



**Operator: Electromagnetic GeoServices Canada Inc. (EMGS)**

**Project: 2022 Controlled Source Electromagnetic Program (CSEM)**

**Reviewed** C-NLOPB, DFO, ECCC-CWS, FFAW, FFA, PC, NRCan, TC, DND, IET

**Comments provided by: Melissa Moss**

Number	Reviewer	Section	Comment	EMGS Response
1	C-NLOPB	Section 1.1. Project Overview	“This EA has been prepared in accordance with the Electromagnetic Geoservices Canada Inc. – Controlled Source Electromagnetic Survey in the Orphan Basin and South Bank (2022) Draft Scoping Document (Scoping Document; Appendix A)”. The C-NLOPB notes that the final scoping document was provided to EMGS on January 31, 2022 and should be referenced here.	
2	C-NLOPB	Section 2.2 Project Location, Figure 2-2.	The Project / Study Area boundary illustrated in Figure 2-2 does not capture the entire area of the Exploration Licences included in the figure (i.e. between points E and F). If there isn’t a particular reason or constraint for excluding that portion of the EL, the C-NLOPB recommends adjusting the boundary of the Project / Study Area to include the entirety of EL 1147.	
3	C-NLOPB	Section 2.4.2 CSEM Source Operation	It is stated that the CSEM towed subsea system is approximately 1,800 m and includes a single streamer comprised of tow and conductor cables and a solid flotation section. However further along in the section it is stated that the CSEM towed system occupies relatively little sea-space and other vessels can pass safely as close as 1 km astern. Please provide rationale for the discrepancy.	
4	C-NLOPB	Section 2.6 Standard Mitigation Measures	As per the Geophysical, Geological, Environmental and Geotechnical Program Guidelines (CNLOPB 2019), an SMMO will be on board to record seabird, shark, and marine mammal and sea turtle observations (including transit to and from the Project / Study Areas) and oversee ramp up procedures. You will require at least two observers because of the 12 hour shift limit and daylight exceeding 12 hours.	

5	C-NLOPB	Section 2.6 Standard Mitigation Measures	The EM source will be ramped up over a 20-minute period. In areas where water depth is greater than 500 m, the EM source will not be initiated if a shark, marine mammal or sea turtle is observed 30 minutes prior to ramp-up within a 500 m safety zone of the energy source. Ramp-up will not occur until the animal has moved beyond the 500 m zone or 20 minutes have elapsed since the last sighting. Please clarify if this means <u>any</u> shark, marine mammal or sea turtle.	
6	C-NLOPB	Section 2.4.3 CSEM Receiver Deployment and Retrieval AND Section 6.1 Marine Fish and Shellfish	It is understood from the Project Description that approximately 40 to 100 m2 of seabed will be affected by the placement of anchors, which will dissolve within 4 to 12 months of placement. How does the proponent plan to ensure that anchors will not be placed in areas with sensitive coral and sponge densities to mitigate possible effects of damage (due to placement) or smothering (once the anchors dissolve)? There doesn't appear to be a good discussion of potential effects described within Section 6.1 relating to benthic environments.	
7	C-NLOPB	Section 3.0 Consultation and Engagement	Has the proponent engaged with other government departments such as Fisheries and Oceans Canada and Environment and Climate Change Canada?	
8	C-NLOPB	Section 6.3.3 Mitigation	Environment and Climate Change Canada has developed new (draft) guidance to support the development of vessel and platform specific systematic stranded bird survey protocols. EMGC should refer to the attached guidance when developing systematic stranded bird survey protocols. The following guidance documents are attached: a) ECCC-CWS Guidance for developing systematic stranded bird survey protocols for vessels and platforms b) Appendix 1 – Stranded Bird Encounter Datasheet c) Appendix 2 – Infographic and Reference Card – What to do when you find a stranded bird? d) Appendix 3 – Seabird Identification Photo Card e) Procedures for handling and documenting stranded birds encountered on infrastructure offshore Atlantic Canada	

