

## CANADA-NEWFOUNDLAND and LABRADOR OFFSHORE PETROLEUM BOARD DETERMINATION REPORT

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### **Part A: GENERAL INFORMATION**

<b>Determination Date</b>	<b><u>April 30, 2015</u></b>
<b>EA Title</b>	Environmental Assessment of HMDC's 2D/3D/4D Seismic Projects 2013-Life of Field Newfoundland Offshore Area
<b>Proponent</b>	Hibernia Management and Development Company Ltd. Suite 1000, 100 New Gower Street St. John's, NL A1C 6K3
<b>Contact</b>	Mr. Kent Slaney Environment Advisor
<b>C-NLOPB File No.</b>	22006-020-001
<b>Location</b>	Hibernia Production Field
<b>Referral Date</b>	January 23, 2013
<b>EA Start Date</b>	January 28, 2013
<b>Law List Triggers</b>	Paragraph 138(1) (b) <i>Canada-Newfoundland And Labrador Atlantic Accord Implementation Act and Section 134(1) (a) Canada- Newfoundland and Labrador Atlantic Accord Implementation Newfoundland and Labrador Act (Accord Acts)</i>

### **Part B: PROJECT INFORMATION**

On January 23, 2013, Hibernia Management and Development Company Ltd. (HMDC) submitted the *Project Description 2D/3D/4D Seismic Projects (2013-Remaining Life of Field) Newfoundland Offshore Area* (HMDC January 2013) to the Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB), describing its plans to undertake two dimensional (2-D), three dimensional (3-D) and/or four dimensional (4-D) seismic surveys in the Hibernia Production Field area in one or more years within a 2013 through the remaining life of field timeframe. HMDC will conduct 2-D, 3-D and/or 4-D seismic surveys between May 1 and December 31 of any given year in the 2013 to end of life timeframe. HMDC submitted the *Environmental Assessment of HMDC's 2D/3D/4D Seismic Projects 2013-Remaining Life of Field Newfoundland Offshore Area* (LGL May 2013a) on May 3, 2013. On July 17, 2013, the C-NLOPB

requested additional information from HMDC in order to satisfy the requirements of the Scoping Document (C-NLOPB 2013). On July 18, 2013, HMDC responded to this request for additional information with the *Environmental Assessment of HMDC's 2D/3D/4D Seismic Projects 2013-Life of Field Newfoundland Offshore Area Addendum* (LGL July 2013b). On July 9, 2014 HMDC submitted the *Environmental Assessment of HMDC's 2D/3D/4D Seismic Projects 2013-Life of Field Newfoundland Offshore Area: Proposed Changes to the Project* (LGL July 2014) proposing to expand the original Study Area to the west and south for the years 2015 and beyond to ensure inclusion of all Project activities including the deployment of streamers. This was forwarded to reviewers and comments on the proposed changes were forwarded to HMDC on October 6, 2014, which was addressed in a document submitted to the C-NLOPB on January 6, 2015. HMDC submitted the *Environmental Assessment of HMDC's 2D/3D/4D Seismic Projects 2013-Life of Field Newfoundland Offshore Area (LGL Limited February 2015)*, an administrative consolidation of the above mentioned reports (herein referred to as the EA Report).

The remainder of Part B summarizes the proposed project, the related environmental setting and existing human use of the area, based on the above mentioned information.

## **1. Description of Project**

The program in 2015, as proposed by HMDC, is to conduct a 4-D seismic survey starting as early as 1 May and concluding as late as 31 December. Four-dimensional data acquisition simply means that successive 3-D survey data sets for the same area are interpreted to delineate changes in the reservoir over time.

The four-dimensional seismic survey will use up to 16 towed solid or gel-filled streamers up to a maximum length of 10,050 m and deployed at a depth of approximately seven to 24 meters. Streamer configurations may vary from year to year but will typically be separated by 50 or 75 meters.

In subsequent surveys, 2-D and 3-D seismic surveys may use up to 16 towed streamers with an approximate length of up to 10,050 m and deployed at depths ranging from five to 30 m.

## **2. Description of Environment**

The following sections provide a summary of the environmental factors described in the EA Report. A complete description of the biological and physical environment can be found in this report.

