Environmental Assessment of HMDC's 2D/3D/4D Seismic Projects 2013-Life of Field Newfoundland Offshore Area Addendum

Prepared by

LGL LIMITED
environmental research associates

for

July 2013 (revised 22 August 2013)
LGL Project No. SA1207

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INTRODUCTION

This document is an Addendum to Hibernia's seismic environmental assessment (EA) submitted to the Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB) in April 2013 (LGL 2013). It contains Hibernia's responses to reviewers' comments received in June and July 2013.

In the following comments and associated responses, Reviewer Comments are quoted *verbatim* and shown in *italics*. Hibernia Responses are provided in regular text.

Reference cited:

LGL Limited. 2013. Environmental Assessment of HMDC's 2D/3D/4D Seismic Projects 2013-Life of Field, Newfoundland Offshore Area. LGL Rep. SA1207. Prepared by LGL Limited for Hibernia Management and Development Company Ltd., St. John's, NL. 227 p. + appendices.

GENERAL COMMENTS

Canada – Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB)

C-NLOPB Comment: *The proponent is required to submit environmental reports on seabird and marine mammal observations, including the raw data to EC-CWS and DFO, respectively, within a year of completing seismic surveys. The C-NLOPB is to be copied on this correspondence.*

HMDC Response: So noted and Hibernia will comply with this requirement under conditions specified below under Specific Comments.

C-NLOPB Comment: *In order to consider the ocean bottom cables (OBC) adequately assessed, more information/details on the actual activity is required. See specific comments in Section 2.2.11. Without this information, the assessment ratings for each VEC, as determined in the various subsections in Section 5.0, are not considered valid. For example, Section 5.6.1 on page 109 states that "placement and retrieval of OBCs which contain receivers (hydrophones) may cause some small disturbance to the seabed but the area involved and the rapid return to normal suggest no change in the prediction of Negligible residual effects on fish habitat of the Study Area.". There have not been enough details provided on OBCs to make this determination. There has not been enough information provided to demonstrate the accuracy of the predicted effects.*

HMDC Response: Due to the presence of the Hibernia GBS and other potential infrastructure obstructions, the use of standard towed floating streamers is not possible. Therefore, a seismic data gap will exist for the field after the 2013 towed survey. On bottom cables (OBCs) are typically used in these situations to acquire any missing seismic data. Such data is referred to as OBC infill data. Thus, OBCs would only be used to acquire infill data around the Hibernia GBS or around other obstructions that could be present in the future (e.g., a drilling rig). With the OBCs on the seafloor, data can be safely acquired immediately adjacent to the GBS as the source array is safely towed in the immediate vicinity of the platform.

The OBC cable configuration would be centered on the Hibernia GBS in the same orientation as the 2001 legacy Hibernia streamer data. OBC surveys would use between two and six receiver cables, approximately 6 to 12 km in length (each), and spaced between 200 and 500 m apart. The sensor housings and armored cable are designed to be heavier than water, and sink to the ocean bottom during deployment. No trenching or deliberate disturbance of the seafloor is required (the only disturbance is related to the cables settling onto the seafloor). Usually cables are laid out in a continuous length, curved at the ends to link up the receiver lines. For the OBC survey planned at Hibernia, cables will remain on the seafloor for the duration of the survey (approx. 2-6 weeks). Depending on the type of system, the end of the cable may be connected to a recording / cable handling vessel, or may be marked by a floating, self-powered recording buoy. The seismic source will be deployed from a separate vessel, and will be an industry standard tuned air source array. Usually the source vessel tows two sources, which are activated alternately every 6-12 seconds, similar to surface streamer seismic acquisition.