1	DFO	Page 2.1; Section 2.1; paragraph 1	<p>"The purpose of the Project is to collect data to inform potential future exploration drilling programs within the two target Project / Study Areas in 2022"</p> <p>"The ""two target project/study areas"" are not clearly identified/illustrated within the EA document. Is this statement an error carried over from the original Project Description? DFO Recommends revision of text for clarification."</p>	
2	DFO	Page 2.1; Section 2.1; paragraph 2	<p>Final survey location maps will be submitted to the C-NLOPB four to six weeks prior to acquisition start-up. Prior to conducting the survey, an array of receivers will be placed on the seabed approximately 1 to 3 km apart.</p> <p>"In DFO's response to the C-NLOPB in Jan. 2022 pertaining to the Department's review of the project description and draft scoping document, DFO identified that "" A detailed description of the project and components should be included within the EA Report, and include the number of receiver anchors to be placed on the seafloor at each Project/Study Area, a diagram of the anchor grid pattern, and mitigations to avoid impacts to corals/sponges, specifically within the Northeast Newfoundland Slope"". DFO acknowledges that additional information will be submitted four to six weeks prior to acquisition start-up, however, please note that DFO will require the outstanding information to complete a Fisheries Act review related to works, activities or undertakings proposed within the boundaries of the Northeast Slope Marine Refuge, which has been establish under the Fisheries Act for the conservation and protection of benthic communities, specifically corals and sponges.</p> <p>DFO will require time to complete a Fisheries Act review, and encourage the operator to provide the outstanding information as soon as possible to minimize the risk of delays."</p>	

3	DFO	Page 2.4; Section 2.3; Paragraph 1	<p>The Project is planned to be conducted in summer / fall 2022, pending authorization from the C-NLOPB. It is estimated that the Project (surveying both Project / Study Areas within one season) will require less than 30 days to complete (not including downtime associated with weather).</p> <p>This statement identifies an estimated timeline of 30 days to complete survey operations at "both Project/Study Areas". Please provide clarification with respect to "both project areas" (See comment #1). Please confirm that the 30 day timeline is accurate for activities planned for summer/fall 2022?</p>	
4	DFO	Page 2.6; Section 2.4.3; Paragraph 1	<p>"During the survey, CSEM seabed nodes (receivers) are deployed on the seabed along towlines. It takes approximately 1 hour to deploy a receiver and the same for recovery in the Project/Study Area water depths. It is anticipated that 54 to 131 receivers would be used in the survey (Table 2.3). The general composition of the node consists of a data acquisition unit, electrical and magnetic sensors, and a positioning transponder, all attached to compacted sand anchor (920mm x 810 mm x 102 mm) in order to provide negative buoyancy during deployment and stability while on the seafloor; the anchors are each approximately 0.75m<sup>2</sup> and remain on the seafloor after receiver retrieval (Figure 2-4). Approximately 40 to 100 m<sup>2</sup> of seabed will be affected by the anchors, which will dissolve within 4 to 12 months of placement."</p> <p>A diagram or map of expected receiver/anchor placement should be included in this section. See comment # 2</p>	

5	DFO	Page 2.7; Section 2.4.3; Paragraph 3	<p>These anchors are expected to deteriorate on the sea floor within approximately 4 to 12 months, depending on seawater temperature.</p> <p>"DFO anticipates that a number of receivers will be deployed within the boundaries of the Northeast Newfoundland Slope Closure (Marine Refuge). The Northeast Newfoundland Slope Closure is an Other Effective Conservation Measure (OECM) established through the Fisheries Act for the purposes of conserving and protecting corals and sponges and contributing to the long term conservation of biodiversity.</p> <p>The deployment of the receivers have potential to damage and/or crush coral and sponges species in the Marine Refuge. Furthermore the deterioration of the concrete anchors leave behind material classified as deleterious substances in larger quantities with respect to fish and fish habitats.</p> <p>To offset potential destruction and/or damage to coral and sponges as a result of receiver placement and to avoid localized impacts to corals and sponges in the vicinity of the anchor location as a result of anchor deterioration, DFO is requesting that the operator consider deployment of a number of anchors within the Marine Refuge that are constructed of concrete that will not deteriorate and remain as permanent structures to promote the colonization of corals and provided additional fish habitat.</p> <p>DFO are available to further discuss this option, if required."</p>	
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6	DFO and C-NLOPB	"Page 2.12; Section 2.6; Bullet #6 & Page 6.2; Section 6.1.3; Bullet #3"	<p>Section 2.6</p> <ul style="list-style-type: none"> <li>The EM source will be ramped up over a 20-minute period. In areas where water depth is greater than 500 m, the EM source will not be initiated if a shark, marine mammal or sea turtle is observed 30 minutes prior to ramp-up within a 500 m safety zone of the energy source. Ramp-up will not occur until the animal has moved beyond the 500 m zone or 20 minutes have elapsed since the last sighting.</li> </ul> <p>Section 6.1.3</p> <ul style="list-style-type: none"> <li>The EM source will be ramped up over a 20-minute period. Regardless of water depth, the electromagnetic source will not be initiated if a shark, marine mammal, or sea turtle is observed 30 minutes prior to ramp-up within a 500 m safety zone. Ramp-up will not occur until the animal has moved beyond the 500 m zone or 30 minutes have elapsed since the last sighting..."</li> </ul> <p>"DFO notes a discrepancy between the mitigations outlined in Section 2.6 and Section 6.1.3 and recommend editing mitigations for consistency and alignment with mitigation outlined in the Statement of Canadian Practice with respect to the Mitigation of Seismic Sound in the Marine Environment (SOCP).</p> <p>Note that the SOCP currently does not specify procedures pertaining to water depths and states that ramp up shouldn't commence until none of the species, identified in Section 7 of the SOCP, are identified in the safety zone for at least 30 minutes.</p> <p>DFO acknowledges that the SOCP may not apply to specifically to Controlled-source Electromagnetic Surveys but encourages the operator to apply SOCP mitigations where appropriate. A clear rationale should be provided for mitigations that deviate from the SOCP.</p>	
7	DFO	Page 2.12; Section 2.6; Bullet #7	<p>"In areas where water depths are less than 500m, the EM source will be shut down if a SARA-listed species is observed within 500m of the energy source."</p> <p>The SOCP specifies that the energy source is shut down immediately if a marine mammal or sea turtle listed as endangered or threatened on Schedule 1 of the SARA is observed within the 500m safety zone and does not identify specific water depths which this condition applies. DFO recommends revision of text to align with the SOCP.</p>	

