing systems of marine birds are most likely best adapted for hearing in air, but likely have some sensitivity in water. Diving birds within a large but unknown radius of an underwater sound source will probably hear a sound pulse if the birds are underwater at the time the pulse arrives. It is thought that the presence of an on-coming seismic vessel may potentially alert alcids (and other seabirds on the water), thereby flushing animals from the area prior to being exposed to any airgun sounds or occurring in close proximity to operating airguns. The ramping up process will allow birds to move away from the noise source before it reaches maximum volume. Of the Alcidae found in the Project Area, the Dovekie is likely common in the fall, the Common Murre is uncommon from fall to spring, the Thick-billed Murre is likely uncommon from fall to spring, the Black Guillemot is scarce year-round, the Razorbill is scarce from Spring to late fall, and the Atlantic Puffin is likely uncommon from spring to late fall. Storm-petrels may be attracted to vessel lighting and become stranded on the survey vessel. However, EMCP or its contractor will conduct routine checks for stranded birds and implement appropriate procedures for release that will minimize the effects of vessel lighting on birds. EMCP will obtain a bird salvage permit for the release of stranded birds and report such information to the CWS. EMCP will have three MMOs on board, as per the Geophysical, Geological, Environmental and Geotechnical Program Guidelines (C-NLOPB 2008), that will record bird sightings. Seabird observations will be undertaken as per the pelagic seabird monitoring protocol developed by the CWS during the survey.

The effects on marine birds are predicted to be of negligible to low magnitude, up to 100 km² geographic extent, a frequency of less than 11 events/year, <1 month duration, and reversible. With the application of mitigation measures, the likelihood of effects occurring is low and **not significant**.

5.2.5 Species at Risk

1

Blue whales are reported in the EA Report to be rare in the Project Area. There was only one sighting of a blue whale reported in the DFO cetacean sightings database within the borders of the Project Area and a single possible sighting during the seismic monitoring programs in the Jeanne d'Arc Basin. Leatherback sea turtles are expected to occur in low densities within the Project Area during summer and fall. Of the identified baleen whales, fin whales were the second most commonly sighted species, after humpback whales in the Jeanne d'Arc Basin during seismic monitoring programs. The mitigation measures outlined in the Geophysical, Geological, Environmental and Geotechnical Program Guidelines (C-NLOPB 2008) will be followed, especially those relating to the protection of SAR including "During ramp-up and when the airgun array is active, airgun(s) shall be shut down, if a marine mammal or sea turtle, listed as Endangered or Threatened (as per Schedule 1 of SARA), including the North Atlantic right whale, Blue whale and leatherback turtle, is observed within 500m of the airgun array". EMCP will have three MMOs on board the vessel.

With the implementation of these mitigations, and with the rare likelihood of these marine mammals and sea turtles occurring, effects will therefore be **not significant**. As indicated above, effects on marine mammals and sea turtles are likely to be not-significant, therefore effects on SARA listed marine mammals and the Leatherback sea turtles are not likely to be adverse and therefore **not significant**.

The northern and spotted wolffish are unlikely to occur in the Project Area as they are typically found at depths greater than 350 m. Striped wolffish have been known to occur in the general region of the Project Area, however more so during the fall. A Recovery Strategy for northern and spotted wolffish and a Management Plan for Atlantic wolffish have been developed. As indicated above, effects on wolffish are likely to be not significant, therefore effects on SARA listed wolffish listed are not likely to be adverse and therefore **not significant**.

It is unlikely that the Ivory Gull will occur in the Project Area, particularly during the summer when the geohazard survey is proposed. There have been no sightings of this species in or near the Project Area during recent seismic monitoring programs conducted in this area. The foraging behaviour of Ivory Gulls would not likely expose it to underwater sound and it is also not known to be sensitive to stranding on vessels. As indicated above, effects on Ivory Gulls are likely to be not significant; therefore effects on Ivory Gulls are not likely to be adverse and therefore **not significant**.

5.2.6 Water Quality/Discharges

0

Routine discharges, which are likely to occur during operation, are similar to those associated with many typical vessel operations. The vessels proposed for the survey are equipped with on-board environmental protection equipment, and a sewage treatment system for wastewater. The effect of the geohazard program on marine water quality will be negligible and **not significant**.

5.3 Accidents and Malfunctions

Accidental discharge of oil into the marine environment may result from improper operational procedures (e.g., improper draining of streamer reel trunks), loss of streamer fluid due to breakage, or, as a worst case, as a result of total vessel loss. Gel-filled streamers will be used to conduct the survey. EMCP has stated that during streamer maintenance, and/or repair (which takes place on deck), there will be one full spill kit available and a second spill kit on standby. A crew member will be dedicated to monitor for on-deck spill events. The streamers will be inspected upon deployment and recovery and are monitored for loss of ballast/balance constantly.

