

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

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**PART A: GENERAL INFORMATION**

<b>Screening Date</b>	<b>July 22, 2014</b>
<b>EA Title</b>	Environmental Assessment East Canada CSEM Survey, 2014-2018
<b>Proponent</b>	Electromagnetic Geoservices Canada, Inc. EMGS AMERICAS, INC. 15021 Katy Freeway, Suite 500 Houston, TX 77094
<b>Contact</b>	Mr. Lars Petter Solevåg Senior Operations Manager Western Hemisphere 15021 Katy Freeway, Suite 500 Houston, TX 77094
<b>C-NLOPB File No.</b>	56006-020-001
<b>Location</b>	Eastern Newfoundland Offshore
<b>Referral Date</b>	<b>December 12, 2013</b>
<b>EA Start Date</b>	<b>December 20, 2013</b>
<b>Law List Triggers</b>	Paragraph 138(1) (b) <i>Canada-Newfoundland Atlantic Accord Implementation Act</i> (Accord Act)

**Part B: PROJECT INFORMATION**

On December 12, 2013, Electromagnetic Geoservices Canada, Inc. (EMGS) submitted a project description entitled, *Project Description East Canada CSEM Survey 2014-2018* (LGL Limited, December 11, 2013) to the Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB), describing its plans to conduct a controlled source electromagnetic (CSEM) program in the offshore region of the Eastern Grand Banks between 2014 and 2018. EMGS submitted the *Environmental Assessment East Canada CSEM Survey 2014-2018* (LGL Limited 2014a) on March 17, 2014. On May 15, 2014, the C-NLOPB requested additional information from EMGS to respond to review comments on the March 17 submission. On June 6 and July 2, 2014, EMGS responded to the review comments, via the *Environmental Assessment East Canada CSEM Survey 2014-2018 Addendum* (LGL Limited 2014b).

**1 Description of Project**

The proposed Project involves an array of controlled source electromagnetic receivers deployed on the seabed, commonly 1-3 km apart in a grid pattern. An electromagnetic source (AC current, 1,250 A, low frequency (variable, <20 Hz) (ELF)) is then deployed and towed at 2-3 kts behind the survey vessel, approximately 30-50 m above the seabed. The CSEM streamer, used to tow the source, consists of tow

and conductor cables and a floatation section segregated into five 50-m sections and one 14-m section. The electromagnetic signal propagates through the subsurface and is recorded by the receivers sitting on the seabed. Each receiver is mounted with a compacted sand anchor, typically about 810 mm x 920 mm in length-width and 102 mm in thickness, in order to provide negative buoyancy during deployment, and to provide stability during seabed recording. The anchor remains at the seabed after release and recovery of the receiver and is designed to degrade within a year. For the proposed CSEM survey in 2014, the CSEM survey vessel can hold up to 200 receivers.

A CSEM survey is proposed between 1 May to 30 November in any given year between 2014 and 2018.

## 2 Description of Environment

A complete description of the biological and physical environment can be found in the Environmental Assessment (EA) report (March 2014) and the subsequent EA addendum (June 2014). The following sections provide references to the appropriate sections of the EA Report and the EA Addendum.

### 2.1 Physical Environment

A description of meteorological and oceanographic characteristics, including extreme conditions, in the Study Area is provided in Section 3.0 of the EA Report (LGL Limited 2014a). Additional information was provided in the EA Addendum (LGL Limited 2014b). Specifically, information was provided on: bathymetry and geology; geology; climatology; physical oceanography; and sea ice and icebergs.

### 2.2 Biological Environment

A detailed description of the biological environment may be found in Section 4.0 of the EA Report (LGL Limited 2014a) and EA Addendum (LGL Limited 2014b). Specifically, information on: fish and fish habitat; fisheries (domestic, Aboriginal and recreational, industry and science surveys); marine mammals and sea turtles; seabirds; species at risk; and sensitive areas.

There are 11 Species at Risk, as defined under Schedule 1 of the *Species at Risk Act* (SARA) that are likely to be within the Study Area. The following table identifies species and their SARA listing and the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) status.