8	DFO	Page 4.6; Section 4.2.2; Paragraph 1	<p>The Northeast Newfoundland Slope Closure (Marine Refuge) is not depicted on Figure 4-1 or identified in the Section 4.2.2 text. The Northeast Newfoundland Slope Closure is an Other Effective Conservation Measure (OECM) established through the Fisheries Act for the purposes of conserving and protecting corals and sponges and contribute to the long term conservation of biodiversity. Additional information can be found at <a href="https://www.dfo-mpo.gc.ca/oceans/oecm-amcepz/refuges/northeastnewfoundlandslope-talusnordestdeterreneuve-eng.html">https://www.dfo-mpo.gc.ca/oceans/oecm-amcepz/refuges/northeastnewfoundlandslope-talusnordestdeterreneuve-eng.html</a>. DFO recommends that the Northeast Newfoundland Slope Closure boundary be included in Figure 4-1 and proposed project interactions inside the Marine Refuge identified and considered throughout the EA.</p>	
9	DFO	Page 5.2; Section 5.1; Paragraph 3	<p>Refer to Figure 2-1 for a depiction of the Project / Study Area and Regional Area</p> <p>"Figure 2-1 does not depict the project/study area and Regional Area. Please reference the appropriate figure."</p>	
10	DFO	Page 5.2; Section 5.2	<p>"Based on the results of the issues scoping exercise described above, the following VCs are considered in this EA document:</p> <ul style="list-style-type: none"> <li>• Marine Fish and Shellfish</li> <li>• Marine Mammals and Sea Turtles</li> <li>• Marine and/or Migratory Birds</li> <li>• Species at Risk</li> <li>• Fisheries and Other Ocean Users""</li> </ul> <p>Section 6.5 Sensitive Area have been omitted from the list of VCs. DFO recommend editing to include Sensitive Areas as a VC.</p>	
11	DFO	Page 6.25; Section 6.5.4; Paragraph 1	<p>"Because of the anticipated schedule, Project activities are not expected to overlap with sensitive time periods of key resources for some of the Sensitive Areas found within the Project / Study Area."</p> <p>Please elaborate on this statement and identify the Sensitive Area and specific sensitive time periods of key resource that are avoided a result of project scheduling.</p>	

12	DFO	Page 6.6; Section 6.2.3	<p>"The following mitigation measures will be used to reduce adverse environmental effects on Marine Mammals and Sea Turtles:</p> <ul style="list-style-type: none"> <li>• An SMMO will be on board to record marine mammal and sea turtle observations and oversee ramp up procedures.</li> <li>• The EM source will be ramped up over a 20-minute period. In areas where water depths are greater than 500 m, the EM source will not be initiated if a marine mammal or sea turtle is observed 30 minutes prior to ramp-up within a 500 m safety zone of the energy source. Ramp-up will not occur until the animal has moved beyond the 500 m zone or 20 minutes have elapsed since the last sighting.</li> <li>• The EM source will be turned off when data are not being collected (e.g., during vessel turns).</li> <li>• Vessel waste discharges will be managed in accordance with MARPOL.</li> <li>• Low vessel speed (4 to 5.5 km/hr [2 to 3 knots]) will reduce underwater noise and the risk of collision with marine mammals and sea turtles.</li> <li>• Dead or distressed marine mammals or sea turtles and SARA-listed species will be reported to the CNLOPB and DFO."""</li> </ul> <p>"Recommend editing mitigations for consistency and alignment with mitigation outlined in the Statement of Canadian Practice with respect to the Mitigation of Seismic Sound in the Marine Environment (SOCP).</p> <p>Please include mitigations pertaining to shut down of energy source if a marine mammal or sea turtle listed as endangered or threatened on Schedule 1 of the SARA is observed within the 500m safety zone.</p> <p>Note that the SOCP currently does not specify procedures pertaining to water depths."</p>	