The OBC cable has a circumference of 15 cm (0.15 m) and a grand total length of 12,000 m (6 cables of 2,000 m each). Assuming 25% of the circumference penetrates the seabed given the relatively hard substrate in the area, provides an estimate of a direct area of effect of about 8,478 m^2 or 0.0 1 km^2 (1 m = 1 x 10^{-6} km). The EA predicted that any effects of OBC deployment and retrieval would be not significant with ratings of negligible magnitude of reversible effects, a geographic extent of less than one square kilometer, in a less than pristine area. While any effects would be continuous, the duration will be less than one month (see Table 5.2 in the EA). If the OBC survey goes over 4 weeks then the duration rating in Table 5.2 would change to the next higher rating but the prediction remains at not significant.

Department of National Defence (DND)

DND Comment: *The report notes that DND will be contacted in regard to potential unexploded ordnance (UXO) in the area prior to any deployment of ocean bottom cables; however, DND provided additional comments on the project during the scoping phase and the comments are not fully represented in the EA Report. DND requests these comments, stated below, be included in the report.*

DND is likely to be operating in the vicinity of the study area in a non-interference manner during the project timeframe.

A search of the unexploded ordinates (UXO) records was conducted to determine the possible presence of UXO within the proponent's project area. Records indicate there are no wrecks present within the survey area. Given DND's understanding of the survey activities to be conducted, the associated UXO risk is assessed as negligible. Nonetheless, due to the inherent dangers associated with UXO and the fact that the Atlantic Ocean was exposed to many naval engagements during WWII, should any suspected UXO be encountered during the course of the proponent's operations it should not be disturbed/manipulated. The proponent should mark the location and immediately inform the Coast Guard. Additional information is available in the 2012 Annual Edition - Notices to Mariners. Section F, No.37. In the event of activities which may have contact with the seabed (such as drilling or mooring), it is strongly advised that operational aids, such as remote operated vehicles, be used to conduct seabed surveys in order to prevent unintentional contact with harmful UXO items that may have gone unreported or undetected. General information regarding UXO is available at our website at www.uxocanada.forces.gc.ca.

HMDC Response: Please add the following two paragraphs at the end of Section 5.5:

"DND is likely to be operating in the vicinity of the study area in a non-interference manner during the project timeframe.

A search of the unexploded ordinates (UXO) records was conducted by DND to determine the possible presence of UXO within the Project Area. Records indicate that there are no wrecks present within this area. Given DND's understanding of the survey activities to be conducted, the associated UXO risk is assessed as negligible. Nonetheless, due to the inherent dangers associated with UXO and the fact that the Atlantic Ocean was exposed to many naval engagements during WWII, should any suspected UXO be encountered during the course of the Hibernia's operations it will not be disturbed/manipulated. Hibernia will mark the location and immediately inform the Coast Guard. Additional information is available in the 2012 Annual Edition - Notices to Mariners. Section F, No.37. In the event of activities which may have contact with the seabed (such as OBC installation and removal), DND strongly advises that operational aids, such as remote operated vehicles, be used to conduct seabed surveys in order to prevent unintentional contact with harmful UXO items that may have gone unreported or undetected. General information regarding UXO is available at DND's website at www.uxocanada.forces.gc.ca."

Fisheries and Oceans Canada (DFO)

DFO Comment: *Please be advised that the "Statement of Canadian Practice with respect to the Mitigation of Seismic Sound in the Marine Environment" (SOCP) specifies the mitigation requirements that must be met during the planning and conduct of marine seismic surveys, in order to minimize impacts on life in the oceans. These requirements are set out as minimum standards to be implemented during the planning and conduct of seismic programs. As such it is advised that the proponent adhere to all relevant minimum mitigations outlined in the SOCP including the Planning Seismic Surveys, Safety Zone and Start-up, Shut-down of Air Source Array(s), Line Changes and Maintenance Shut-downs, Operations in Low Visibility and Additional Mitigative Measures and Modifications sections of the SOCP.*

HMDC Response: Hibernia will adhere to all relevant minimum mitigations as outlined in the *SOCP*.