### **2.1 Physical Environment**

A description of meteorological and oceanographic characteristics in the Study Area, including: climatology; wind and wave extreme value analyses; physical oceanography; and sea ice and icebergs are provided in Section 3.0 of the EA Report.

### **2.2 Biological and Socio-economic Environments**

A detailed description of the biological and socio-economic environments may be found in Section 4.0 of the EA Report. Specifically, information on: ecosystem; marine fish and fish habitat; seabirds; marine mammals and sea turtles; marine fisheries including commercial, industry and government research vessel surveys; sensitive and protected areas; and species at risk.

### 2.2.1 Species at Risk

There are 10 Species at Risk, as defined under Schedule 1 of the *Species at Risk Act* (SARA) that are likely to be within the Study Area and possibly in the Project Area. The following table identifies species likely to be present and their SARA listing and Committee on the Status of Endangered Wildlife in Canada (COSEWIC) designation. A brief description of species listed as endangered or threatened on Schedule 1 is included below.

SPECIES	SARA Status	COSEWIC Status
Blue Whale (Atlantic population) ( <i>Balenoptera musculus</i> )	Schedule 1 – Endangered (May 2012)	Endangered (May 2012)
North Atlantic Right Whale ( <i>Eubalaena glacialis</i> )	Schedule 1 – Endangered (2003)	Endangered (May 2003)
Leatherback Sea Turtle (Atlantic population) ( <i>Dermochelys coriacea</i> )	Schedule 1 – Endangered (May 2012)	Endangered (May 2012)
Ivory Gull ( <i>Pagophilia eburnea</i> )	Schedule 1 – Endangered (April 2006)	Endangered (April 2006)
White shark (Atlantic population) ( <i>Carcharodon carcharias</i> )	Schedule 1 – Endangered (April 2006)	Endangered (April 2006)
Northern Wolffish ( <i>Anarhichas denticulatis</i> )	Schedule 1 – Threatened (November 2012)	Threatened (May 2001)
Spotted Wolffish ( <i>Anarhichas minor</i> )	Schedule 1 – Threatened (November 2012)	Threatened (May 2001)
Atlantic Wolffish ( <i>Anarhichas lupus</i> )	Schedule 1 – Special Concern (November 2012)	Special Concern (November 2012)
Fin Whale (Atlantic population) ( <i>Balaenoptera physaalus</i> )	Schedule 1 – Special Concern (May 2005)	Special Concern (May 2005)
Sowerby’s beaked whale ( <i>Mesoplodon bidens</i> )	Schedule 1 – Special Concern (November 2006)	Special Concern (November 2006)

Final recovery strategies have been prepared for seven species currently designated as either *endangered* or *threatened* under Schedule 1 and potentially occurring in the Project Area: (1) the North Atlantic right whale (Brown 2009); (2) the leatherback sea turtle (DFO 2013); (3) the spotted wolffish (Kulka et al. 2007); (4) the northern wolffish (Kulka et al. 2007); (5) the blue whale (Beauchamp et al. 2009); (6) the Scotian Shelf population of the northern bottlenose whale (DFO 2010); and (7) the St. Lawrence Estuary population of beluga whale (DFO 2012). In addition, a management plan has been prepared for the Atlantic wolffish (Kulka et al. 2007), currently with *special concern* status on Schedule 1 of SARA.

## **Part C: ENVIRONMENTAL ASSESSMENT PROCESS**

### **3. Review Process**

On January 23, 2013, HMDC submitted the *Project Description 2D/3D/4D Seismic Projects (2013-Remaining Life of Field) Newfoundland Offshore Area* (HMDC January 2013). The Project requires an authorization pursuant to Section 138(1) (b) of the *Canada-Newfoundland and Labrador Atlantic Accord Implementation Act* and Section 134(1) (a) of the *Canada-Newfoundland and Labrador Atlantic Accord*

*Implementation Newfoundland and Labrador Act*. The C-NLOPB forwarded the project description on January 28, 2013 to: Fisheries and Oceans Canada (DFO); Environment Canada (EC); Department of National Defence (DND); Transport Canada (TC); Natural Resources Canada (NRCan); Health Canada; and the Newfoundland and Labrador Departments of Environment and Conservation, Fisheries and Aquaculture, and Natural Resources. On March 4, 2013, the C-NLOPB notified HMDC that an environmental assessment was required and the proponent was provided with a Scoping Document.