SPECIES	SARA Status	COSEWIC Status
Blue Whale ( <i>Balenoptera musculus</i> )	Schedule 1 – Endangered (May 2012)	Endangered (May 2012)
North Atlantic Right Whale ( <i>Eubalaena glacialis</i> )	Schedule 1 – Endangered (May 2013)	Endangered (May 2013)
Northern bottlenose whale ( <i>Hyperoodon ampullatus</i> ) Scotian Shelf population	Schedule 1 – Endangered (May 2011)	Endangered (May 2011)
Leatherback Sea Turtle ( <i>Dermochelys coriacea</i> )	Schedule 1 – Endangered (May 2012)	Endangered (May 2012)
White shark ( <i>Carcharodon carcharias</i> ) Atlantic population	Schedule 1 – Endangered (April 2006)	Endangered (April 2006)
Ivory Gull ( <i>Pagophila eburnean</i> )	Schedule 1 – Endangered (April 2006)	Endangered (April 2006)
Northern Wolffish ( <i>Anarhichas denticulatis</i> )	Schedule 1 – Threatened (November 2012)	Threatened (November 2012)
Spotted Wolffish ( <i>Anarhichas minor</i> )	Schedule 1 – Threatened (November 2012)	Threatened (November 2012)
Atlantic Wolffish ( <i>Anarhichas lupus</i> )	Schedule 1 – Special Concern (November 2012)	Special Concern (November 2012)

Fin Whale ( <i>Balaenoptera physalus</i> ) Atlantic population	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)

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

### **3. Review Process**

On December 12, 2013, EMGS submitted a project description entitled, *Project Description East Canada CSEM Survey 2014-2018* (LGL Limited 2013) to the C-NLOPB, describing its plans to conduct a CSEM survey offshore Newfoundland in the offshore region of the Eastern Grand Banks. The Project requires an authorization pursuant to Section 138(1) (b) of the *Canada-Newfoundland 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 requested comments on the project description and identification of expertise on December 20, 2013 to: Fisheries and Oceans Canada (DFO); Environment Canada (EC); Department of National Defence (DND); Transport Canada (TC); Natural Resources Canada; Health Canada; and the Newfoundland and Labrador Departments of Environment and Conservation (NLDEC), Fisheries and Aquaculture (NLDFA), Natural Resources (NLDNR), One Ocean (OO), and the Fish, Food and Allied Workers Union (FFAW).

On January 28, 2014, the C-NLOPB notified EMGS that an environmental assessment was required and the Scoping Document was provided.

EMGS submitted the *Environmental Assessment East Canada CSEM Survey, 2014-2018* (LGL Limited 2014a) on March 17, 2014. The C-NLOPB forwarded the EA Report on March 18, 2014 to DFO, EC, DND, NLDEC, NLDFA, NLDNR, OO, and the FFAW for review.

Comments on the EA Report were received from EC, FFAW and DFO. In order to address deficiencies in the EA Report, EMGS was required to provide a response to the EA Report comments. On June 6, 2014, EMGS responded to the review comments, via the *Environmental Assessment East Canada CSEM Survey, 2014-2018 Addendum* (LGL Limited 2014b) and this was forwarded to reviewers for their consideration. Additional comments were provided from reviewers and these were forwarded to EMGS on June 27, 2014. All comments were satisfactorily addressed and a revised EA Addendum was submitted on July 2, 2014.

### **3.1 Scope of Project**

The Study Area is composed of the Project Area plus a 20 km buffer area around the Project Area to account for any potential effects such as sound, accidental spills, or electromagnetic emissions on marine animals that may occur outside the Project Area. The proposed Project involves an array of receivers mounted with a compacted sand anchor on the seabed, commonly 1-3 km apart. An electromagnetic source is then deployed and towed behind the survey vessel, roughly 30-50 m above the seabed. The electromagnetic signal propagates through the subsurface and is recorded by receivers sitting on the sea bed. A CSEM survey is proposed between 1 May to 30 November in any given year between 2014 and 2018. The duration of a CSEC survey is estimated at 60 to 150 days in any given year between 2014 and 2018. For the proposed CSEM survey in 2014, the CSEM survey vessel will be an exploration vessel which can hold up to 200 receivers.

The CSEM source system consists of a power supply and control unit at the topside transmitter mounted on towed subsea-frame (tow fish) horizontal electric dipole connected to the tow fish.

The topside unit is controlling the power to generate the predefined Electromagnetic (EM) pulse at the electric dipole. The power is transformed to high voltage/low current and transferred via umbilical to the subsea system. At the subsea system the power is transformed back to low voltage/high current. A trailing electric dipole (antenna) is connected to the subsea signal source. This antenna is fed with a periodic current (AC). The waveform, amplitude and periodic time can be defined and changed at the topside operator station. A separate power supply feeds the instrumentation on the tow fish.