DFO Comment: *The report indicates that the 4D survey for 2013 may occur at any time from May 1 to December 31. Any potential other seismic surveys conducted during subsequent seasons in 2014-End of Field (EF) will also occur during the same temporal window of 1 May to 31 December. While the proponent does acknowledge that Species at Risk Act (SARA) requirements could change over this timeframe and that they will reassess accordingly, DFO would like to note that changes to the SARA could include additions to species on Schedule 1 of SARA, changes in species status, new recovery strategies, action plans and/or management plans and identification of critical habitat. Please continue to refer to the Species at Risk Public Registry (www.sararegistry.gc.ca) to get the most up to date information.*

HMDC Response: Hibernia will continue to refer to the Species at Risk Public Registry (www.sararegistry.gc.ca) to get the most up to date information in regard to changes to the *SARA* which could include additions to species on Schedule 1 of *SARA*, changes in species status, new recovery strategies, action plans and/or management plans and identification of critical habitat.

DFO Comment: *As is common practice sightings data for marine mammals and sea turtles should be forwarded to DFO.*

HMDC Response: Hibernia agrees to forward sightings data for marine mammals and sea turtles to DFO.

Fish, Food and Allied Workers (FFAW)

FFAW Comment: *In light of the Study Area involving or being precariously close to some of the most fruitful harvesting grounds for members of the FFAW, both for Shrimp and Snow Crab. Further, considering the changing environmental circumstances and species composition, the FFAW would suggest that having an Environmental Assessment covering seismic '2013-life of field' is not tenable.*

With environmental changes there will be changes to where species are harvested. For Snow Crab this could cause harvesting taking place in shallower water as the water on the Grand Banks plateau is expected to remain cold as there as some deeper waters come to have higher temperatures.

HMDC Response: The EA will undergo an Annual Scope Review including consultations with One Ocean and the FFAW in order to capture any changes in the environment, fisheries, or project details. Any relevant important changes will be addressed in an EA Amendment.

FFAW Comment: *With regards the discussions on seismic activity and fisheries science (i.e., page 63 and pages 136-37), the FFAW maintains its stance that there should be no seismic activity on or near the Industry-DFO Collaborative Trap Survey for Snow Crab locations until said locations have been completed. As this scientific survey is a collaborative effort it would necessarily require consultation with both entities pursuing the research. The document suggests that DFO was consulted on something of this nature in 2002 and these consultations then necessarily still apply. However, the FFAW was not brought into the discussions around the suggested temporal and spatial separation plan in 2002. The research locations have been the same since the beginning and it is paramount for the scientific integrity that these remain such, especially due to the importance it can have on the future economics for the harvesting fleet.*

HMDC Response: Locations are shown in Figure 4.24 of the EA. There are six or eight locations that fall within the Study Area but none within the Project Area, and all 40 km or more from the 2013 seismic acquisition area. Hibernia will manage potential interactions with the crab surveys via continued communications with FFAW.

SPECIFIC COMMENTS

Canada – Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB)

Section 2.1 Spatial and Temporal Boundaries of the Project, 1st para., line 4, pg 5 – "*It also includes any additional turning area if required.*" *The seismic vessel turning area should be included in the 'Project Area". As per the March 4, 2013 Scoping Document, the Project Area is the area in which seismic survey activities are to occur, including the area of the buffer zone normally defined for line*

changes. The 'Study Area" encompasses the Project Area plus a 20-km buffer area around the Project Area to account for any propagation of seismic survey sound beyond the Project Area.

HMDC Response: The Project Area encompasses both the seismic acquisition area (i.e., red box in Figure 1.1) and the area required for turning (i.e., the inner dotted line boundary in Figure 1.1). The first paragraph of Section 2.1 is revised as follows:

"In terms of spatial boundaries, the Study Area encompasses the Project Area plus a 20-km buffer area around the Project Area; this buffer is to account for any propagation of seismic survey sound beyond the Project Area that could potentially affect marine biota (Figure 1.1.) The Project Area encompasses the 2013 Seismic Acquisition Area (Figure 1.1) as well as a turning area surrounding the acquisition area. The Study Area is equivalent to the "Affected Area" described in the Scoping Document. The temporal boundaries include 2013-EF wherein surveys may occur anytime between 1 May and 31 December."