On May 3, 2013, HMDC submitted the “*Environmental Assessment of HMDC’s 2D/3D/4D Seismic Projects 2013-Remaining Life of Field Newfoundland Offshore Area*” (LGL 2013a). The C-NLOPB forwarded this report on May 7, 2013 to DFO, EC, DND, and the provincial Departments of Environment and Conservation, Fisheries and Aquaculture, and Natural Resources. The FFAW and One Ocean were also provided a copy of the report for review.

Comments on the 2013 EA Report were received from DFO, EC, DND and the FFAW. In order to address deficiencies, HMDC was required to provide a response to the review comments. On July 18, 2013, HMDC responded to this request with the *Environmental Assessment of HMDC’s 2D/3D/4D Seismic Projects 2013-Life of Field Newfoundland Offshore Area Addendum* (LGL July 2013b). The C-NLOPB forwarded this document to DFO, EC, DND and the FFAW.

On July 9, 2014 HMDC submitted the *Environmental Assessment of HMDC’s 2D/3D/4D Seismic Projects 2013-Life of Field Newfoundland Offshore Area: Proposed Changes to the Project* (LGL July 2014) proposing to expand the original Study Area to the west and south for the years 2015 and beyond to ensure inclusion of all Project activities including the deployment of streamers. The C-NLOPB forwarded this document on July 11, 2014 to DFO, EC, DND, and the provincial Departments of Environment and Conservation, Fisheries and Aquaculture, and Natural Resources. The FFAW and One Ocean were also provided a copy for review. Comments on the proposed changes were sent to HMDC on October 6, 2014. HMDC responded on January 6, 2015. All comments were addressed satisfactorily by January 9, 2015.

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. The scoping exercise is complete because an assessment was conducted in respect of every construction, operation, modification, decommissioning, abandonment, or other undertaking proposed by HMDC that is likely to be carried out in relation to their proposed Project.

### **3.1 Scope of Project**

The Project is located in an offshore area approximately 240 km northeast of St. John’s, Newfoundland and Labrador. In terms of spatial boundaries, the Project/Study Area in which all routine project activities will occur, including streamer and non-activated source array deployment and vessel turns, is approximately 15,261 km<sup>2</sup>. This includes the area within which any potential effects of the Project could occur. The 4,035 km<sup>2</sup> Life of Field (LOF) Seismic Survey Area is within the Project Area and is the area within which the sound source arrays may be active for data acquisition and survey.

The seismic survey vessel(s) used during the Project will be approved for operation in Canadian waters and will be typical of the worldwide seismic fleet. In the case of either 2-D or 3-D surveys, the seismic survey ship will have air source arrays and multiple streamers. A typical 3-D survey sound source consists of one or two air source arrays, 3,000 to 6,000 in<sup>3</sup> in total volume, which operates at towed depths between 6 m and 15 m. The air source operates on compressed air at pressures 1,800 to 2,500

psi, and produce approximate peak-to-peak pressures 100 to 180 bar-m. Streamer configurations may vary. 2-D, 3-D and 4-D seismic surveys may use up to 16 towed streamers of a maximum length of 10,050 m and deployed at depths ranging from five to 30 m. The air source will operate at a towed depth of approximately six meters. The air sources will be operated with compressed air at a pressure of approximately 2,000 psi. While towing the survey lines, the two air source arrays are discharged alternately, one each approximately every 18.75 meters down the line. Seismic air source array specifications may vary in subsequent years.

In the proposed 4-D survey in 2015, the vessel will tow a dual sound source and up to 12 seismic streamers of an average length of 6,000 meters deployed at a depth of approximately 15 to 25 meters. The solid or gel-filled streamers will be separated by 75 meters. The proposed 2015 4-D survey sound source will consist of two air source arrays, with sufficient volume to output up to 120 bar-meters peak to peak. The air source will operate at a towed depth of approximately six meters. The air sources will be operated with compressed air at a pressure of approximately 2,000 psi. While towing the survey lines, the two air source arrays are discharged alternately, one each 18.75 meters down the line. Seismic air source array specifications may vary in subsequent years. Seismic surveys will occur within the 1 May to 31 December period. The timing of the acquisition of specific lines within the Project Area in any year will depend on several factors, including commercial fish harvesting, local weather, sea state, and ice conditions.