The electric dipole (antenna) is neutrally balanced for in-line towing operation. A tail fish is designed to keep tension on the antenna system. Tow fish and tail fish are carrying additional survey and navigation equipment.

The CSEM streamer consists of tow and conductor cables and a floatation section containing Isopar M fluid. The floatation sections are segregated into five 50-m sections (containing 670 L each) and one 14-m section containing 187 L. The total length of the tow package will vary with the depth being surveyed, with a maximum length of several thousand metres. Compared to a typical 3D seismic survey, a CSEM towed system is very different in that it consists of only one shorter streamer. A CSEM survey occupies relatively little “sea-space” that allows other vessels to pass within one kilometer safely.

Controlled source electromagnetic receiver nodes are placed on the seabed in a grid pattern. The node consists mainly of antenna, receiver, positioning transponder, release system, buoyancy, and an anchor. Sonardyne Programmable Generic Transponders (PGT) are used on both the receivers and the towed source in order to position them in the water. The PGT also can release the receiver from the anchor by primary or secondary release. Primary release is an electric motor which releases the wire from the PGT. The secondary release uses a burn wire in case the primary fails to release. Buoyancy is provided in order to bring the receivers back to the surface after the anchor release. The system consists of five glass spheres enclosed in high quality yellow plastic. The PGT is also used to position the receivers on the seabed using the shipboard Sonardyne or Kongsberg Ultra Short Base Line (USBL) system. It works by sending an acoustic interrogation signal to the PGT which in turn sends a reply signal enabling its precise position to be calculated.

Each receiver is mounted with a compacted sand anchor, typically about 810 mm x 920 mm in length, width and 102 mm in thickness, in order to provide negative buoyancy during deployment, and to provide stability during seabed recording. The anchor remains at the seabed after release and recovery of the receiver. The anchor contains components found in natural gravel, limestone and/or seawater.

Annual CSEM surveys will occur within the period 1 May to 30 November from 2014 to 2018. The timing of the acquisition of specific lines within the Project Area in any year will depend on several factors, including commercial fish harvesting, the local weather, sea state, and ice conditions in specific locations. The estimated duration of the proposed 2014 survey is approximately 60 to 120 days.

### 3.2 Boundaries

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

<b><i>Boundary</i></b>	<b>Description</b>
<i>Temporal</i>	From 1 May to 30 November, 2014 to 2018.
<i>Project Area</i>	The Eastern Grand Banks with the “corner” coordinates (decimal degrees, WGS84 projection): <ul style="list-style-type: none"> <li>• 51.12630°N, -52.12409°W;</li> </ul>

	<ul style="list-style-type: none"> <li>• 51.81937°N, -50.76807°W;</li> <li>• 51.81908°N, -50.27190°W;</li> <li>• 51.81910°N, -49.48187°W;</li> <li>• 51.81946°N, -48.20051°W;</li> <li>• 51.81879°N, -47.11271°W;</li> <li>• 51.81944°N, -46.61169°W;</li> <li>• 49.59088°N, -44.04801°W;</li> <li>• 44.15804°N, -47.90390°W;</li> <li>• 44.22781°N, -50.0302°W 1;</li> <li>• 48.36087°N, -49.40997°W; and</li> <li>• 51.12630°N, -52.12409°W</li> </ul> <p>The Project Area includes the ships' turning radii.</p>
<i>Study/Affected Area</i>	The Study Area includes the Project Area plus a 20 km buffer area for potential effects around the Project Area.
<i>Regional Area</i>	The area extending beyond the "Affected Area" boundary within the Eastern Grand Banks and Eastern Newfoundland.

### 3.3 Scope of Assessment

For the purpose of meeting the requirements of the *Accord Act*, the factors that were considered to be within the scope of the environmental assessment are those set out in the *Electromagnetic Geoservices Canada, Inc. Controlled Source Electromagnetic Survey, 2014 to 2018 Scoping Document* (C-NLOPB 2014).