Section 2.1 Spatial and Temporal Boundaries of the Project, 1st para., last sentence, pg 5 – "*The temporal boundaries include 2013-EF wherein surveys may occur anytime between 1 May and 30 December*." *Section 2.2 Project Overview, 2nd and 3rd para. states* "*31 December*".

HMDC Response: The sentence is amended as follows:

"The temporal boundaries include 2013-EF wherein surveys may occur anytime between 1 May and 31 December."

Section 2.2.5 Site Plans, line 1, pg 7 – *Should "2012-EF" be "2013-EF"? Also stated in Section 2.6.1.*

HMDC Response: That is correct. Section 2.2.5 is amended as follows:

"The Project Area proposed for the 2013-EF seismic program is shown in Figure 1.1. Water depths in the Project Area range from <100 m to <200 m. The Seismic Acquisition Area for 2013 is also indicated in Figure 1.1."

Please amend Section 2.6.1 to 2013-EF as well.

Section 2.2.11 On Bottom Cables, pg 9 – *It is not enough to say "More specifics can be provided in the future if and when OBCs are to be used". Project details are required in this EA report in order to consider the assessment valid. Details such as how many cables or nodes, how do they stay on the seabed, how long would they be on the seabed (timing for deployment and removal), vessel and equipment description, surface markers, energy source.*

Please see details for same question in "General Comments" above.

Section 2.4 Project Site Information, 2nd para., line 3, pg 11 – *The turning area must be within the identified "Project Area".*

HMDC Response: The turning zone is within the Project Area identified in Figure 1.1. Please replace the following sentence:

"The Study Area includes a 20 km turning area (buffer around Project Area) to accommodate ship turning, holding, and streamer deployment (Figure 1.1)"… with the sentence below.

"The Project Area includes a 20-km turning area (buffer around the Seismic Acquisition Area) to accommodate ship turning, holding, streamer deployment and if required, air source testing (Figure 1.1)."

Section 2.4 Project Site Information, last line, pg 12 – "*The 702 km^2 area and a 20 km turning zone are defined by the coordinates in Table 2.2*". *Please confirm that the turning zone is within the Project Area.*

HMDC Response: Confirmed. The turning zone is contained within the Project Area. See also the previous response above.

Section 4.3.4.1 Snow Crab, page 55, first and last paragraph, *there are two references to (R. Dunphy, Hibernia Management & Development Co. Ltd. – ExxonMobil Canada Properties Environmental Lead, pers. comm., 2013). The more appropriate, and proper, reference is what the reviewer finds in Section 6.0 Literature Cited, "...reference to the One Ocean Board Meeting Jan. 2013 Minutes..." The way it is now may be interpreted as a conflict of interest as the consultant (LGL) is quoting the client (HMDC).*

HMDC Response: Please change (R. Dunphy, Hibernia Management & Development Co. Ltd. – ExxonMobil Canada Properties Environmental Lead, pers. comm., 2013) to (One Ocean Board Meeting Jan. 2013 Minutes).

Section 4.3.4.2 Northern Shrimp, pages 59-60, last paragraph, *there is a reference to (R. Dunphy, Hibernia Management & Development Co. Ltd. – ExxonMobil Canada Properties Environmental Lead, pers. comm., 2013). The more appropriate, and proper, reference is what the reviewer finds in Section 6.0 Literature Cited, "...reference to the One Ocean Board Meeting Jan. 2013 Minutes..." The way it is now may be interpreted as a conflict of interest as the consultant (LGL) is quoting the client (HMDC).*

HMDC Response: Please change (R. Dunphy, Hibernia Management & Development Co. Ltd. – ExxonMobil Canada Properties Environmental Lead, pers. comm., 2013) to (One Ocean Board Meeting Jan. 2013 Minutes).