### 3.2 Boundaries

The boundaries of the Project are defined in the EA Report as follows and are acceptable to the CNLOPB.

<b>Boundary</b>	<b>Description</b>
<i>Temporal</i>	Between May 1 and December 31.
<i>Project/Study Area</i>	Defined as a 15,261 km <sup>2</sup> area. The geographic coordinates (Easting (m), Northing (m); WGS-84 UTM Zone 22 N) are: NE Corner: 737337, 5207185; SE Corner: 685271, 5092997; SW Corner: 574629, 5143442; and NW Corner: 626695, 5257634.
<i>Life of Field Seismic Survey Area</i>	Defined as a 4,035 km <sup>2</sup> area. The geographic coordinates (Easting (m), Northing (m); WGS-84 UTM Zone 22 N) are: NE Corner: 710844, 5197280; SE Corner: 683660, 5137689; SW Corner: 627615, 5163253; and NW Corner: 654800, 5222847.
<i>Regional Area</i>	Jeanne d'Arc Basin

There may also 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

The factors that were considered to be within the scope of the environmental assessment are those set out in paragraphs 16(1) (a) through 16(1) (d) of the CEAA (1992), and those listed in the *Hibernia Management and Development Company Ltd. 2D/3D/4D Seismic Projects 2013-Remaining Life of Field Newfoundland Offshore Area Scoping Document* (C-NLOPB 2013).

## 4. Consultation

### 4.1 Consultation carried out by HMDC

A description of the program and a location map were sent to the FFAW and One Ocean prior to the consultation meeting. HMDC and its consultant met with representatives of the FFAW and One Ocean on 28 March 2013 to review and discuss the proposed program. In addition, the following organizations were contacted:

- Icewater Seafoods
- Ocean Choice International
- Association of Seafood Producers (ASP)
- Groundfish Enterprise Allocation Council (GEAC)
- Clearwater Seafoods Ltd.

No significant issues/concerns were raised during the consultation meeting with the FFAW and One Ocean. The topics that were discussed included the following:

- Details of crew changes in relation to FLOs;
- Temporal and spatial details related to streamer deployment;
- Necessity of having a paper marine chart at consultation meetings;
- Temporal and spatial details of post-season snow crab survey;
- Single Point of Contact (SPOC);
- A 'seismic protocol' document recently completed by One Ocean; and
- The westward distributional expansion of snow crab in NAFO Unit Areas 3Li and 3Lt to around the 57 fathom depth.

Some of the topics for discussion (e.g., snow crab survey, SPOC) will continue to be addressed during lead up to the program. Other respondents (ASP and GEAC) to date have not identified any issues associated with the proposed project. HMDC will continue to communicate with the FFAW, One Ocean and others.

The C-NLOPB is satisfied that the consultations carried out by HMDC, and reported on in the EA Report included all elements of the Project, and that HMDC has addressed substantive concerns about the proposed Project.

### 4.2 Review of the EA Report

The C-NLOPB forwarded the EA Report on May 7, 2013 to DFO, EC, DND, and the provincial Departments of Environment and Conservation, Fisheries and Aquaculture, and Natural Resources. The FFAW and One Ocean also were provided a copy of the EA Report for review. The consolidated review comments were provided to HMDC on July 17 2013. HMDC responded on July 18, 2013 and provided an EA Addendum. This EA Addendum was forwarded to reviewers for their consideration. On July 9, 2014 HMDC submitted proposed changes to the project and was subsequently forwarded to reviewers.