## 4. Consultation

### 4.1 Consultation carried out by EMGS

Consultations for the proposed Project were undertaken by EMGS with the following agencies, stakeholders, and interest groups:

- C-NLOPB
- DFO
- EC
- Transport Canada
- Nature Newfoundland and Labrador (NNL) (and various member organizations)
- OO
- FFAW
- Association of Seafood Producers (ASP)
- Ocean Choice International (OCI)
- Groundfish Enterprise Allocation Council (GEAC) Ottawa
- Canadian Association of Prawn Producers
- Clearwater Seafoods
- Iceswater Fisheries
- Newfoundland Resources Ltd. (NRL)

A short description of the proposed program, including program location map and species harvesting location maps, were sent to the relevant agencies and industry stakeholder groups in early January 2014. They were asked to review this information, provide any comments on the proposed activities and to indicate whether or not they would like to meet to discuss the proposed program in more detail.

No specific significant issues/concerns were raised during the consultations. However, the following main points were raised:

- EA should address potential effects on marine fish (especially sharks), marine mammals, sea turtles, and seabirds;
- EA should refer to previous MMO/SBO reports;
- Potential deleterious substances in the degradable receiver anchors;
- Potential conflict with fisheries and DFO R/V surveys should be addressed;
- Cumulative effects with other potential surveys (e.g., potentially three or more seismic programs for 2014);
- FLO onboard to alleviate any conflicts with the commercial fisheries; and
- Provide shape files to FFAW for final surveys lines.

Commitment was made by EMGS to continue to communicate with the FFAW, One Ocean and others upon finalization of the 2014 survey lines. On June 27, 2014, EMGS provided an update on project details, including the delineation of the 2014 CSEM survey area, to all groups initially consulted in January, 2014.

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

#### **4.2 Review of the March 2014 EA Report**

The C-NLOPB forwarded the EA Report on March 18, 2014 to DFO, EC, DND, NLDEC, NLDFA, NLDNR, OO and the FFAW to review.

DND provided comments on the EA Report on 23 April, 2014 which stated that comments provided by DND during the scoping phase were appropriately addressed and that they would likely be in the area in a non-interference manner, thus requesting to be informed of dates and locations of project activities.

EC provided comments on the EA Report on 29 April 2014. The key issues were: proper data numbers and concentrations of seabirds; sound from potential helicopter use; information on the Ivory Gull; and proper reference to the legislation concerning a bird handling permit. They reiterated that their comments on the draft scoping document (January 17, 2014) were still valid. EC provided a response on the EA Addendum on 19 June 2014 reminding the proponent to provide bird observation data.

DFO provided comments on the EA Report on 15 May 2014. Their comments focused on: up-to-date fisheries data; expanded assessment of the project on marine life; other fishes caught in the commercial fishery; COSEWIC candidate species; integrated management areas; adherence to the Standard of Canadian Practice (even though it is not a seismic program); species at risk; sensitive areas; and mitigations. DFO provided a response on the EA Addendum on 25 June 2014 that they were satisfied that their comments had been addressed.

The FFAW provided comments on the EA Report on 9 May 2014. The key issues were: the lack of discussion and data of commercial fisheries outside the 200 mile limit; and the lack of consultation. The FFAW provided comments on the EA Addendum on 20 June, 2014. Comments included: the acknowledgment that the NAFO data cannot be mapped; and the continued lack of consultation. EMGS provided additional information on June 27, 2014. The FFAW responded on July 10, 2014 that open lines of communications should be strived for and that that they would be available for consultations.

The consolidated review comments were provided to EMGS on May 15, 2014. EMGS responded on June 6, 2014 in the form of an EA Addendum. EMGS's June 6, 2014 response was forwarded to reviewers on June 6, 2014 for consideration. Additional comments were forwarded to EMGS on June 27, 2014. A revised EA Addendum was provided by EMGS on July 2, 2014 that included all comments and responses.

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 EMGS 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, EMGS presented information regarding the potential effects of the CSEM program activities on fish and fish habitat, fisheries, seabirds, marine mammals and sea turtles, species at risk, and sensitive areas. A summary of the effects assessment follows.

### **5.2 Valued Ecosystem Components/ Potential Environmental Effects**

#### **5.2.1 Fish and Fish Habitat**

**1**

The potential effects of the proposed project on fish and fish habitat may be found in Section 5.7.5 of the EA Report and pages 5 and 11 to 13 of the EA Addendum.