Section 5.5 Effects of the Environment on the Project, 2nd para., line 4, pg 108 – "*Icebergs may cause some detours in May*…". *Please discuss "detours". Specifically, what mitigation will be in place if these detours are outside the Project Area?*

HMDC Response: All necessary measures will be taken to ensure the safety of the vessel and personnel. If icebergs become a threat warranting a deviation from the survey plan, the vessel could be forced to sail outside the Project Area with streamers in tow but no source array activation will be required.

In such a case a notification to mariners will be issued. The FLO and picket vessel will continue to function to identify fishing gear locations and communicate with fishers as needed.

Section 5.5 Effects of the Environment on the Project, 1st para., pg 109 – *More detail is required in the event that extreme weather conditions have to suspend surveys. What would typically be done in this scenario? Would streamers be taken out of the water? If the vessel has to leave the Project Area, what mitigation would be applied?*

HMDC Response: All necessary measures will be taken to ensure the safety of the vessel and personnel. If extreme weather conditions become a threat warranting a deviation from the survey plan, the vessel could be forced to sail outside the project area but no source array activation will required.

In such a case, a notification to mariners will be issued. The FLO and picket vessel will continue to function to identify fishing gear locations and communicate with fishers as needed.

Section 5.6.2.2 Vessel Presence Including Streamers and OBC, pg 136 – "*During transit to the seismic survey area, streamers may be deployed. Therefore, a separate route analysis will be prepared and discussions with fishing interests will be conducted before the transit*". *The transit area has not been identified nor assessed. As per previous comments, all project activities associated with the proposed program are to take place within the area identified in the EA report as the "Project Area". This activity does not fall within this area.*

HMDC Response: In 2013, the streamers will have already been deployed for the Hebron survey; therefore, this is not an issue at present. In future years, it may be desirable to commence deployment on approach to the Project Area. If this is the case the Project Area can be adjusted to show a deployment area based upon the most up to date survey design and fisheries distributions as part of the annual EA scope review and amendment.

The sentence in question is amended as follows:

While not planned for 2013, during transit to the seismic survey area it may be desirable to deploy streamers while enroute. Therefore, a separate route analysis will be identified and the Project Area adjusted accordingly. As part of the annual EA review, an EA amendment will be prepared and consultations will be held with stakeholders. Deploying while in transit does not apply to OBC surveys.

Section 5.6.2.2 Vessel Presence Including Streamers and OBC, subsection Avoidance, page 136, last paragraph, first sentence, *this sentence is incorrect as the onus is on the proponent to request such information from those involved in DFO and joint DFO/Industry research surveys.*

HMDC Response: The last paragraph under Avoidance p. 135-136 states "As with the commercial fishery, those involved in DFO and joint DFO/Industry research surveys will need to exchange detailed locational information with those involved in the seismic surveying. In 2002 when the plan was first implemented in the eastern Newfoundland Region, positional information was exchanged between DFO and the seismic survey company. A temporal and spatial separation plan was then agreed to with DFO

and implemented by the seismic vessel to ensure that seismic operations did not interfere with the research survey. This included adequate "quiet time" before the research vessel arrived at its survey location. The avoidance protocol includes a 30 km (16 nmi) spatial separation and a seven day pre-research survey temporal separation."

Hibernia will contact DFO to obtain information on the timing and locations of any DFO and joint DFO/Industry research surveys in order to avoid any potential conflicts.

Section 5.8.3 Fisheries, pages 204-205, last paragraph, last sentence, *"... this EA will be updated accordingly if it is determined the project differs substantially from the activity assessed herein." This is incorrect, the sentence should read, ""... this EA will be updated AMENDED accordingly if it is determined the project differs substantially from the activity assessed herein." Activities that were not scoped or assessed for this environmental assessment cannot be authorized without an amendment.*

HMDC Response: Please change the wording from "updated" to "amended" in this sentence.