DFO provided comments on the EA Report on 13 June 2013. Their comments focused on the Statement of Canadian Practice (SOCP), monitoring SARA species over the multi-year program, referencing of the fish data and the transmittal of MMO reports. DFO replied to the Addendum on 23 July 2013 stating that they were satisfied with HMDC's response. DFO replied to the proposed changes to the project on 28 July 2014 with a comment on the proposed OBS activity. This activity has been withdrawn by HMDC, as indicated in their response on January 6, 2015

DND provided comments on the EA Report on 11 June 2013 requesting that their initial feedback submitted on February 8, 2013 be included in the EA Report. DND replied to the Addendum on July 31, 2014 indicating that they were satisfied. DND replied to the proposed changes to the project on 5 August 2014 with nothing further to add.

EC provided comments on the EA Report on 17 June 2013 and requested that HMDC collect seabird data to share with them and provided protocol and proper bird-handling advice. They also had a number of specific comments pertaining to proper protocols, deck lighting, and proper contact information for dealing with injured birds. EC replied to the Addendum on 23 July 2013 stating that they required clarification on a few of HMDC's responses. EC replied to the proposed changes to the project on 15 July 2014 with a reminder respecting seabird observations and the sharing of that data. HMDC agreed to this in their January 6, 2015 correspondence. EC replied on January 7, 2015 with nothing further to add.

The FFAW provided comments on the EA report on 12 July 2013. The key issues were: concerns of the impact on shrimp and crab, both in the commercial and post season trap surveys; the dynamics of the fishing industry and the multi-year program; and the identification of the possibility of gear contact.

All reviewers were satisfied that their comments had been adequately addressed. The C-NLOPB believes that all substantive comments within the scope of the EA have been satisfactorily addressed.

## **5. Environmental Effects Analysis**

### **5.1 Methodology**

The C-NLOPB reviewed the environmental effects analysis presented by HMDC in its EA Report. A Valued Ecosystem Component (VEC) based assessment, based on the interaction of project activities with VECs, was used in assessing environmental effects, including cumulative effects and effects due to accidental events. The environmental assessment methodology and approach used by the Proponent is acceptable to the C-NLOPB.

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

- magnitude of impact;
- geographic extent;
- duration, likelihood, and frequency;
- reversibility;
- ecological, socio-cultural and economic context; and
- significance of residual effects following implementation of mitigation measures.

The potential effect significance of residual effects, including cumulative effects, for each VEC was 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, were considered in determining overall significance of residual effects.

In the EA Report, HMDC presented information regarding the potential effects of the geophysical program activities on fish and fish habitat, commercial fisheries, seabirds, marine mammals and sea turtles, and species at risk. A summary of the effects assessment follows.

## 5.2 Valued Ecosystem Components/ Potential Environmental Effects

### 5.2.1 Fish, Fish Habitat and Invertebrates

1

The seismic program will not result in any direct physical disturbance of the bottom substrate. During seismic surveys, survey equipment is not expected to come in contact with the seafloor and deep-water corals and sponges. Therefore the negligible residual effects on fish habitat (i.e., water and sediment quality, phytoplankton, zooplankton, and benthos) are predicted to be **not significant**.

The potential effects of exposure to sound on fish and marine invertebrates can be found in Section 5.6.1 of the EA Report. Mitigations consistent with those outlined in the *Geophysical, Geological, Environmental and Geotechnical Program Guidelines* (C-NLOPB 2012), will be implemented. The effects assessment concluded that physical effects on fish due to Project activities will be negligible to low in magnitude, in an area of less than 100 km<sup>2</sup>, and of duration of one to 12 months. The likelihood of effects (behavioural and physical) is low and therefore **not significant**.

Any potential physical or behavioural impact to invertebrate species is considered to be negligible to low in magnitude, within an area of less than 100 km<sup>2</sup>, over duration of one month to 12 months. The likelihood of effects (behavioural and physical) is low and therefore **not significant**.

### 5.2.2 Commercial Fishing and DFO Research Surveys

1

A discussion of the potential effects of the proposed project on fisheries may be found in Section 5.6.2 of the EA Report.

HMDC indicated that a number of mitigations, consistent with those outlined in the *Geophysical, Geological, Environmental and Geotechnical Program Guidelines* (C-NLOPB 2012), will be implemented. HMDC will adhere to all relevant minimum mitigations outline in the Statement of Canadian Practice. These include: avoidance of heavily fished areas; use of a FLO on the vessel to be a communication link between the two industries and to help ensure effective communication between petroleum operators and fishers at sea; communication with fishers (via a Notice to Mariners and a Notice to Fishers) and scheduling of surveys to reduce interference with DFO research vessels; single point of contact (SPOC), and a fishing gear damage compensation plan. HMDC will maintain regular communications with the FFAW and fishers before and during surveys.