The EA Report states that a small amount of benthic habitat (about 0.75 m<sup>2</sup> per concrete base) will be altered as the concrete receiver base is placed on the sea floor. The geographic extent used in predictions is conservatively on the order of 0.5 km<sup>2</sup> -2.0 km<sup>2</sup> (the overall footprint of all 200 anchors is 149 m<sup>2</sup>). The duration of exposure of a fixed point along the axis of the tow would be short and on the order of 14-21 minutes with the vessel moving at 2 kts. This duration of exposure to emissions is estimated to be short

enough to not interfere with any known processes such as orientation, movements or prey detection. The effects on fish and fish habitat are predicted to be: negligible to low in magnitude; within an area less than 1 km to 10 km<sup>2</sup>, and over a duration of 1-12 months. Thus, any effects are considered **negligible** residual effects and hence **not significant** with the possible exception of vessel/gear presence.

### 5.2.2 Commercial and Traditional Fisheries and DFO Research Surveys 1

The potential effects of the proposed project on fisheries may be found in Section 5.7.6 of the EA Report and pages 4, 5 and 11 to 13 of the EA Addendum.

There are no recreational, subsistence or aboriginal fisheries in the Study Area. Given the application of mitigation measures, including the avoidance of fishery activity, the effects of the project on commercial fisheries and DFO research surveys are predicted to be: negligible to low in magnitude; within an area less than 1 km to 10 km<sup>2</sup>, and over a duration of 1-12 months and are considered to be **negligible** and thus **not significant**. To avoid potential conflict with research surveys and fisheries, EMGS will employ a Fisheries Liaison Officer (FLO) and Single Point of Contact (SPOC) and maintain communications with DFO. As a result, any indirect effects on the fisheries caused by these components will be **negligible** as well.

### 5.2.3 Seabirds 1

The potential effects of the proposed project on marine birds may be found in Section 5.7.7 of the EA Report and page 10 of the EA Addendum.

Any effects from project waste, the CSEM source, underwater sound and receiver deployment and retrieval on seabirds are considered **negligible** residual effects and hence **not significant**.

The main effect of the Project on seabirds involves attraction to the lighted vessel at night, especially during very low visibility. Mitigation and monitoring for stranded birds will result in residual effects of attraction to lights of low to medium magnitude for a duration of less than 1 month to 1 to 12 months over a geographic extent of 1 to 10 km<sup>2</sup>. Therefore, the reversible residual effects of vessel lights on the Seabird VEC are predicted to be **not significant**.

Mitigations will focus on prevention and the oil spill response plan. 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 less than 1 month over a geographic extent of less than 1 km<sup>2</sup> to 1 to 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 Sea Turtles 1

The potential effects of the proposed project on marine mammals may be found in Section 5.7.8 of the EA Report and pages 11 to 13 and 19 of the EA Addendum.

The effects on marine mammals are predicted to be: negligible to low in magnitude; within an area less than 1 km to 10 km<sup>2</sup>, and over a duration of 1-12 months. With the application of mitigation measures, the likelihood of effects occurring is low, and effects will be **negligible**, and therefore **not significant**.

The potential effects of the proposed project on sea turtles may be found in Section 5.7.9 of the EA Report and pages 11 to 13 and 19 of the EA Addendum.



The effects on sea turtles are predicted to be: negligible to low in magnitude; within an area less than 1 km to 10 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 **negligible**, and therefore **not significant**.

#### 5.2.5 Species at Risk

1

The potential effects on species at risk that may be found in the Study Area is discussed in Section 5.7.10 of the EA Report and pages 11 to 13 and 19 of the EA Addendum.

Based on available information, it is rare to encounter any of the species at risk identified in the EA Report in the Study Area. In some cases the Study Area would be at the limits of their present range (*e.g.*, North Atlantic right whale). The Ivory Gull tends to be associated with ice, something which the Project will attempt to avoid. Northern bottle nose whale have been observed in and near the Study Area but it is not known if they belong to the Schedule 1 population resident in the Gully off Nova Scotia, or the Davis Strait population. There are finalized recovery strategies for the Northern and Spotted Wolffish (Kulka et al. 2008), leatherback sea turtles (ALTRT 2006), blue whales in Atlantic Canada (Beauchamp et al. 2009), the Scotian Shelf population of northern bottlenose whales (DFO 2010), and the Ivory Gull (Environment Canada 2014). There is a Management Plan for Atlantic Wolffish (Kulka et al. 2008). Mitigation and monitoring designed to minimize potential effects on SARA-listed fish, marine mammals and sea turtles, and seabirds will be implemented.