1	ECCC-CWS	2.6 Standard Mitigation Measures	<p>“The SMMO will be on board to conduct routine checks for stranded bird and Canadian Wildlife Service (CWS) bird handling and release procedures (e.g. Environment and Climate Change Canada 2016) will be implemented if stranded birds are encountered on the vessel.”</p> <p>ECCC-CWS notes that the location of the survey is located relative to known foraging habitats of Leach’s Storm-petrel (COSEWIC-assessed as Threatened in November 2020), particularly from important breeding colonies at Gull and Baccalieu Island. The project has the potential for increased interactions with Leach’s Storm-petrel and other migratory birds, particularly with respect to attraction to artificial lighting and potential strandings on vessels and project infrastructure (per Gjerdrum et al. 2021, storm-petrels are the most commonly stranded species in NL (93%) based on reports from 1998-2018). The location and proposed timing of activities overlap with peak storm-petrel stranding period (mid-September to mid-November) when young Leach’s Storm-petrel fledge and make their first flight offshore.</p> <p>The prompt location of stranded birds through daily, systematic searches of vessel(s) increases the potential of reducing harm and/or mortality of stranded birds. Gjerdrum et al. 2021 states per reports, 98% of stranded storm-petrels found alive were successfully released back to the ocean.</p> <p>ECCC-CWS recommends that the proponent develop and implement vessel-specific systematic search protocols for stranded birds that will be undertaken by trained, experienced observers. Additionally, ECCC-CWS notes that new guidance has been developed, to complement the Procedures for handling and documenting stranded birds encountered on infrastructure offshore Atlantic Canada (ECCC, 2017), regarding the development and implementation of systematic stranded bird protocols. Guidance has been attached for the proponent’s consideration.</p> <p>ECCC-CWS Guidance for Developing Systematic Stranded Bird Survey Protocols for Vessels and Platforms.</p> <p>Appendix 1 – Stranded Bird Encounter Datasheet</p>	
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2	ECCC-CWS	2.6 Standard Mitigation Measures	<p>“In accordance with the MBCA, a Federal Migratory Bird Permit will be obtained from the CWS for handling stranded birds that may be encountered on the vessel. A salvage report will be filed with CWS as required by the permit.”</p> <p>ECCC-CWS notes that Permit applications can be obtained from via email at: Permi.Atl@ec.gc.ca. Any data collected from stranded bird surveys during the survey should be documented using the stranded bird datasheets and hard or scanned copies of datasheets sent to CWS at: ec.scfatldonneesei-cwsatliadata.ec@ec.gc.ca.</p>	
3	ECCC-CWS	N/A	<p>Given the high potential for migratory bird strandings, particularly Leach’s Storm-petrel in mid-September to mid-November, ECCC-CWS recommends that the proponent consider including stranded seabird awareness training for all members on the vessel, to ensure that individuals are adequately informed of potential impacts to migratory birds. ECCC-CWS is able to provide awareness materials for the proponent’s consideration, if desired.</p>	
1	DND	Section 6.6.3 Mitigation	<p>It is noted that “advance communication with DFO and Department of National Defence during survey planning will limit potential for conflict with research vessel cruises or military activities.”</p> <p>o Please identify a point of contact for communications with Maritime Forces Atlantic (MARLANT) Safety and Environment, Department of National Defence.</p>	
1	NL FFA	Section 3.0, Consultation and Engagement	<p>It mentions that the proponent met with the Fish, Food and Allied Workers (FFAW) to discuss the project. It is also mentioned that a Fisheries Liaison Officer will be onboard the survey vessel to facilitate communication with fishers and provide advice and coordination regarding avoiding fishing vessels and fishing gear. The Newfoundland and Labrador fishing industry is an important ocean stakeholder. Engagement with fish harvesters should continue to be a top priority throughout the assessment process and throughout the lifetime of the project if permitted to proceed.</p>	