Given the application of mitigation measures, including the avoidance of fishery activity, it is predicted that the effects of the seismic activity, including vessel movement, will be: negligible to low in magnitude; during <1 to 1-12 months; over an area of less than 100 km<sup>2</sup>; and reversible. The likelihood of effects (behavioural and physical) is low and therefore **not significant**.



To avoid potential conflict with DFO Research surveys, HMDC will maintain communications with DFO personnel to keep up-to-date on the timing of planned research surveys. In addition, a temporal and spatial buffer zone will be implemented, in consultation with DFO, to reduce any potential interference with fish behavioural patterns.

With application of the mitigations discussed in the EA Report, effects of vessel presence, including all gear being towed by the seismic vessel, on the commercial fishery VEC are predicted to be a negligible to low magnitude during <1 to 1-12 months over an area of <1 to 11-100 km<sup>2</sup>. Based on these criteria ratings, the *reversible* residual effects of vessel presence during the seismic program on the Fishery VEC are predicted to be **not significant**.

### 5.2.3 Marine Birds

1

The potential effects of the proposed project on marine/migratory birds may be found in Section 5.6.3 of the EA Report.

Seabirds are expected to flush or dive in response to sounds or to avoid the area. It is predicted that there will be **no significant effects** on seabirds from the sound. The magnitude of the effect (if it occurs) will be: negligible to low; over an area less than 1 to 100 km<sup>2</sup>; and for a duration of 1 to 12 months.

Efforts will be made by HMDC to minimize deck light (if safe and practical) and to conduct routine checks for stranded birds. Mitigation and monitoring for stranded birds will result in residual effects of attraction to lights of low to medium magnitude for a duration of <1 month to 1 to 12 months over a geographic extent of <1 to 1-10 km<sup>2</sup> and therefore **not significant**.

Potential accidental releases would likely be small and evaporation/dispersion rapid, the effects on seabirds are predicted to have low to medium magnitude for a duration of <1 month over a geographic extent of <1 km<sup>2</sup> to 1-10 km<sup>2</sup>. Therefore, the residual effects of an accidental release (e.g., Isopar M) on the seabird VEC are predicted to be **not significant**.

### 5.2.4 Marine Mammals and Turtles

1

The discussion on the potential effects of the proposed project on marine mammals and sea turtles may be found in Section 5.6.4 of the EA Report.

Disturbance effects from Project activity noise on toothed whales would likely be low for a <1 month to 1-12 months over an area of 11-100 to 101-1,000 km<sup>2</sup>. Therefore, potential effects related to disturbance, are judged to be **not significant** for toothed whales.

It is uncertain how many baleen whales may occur in the Study Area during the period when seismic activity is most likely to occur. The Project Area is not known to be a unique feeding or breeding area for baleen whales. Disturbance effects on species of baleen whales would likely be low for a duration of <1 month to 1-12 months over an area of 11-100 km<sup>2</sup> to 101-1,000 km<sup>2</sup>. Therefore, residual effects related to disturbance, are judged to be **not significant** for baleen whales.

The seismic program is predicted to have negligible to low hearing impairment and/or physical effects on seals for a duration of <1 month to 1-12 months over an area <1 km<sup>2</sup>. Therefore, hearing impairment and physical effects on seals would be **not significant**.

The seismic program is predicted to have negligible to low physical effects on sea turtles for a duration of <1 month to 1-12 months over an area <1 to 1-10 km<sup>2</sup>. Therefore, auditory and physical effects on sea turtles would be **not significant**.

#### 5.2.5 Species at Risk

1

The discussion of potential effects of the proposed project on species at risk may be found in Section 5.6.5 of the EA Report.