The vessel is required to carry "Shipboard Oil Pollution Emergency Plan" pursuant to MARPOL 73/78. The Plan contains a description of procedures and checklists which govern operations involving hydrocarbons, adherence to which should prevent unintended operational releases. There will be no fuel transfer at sea.

Effects due to accidental spills associated with the proposed operation therefore are considered, overall, to be detectable if they occur, but neither significant nor likely.

5.4 Cumulative Environmental Effects

There is little potential for environmental effects resulting from the proposed geohazard survey to overlap with other existing programs either temporally (7 to 12 days for the site-specific survey) or spatially (Project Area is approximately 150 km²). Potential cumulative environmental effects external to the Project include marine transportation, commercial fishing, oil and gas exploration including seismic activity and existing oil development projects (Hibernia, White Rose and Terra Nova). During the geohazard survey, it is expected that some

commercial traffic (vessels supplying existing developments) will be passing in the vicinity of the Project Area. As well, commercial fishing vessels may be operating in the vicinity.

Husky Energy, Suncor Energy and Hibernia Management Development Company will be conducting a joint environmental effects monitoring program in 2010, including a commercial fisheries survey in late June/early July and a sediment program, tentative scheduled for early August. The surveys are conducted in the vicinity of the Terra Nova, White Rose and Hibernia South Extension fields (and reference areas) and include commercial fish surveys using a Campellan trawl and scallop dredge and sediment survey using a box corer. Husky Energy will be conducting exploration drilling (including vertical seismic profiling from the drilling rigs) in the Jeanne d'Arc Basin in 2010 (and development drilling at North Amethyst). Suncor Energy will be conducting dive and remotely operated vehicle work near Terra Nova. Statoil Canada will possibly conduct a seismic survey on Exploration License 1101 (south of the Terra Nova field). EMCP is planning to conduct a seismic survey at the Hibernia South Extension field. DFO research surveys in 3L overlap with parts of the Project Area. The preliminary schedule for any year is usually available in early spring, and the spring survey is typically conducted within NAFO Division 3LNO in May to June.

A negligible cumulative environmental effect is expected with noise and traffic external to the Project, given the restricted access of non-Project vessels near the source vessel during the geohazard survey. The incremental amount of vessel traffic as a result of this Project will be negligible compared to existing vessel traffic in the area. Cumulative environmental effects resulting from any of the Project activities will not be additive or cumulative because the Project activities are transitory. Therefore, the cumulative environmental effects of the Project in combination with other projects and activities are rated **not significant**.

5.5 Follow-up Monitoring Required Yes ☐ No ☒

The C-NLOPB does not require follow-up monitoring, as defined in the CEA Act, to be undertaken.

6. Other Considerations

The C-NLOPB is satisfied with the environmental information provided by EMCP regarding the potential adverse environmental effects which may result from the proposed geohazard survey, and satisfied with the operator's proposed monitoring and mitigative measures.

The C-NLOPB is of the view that the environmental effects from the Project in combination with other projects or activities that have been or will be carried out are **not likely** to cause significant adverse cumulative environmental effects.

The C-NLOPB is of the view that if the proposed environmental mitigative measures outlined in the EA Report and Addendum, and those listed below are implemented, the Project is not likely to cause significant adverse environmental effects.

7. Recommended Conditions and/or Mitigations

The C-NLOPB recommends that the following conditions be included in the authorization if the Project is approved.

- *ExxonMobil Canada Properties shall implement, or cause to be implemented, all the policies, practices, recommendations and procedures for the protection of the environment included in or referred to in the Application and in the “Hebron 2010 Geohazard Survey Environmental Assessment” (Stantec March 2010) and “Hebron 2010 Geohazard Survey Environmental Assessment Addendum” (Stantec May 2010).*
- *ExxonMobil Canada Properties or its contractors shall shut down the seismic airgun array if a marine mammal or sea turtle listed as **Endangered or Threatened** (as per Schedule 1 of SARA), is observed within 500 m of the safety zone during ramp-up procedures and when the array is active.*

Part D: Screening Decision

8. Decision/Decision Date

The Canada-Newfoundland Offshore Petroleum Board is of the opinion that, taking into account the implementation of proposed mitigation measures set out in the conditions above and those committed to by EMCP, the Project **is not likely to cause significant adverse environmental effects**. This represents a decision pursuant to Section 20(1)(a) of the CEA Act.

Responsible Officer

Original signed by Elizabeth Young
Elizabeth Young
Environmental Assessment Officer

Date: June 10, 2010

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