The effects on species at risk are predicted to be: negligible to low in magnitude; within an area less than 1 km to 10 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 **negligible**, and therefore **not significant**.

#### 5.2.6 Sensitive Areas

0

The potential effects of the proposed project on sensitive areas may be found in Section 5.7.11 of the EA Report and page 3 of the EA Addendum. There is some potential for smothering of corals and sponges from the anchors. However, the risk of smothering is reduced by the small footprint of the anchors and the fact that the areas of concentration of corals and sponges are relatively small (*e.g.*, coral/sponge closure areas compose about 2.4% of the Project Area). Furthermore, it is likely that these colonies do not completely blanket the sea bed even in areas of concentration and thus the risk of encountering them is correspondingly small. For these reasons and the degradable nature of the anchors, it was predicted that any effects from the anchors will be *not significant*. Based on the previous conclusions on the effects of the project on the other VECs, the project is predicted to have **no significant effect** on sensitive habitat.

#### 5.2.7 Water Quality/Discharges

0

Information on discharges may be found in Section 2.14 of the EA report. The effect of the project operations on marine water quality should be undetectable and **not significant**.

#### 5.3 Cumulative Environmental Effects

1

Potential cumulative environmental effects may be found in Section 5.10 of the EA Report. With the implementation of mitigative measures including EMGS's commitment to ongoing communications with other Operators with active geophysical programs within the general vicinity of its CSEM program, and the limited temporal scope, 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

In the unlikely event of the accidental release of hydrocarbons during the Project, the measures outlined in EMGS' oil spill response plan will be implemented. In addition, EMGS will have an emergency response plan in place.

The effects of an accidental spill are predicted to be: low in magnitude; within an area less than 1 km to 10 km<sup>2</sup>, and over a duration of less than 1 month. 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 to be undertaken for this Project.

### 6. Other Considerations

The C-NLOPB is satisfied with the environmental information provided by EMGS regarding the potential adverse environmental effects which may result from the proposed project, and are satisfied with the perator'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 CSEM 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 East Canada CSEM Survey 2014-2018" (LGL Limited March 2014) and in the "Environmental Assessment East Canada CSEM Survey, 2014-2018 Addendum" (LGL Limited July 2, 2014).*
- *The Operator, or its contractors, shall shut down the electromagnetic source 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 source is active. The safety zone shall have a radius of at least 500 m, as measured from the centre of the source.*

## 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 Electromagnetic Geoservices Canada Inc., the Project is **not likely to cause significant adverse environmental effects**.*

Responsible Officer

Elizabeth Young

Date: July 22, 2014

Elizabeth Young

Environmental Assessment Officer

Canada-Newfoundland and Labrador Offshore Petroleum Board

## References:

ALTRT (Atlantic Leatherback Turtle Recovery Team). 2006. Recovery Strategy for Leatherback Turtle (*Dermochelys coriacea*) in Atlantic Canada. *Species at Risk Act* Recovery Strategy Series. Fisheries and Oceans Canada, Ottawa, vi + 45 p.

Beauchamp, J., H. Bouchard, P. de Margerie, N. Otis and J.-Y. Savaria. 2009. Recovery Strategy for the blue whale (*Balaenoptera musculus*), Northwest Atlantic population, in Canada [FINAL]. *Species at Risk Act* Recovery Strategy Series. Fisheries and Oceans Canada, Ottawa. 62 pp.

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Kulka, D., C. Hood, and J. Huntington. 2008. Recovery strategy for Northern Wolffish (*Anarhichas denticulatus*) and Spotted Wolffish (*Anarhichas minor*), and management plan for Atlantic Wolffish (*Anarhichas lupus*) in Canada. Fisheries and Oceans Canada: Newfoundland and Labrador Region. St. John's, NL. X + 103 p.

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LGL Limited. 2014a. Environmental Assessment East Canada CSEM Survey, 2014-2018. LGL Rep. SA1248. Rep. by LGL Limited, St. John's, NL for Electromagnetic Geoservices Canada (Operator) (EMGS), Vancouver, BC. 192 p. + Appendices.

LGL Limited. 2014b. Environmental Assessment East Canada CSEM Survey, 2014–2018 Addendum. LGL Rep. SA1248. Rep. by LGL Limited, St. John's, NL, for Electromagnetic Geoservices Americas Inc., Vancouver, BC. 26 p. + appendices.