The EA Report indicates that the area for potential surveys has no unique habitat for species at risk. The mitigation measure of ramping up the airgun array (over a 30 min period) is expected to minimize the potential for impacts on white sharks and wolffishes as fish species are highly mobile. As per the detailed effects assessment contained in the EA Report, physical effects of the Project on the various life stages of the white shark and two wolffish species will range from negligible to low for a duration of <1 month to 1-12 months over an area of <1 km<sup>2</sup>. Behavioural effects may extend out to a larger area but are still predicted to be **not significant**.

All of the marine mammal and sea turtle species at risk are highly mobile, and with the implementation of project mitigations individuals within the project's zone of influence are likely to move out of the area. Key mitigations and monitoring outlined in the EA Report that is designed to minimize potential effects of airgun array noise on SARA-listed marine mammals and sea turtles will be implemented. Specifically, HMDC has committed to adhere to mitigations detailed in Appendix 2 of the *Geophysical, Geological, Environmental and Geotechnical Program Guidelines* (C-NLOPB 2012) including those in the *Statement of Canadian Practice with Respect to the Mitigation of Seismic Sound in the Marine Environment*. The effects on marine mammals are predicted to be: negligible to low in magnitude; within an area less than 1 km to 100 km<sup>2</sup> and for a duration of 1 to 12 months. With the application of mitigation measures, the likelihood of effects occurring is low, and effects will be **not significant**. The effects on sea turtles are predicted to be: negligible to low in magnitude; within an area less than 1 km to 100 km<sup>2</sup>; and over duration of 1 to 12 months. With the application of mitigation measures, the overall likelihood of effects occurring is low, and effects will be **not significant**.

The main potential environmental interactions between the project and the bird species at risk are the same as those for the Marine/Migratory Bird VEC. Planned mitigation measures will help to avoid or reduce adverse interactions and interactions with project activities are therefore unlikely. It is predicted that there will be **no significant effects** on marine/migratory birds. The magnitude of the effect (if it occurs) will be: negligible to low; over an area less than 1 to 100 km<sup>2</sup>; and for a duration of 1 to 12 months.

#### 5.2.6 Water Quality/Discharges

0

Information on discharges may be found in Section 2.2 of the EA Report and in the respective VEC sections of Section 5 of the EA Report. The effect of the program operations on marine water quality should be undetectable and **not significant**.

#### 5.3 Cumulative Environmental Effects

1

A discussion of potential cumulative environmental effects may be found in Section 5.7 of the EA Report and in the respective VEC discussions in Section 5. HMDC has committed to the implementation of mitigative measures such as coordinating logistics with other East Coast operators to provide sufficient buffers and to minimize acoustic interference, and ramp-ups, delayed start-ups, and shutdowns of the air source arrays. With the limited temporal scope and overlap with other projects and activities, the

cumulative environmental effect of the program, in conjunction with other projects and activities, is predicted to be **not significant**.

#### 5.4 Accidents and Malfunctions

0

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.

The vessel is required to carry a "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 releases. The vessel will also carry a copy of HMDC's "Spill Spill Response Plan". Inspections of seismic equipment will be conducted regularly.

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**.

#### 5.5 Follow-up Program Required

Yes

No

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

### 6. Other Considerations

The C-NLOPB is satisfied with the environmental information provided by HMDC regarding the potential adverse environmental effects which may result from the proposed project, and are 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.

### 7. Recommended Conditions and /or Mitigations

The C-NLOPB recommends that the following conditions be included in the authorization if the seismic/geophysical survey program is approved:

- *The Operator 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 "Environmental Assessment of HMDC's 2D/3D/4D Seismic Projects 2013-Life of Field Newfoundland Offshore Area" (LGL, May 2013(Revised February 2015)).*
- *The Operator, 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 in the safety zone during ramp- up procedures and when the array is active. The safety zone shall have a radius of at least 500 m, as measured from the centre of the air source array(s).*

## **Part D: Determination Decision**

### **8. C-NLOPB Decision**

The C-NLOPB is of the opinion that, taking into account the implementation of the proposed mitigation measures set out in the conditions above and those committed to by Hibernia Management and Development Company Ltd., the Project **is not likely to cause significant adverse environmental effects**.

Responsible Officer    Original signed by Elizabeth Young

Date: April 30, 2015

Elizabeth Young  
Environmental Assessment Officer  
Canada-Newfoundland and Labrador Offshore Petroleum Board

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