2	NL FFA	Section 4.7.1 Summary of Key Commercial Fishing Activity in the Project / Study Areas	FFA would like to note that, during consultation, FFAW indicated Greenland halibut (turbot) as the primary species harvested during the summer along the shelf area to the west of the project/study area. Additionally, Section 4.7.1 Summary of Key Commercial Fishing Activity in the Project / Study Areas also includes 2020 data from Fisheries and Oceans Canada (DFO) that shows turbot landings accounting for 95 per cent weight and value of domestic harvesting activity in the study area. Turbot is an important commercial species for Newfoundland and Labrador harvesters; it was the most valuable groundfish species exported from the province in 2020.	
3	NL FFA	Section 4.2.3 Fish Assemblages	The proponent notes that pelagic species, such as capelin, exhibit inshore offshore migrations. July and August are important months for capelin in terms of spawning and fishing. Table 4.3 indicates that there is a high potential for capelin to be found in the project area and further highlights June, July, and August as spawning times for capelin. While capelin usually spawn in June/July, it is important to consider that they are extremely temperature sensitive, which can result in highly variable spawning times each year.	
4	NL FFA	Section 4. 5 Species at Risk	There have been increased sightings of the endangered North Atlantic Right Whale (NARW), <i>Eubalaena glacialis</i> , in Newfoundland and Labrador waters in recent years. The NARW is particularly vulnerable to extinction, being that it is a slow growing species with only approximately 336 animals remaining worldwide. DFO and Transport Canada have implemented a number of protective measures in an effort to minimize interactions with NARWs. From an economic perspective, Canada is now required to demonstrate stringent efforts to protect marine mammals to meet the United States (U.S) Import Provisions under the Marine Mammal Protection Act so that Canada may continue to export fish and seafood to the U.S. While the proponent considers that NARWs and other marine mammals could be in the area during experimental trials, they should also be aware of the possibility that interactions with NARWs can affect Canada's ability to export seafood.	
5	NL FFA	Section 4.7.1 Summary of Key Commercial Fishing Activity in the Project / Study Areas	It is noted that the Regional Area's eastern extent of the project boundary extends just beyond Canada's Exclusive Economic Zone (EEZ) where the Northwest Atlantic Fisheries Organization (NAFO) holds jurisdiction over commercial fishing activity in those areas. It is advised that the proponent seek to include data from NAFO on fishing activity that might occur during the summer and fall in the project area that extends just beyond the EEZ. In addition to domestic fishing fleets, there may also be international vessels actively fishing in this area during the timeframe of the project.	

6	NL FFA	Section 6.2.3 Mitigation	It is stated that the electromagnetic source will not be initiated if a marine mammal or sea turtle is observed 30 minutes prior to ramp-up within a 500m safety zone of the energy source. It further states that ramp-up will not occur until the animal has moved beyond the 500m zone or 20 minutes have elapsed since the last sighting. It is unclear what rationale was used for determining the appropriate amount of wait time before beginning ramp-up when there has been a sighting (i.e. 30 minutes) or for when a marine mammal or sea turtle has been last sighted (i.e. 20 minutes). The rationale behind determining the appropriate size of the safe zone (i.e. 500m) is also unclear. There is concern that these timeframes and the size of the safe zone may not be sufficient in protecting marine mammals and/or sea turtles from the electromagnetic fields. It should be noted that research on the effects of electromagnetic fields resulting from electromagnetic surveys on the behavior of electrosensitive animals is still very limited.	
7	NL FFA	Section 6.5 Sensitive Areas	The study area for the Controlled Source Electromagnetic Survey overlaps with the Northeast Slope Marine Refuge, as well as additional Significant Benthic Areas for sea pens outside of the Refuge. The Northeast Slope Marine Refuge was created to protect slow-growing, fragile cold-water corals and sponges and is closed to bottom contact fisheries. In section 6.5.4.3 of the Environmental Assessment Report for the Orphan Basin and South Bank Controlled Source Electromagnetic Survey 2022, it is provided that receiver packages are temporarily anchored on the seafloor and that when they are retrieved, the anchor is not retrieved and remains on the seafloor. While it is recognized that the anchors will dissolve within 4 to 12 months, the deployment of receivers and anchors is concerning as approximately 100 m <sup>2</sup> of benthic habitat will be disturbed. Sea pens, which are thought to be the dominant species of coral in the area, have slow growth rates meaning that once a colony is destroyed or threatened it takes a considerable amount of time for sea pens to re-establish. Cold-water corals and sponges provide essential habitat for juvenile fish, including those that are commercially valuable.	
1	FFAW	Section 2.2 Project Location	We would like to note that this is a single year application, and that only activities in the Orphan Basin are considered and assessed.	