Environment Canada – CWS

EC-01, Section 2.2 Project Description, *EC-CWS continues to recommend the implementation of a seabird monitoring protocol for all offshore projects. Although it was originally provided with the EC-CWS comments concerning the guidelines for this project, EC-CWS again provides the CWS monitoring protocol for pelagic seabirds at sea (attached), as well as a guide for pelagic seabirds of Atlantic Canada (attached) for assistance in identifying pelagic seabirds in the area. As is noted in Section 5.8.2 of the environmental assessment, surveys of this nature are typically performed by the Marine Mammal Observer in cases where a dedicated Seabird Observer is not available. A report of the seabird monitoring program, together with any recommended changes, is to be submitted to EC-CWS on a yearly basis. In an effort to expedite the process of data exchange, EC-CWS recommends that the data (as it relates to migratory birds or Species at Risk) collected from the monitoring program be forwarded in digital format to the EC-CWS office following completion of the study. These data will be centralized for EC-CWS's internal use to help ensure that the best possible natural resource management decisions are made for these species in Newfoundland and Labrador. Metadata will be retained to identify source of data and will not be used for the purpose of publication. EC-CWS will not copy, distribute, loan, lease, sell, or use of this data as part of a value added product or otherwise make the data available to any other party without the prior express written consent.*

HMDC Response: So noted and Hibernia will comply with the requirement to supply a seabird report and associated digital data within one year under the conditions specified.

EC-02, Section 2.3 Mitigations, *The pelagic seabird monitoring program recommended in the guidelines and in EC-01 should be added to this section.*

HMDC Response: Please add the following sentence to Section 2.3:

"A pelagic seabird monitoring program will be instituted by the MMO (s) generally consistent with the protocols contained in Gjerdrum et al. (2012)."

Reference Cited:

Gjerdrum, C., D.A. Fifield, and S.I. Wilhelm. 2012. Eastern Canada Seabirds at Sea (ECSAS) standardized protocol for pelagic seabird surveys from moving and stationary platforms. Canadian Wildlife Service Technical Report Series No. 515. Atlantic Region. vi + 37 pp.

EC-03, Section 5.6.3.1 Sound, *The protocol of ramping up the airgun prior to use should be listed as a mitigation activity in this section, similar to how it is referenced throughout the previous sections concerning marine mammals. Though this mitigation is referenced as a deterrent for marine mammals, it functions as a similar deterrent for avifauna.*

HMDC Response: Please add to the fourth paragraph in Section 5.6.3.1 as last sentence:

"The standard mitigation of ramping up air sources to minimize effects on marine mammals should also deter seabirds in the area from submerging near the air sources."

Also, please add "Ramp-up" under Mitigations in Table 5.8 in this section.

EC-04, Section 5.6.3.2 Vessel Lights, *Quote: "Deck lighting can be minimized (if it is safe and practical to do so) to reduce the likelihood of stranding." EC-CWS recommends changing this to "Deck lighting will be minimized (if it is safe and practical to do so) to reduce the likelihood of stranding."*

HMDC Response: Please change sentence to read: "Deck lighting will be minimized (if it is safe and practical to do so) to reduce the likelihood of stranding."

EC-05, Section 5.6.3.2 Vessel Lights, *The section regarding Leach's Storm-Petrel on page 144 should be moved to or referred to in section 5.8.2 (Mitigations).*

HMDC Response: Please add the following text to Table 5.18 under Primary Mitigations adjacent to "Injury (mortality) to stranded seabirds":

"See Section 5.6.3.2 in regard to Leach's Storm-Petrel."

EC-06, Section 5.6.3.7 Accidental Releases, *EC-CWS continues to support the use of solid seismic streamers due to the potential of the release of streamer fluid from liquid-filled seismic streamers. Though potential accidental releases of Isopar M are predicted to be small in magnitude, these releases should still be discussed in the oil spill response plan. Solid streamers do not release sheen-inducing substances, and so are not likely to negatively affect migratory birds.*

HMDC Response: It is ExxonMobil and Hibernia's policy to require the seismic contractor to use solid streamers. If unforeseen circumstances necessitate the use of liquid-filled (Isopar) streamers then the Hibernia Oil Spill Response Plan will be amended accordingly. Isopar M is a light hydrocarbon subject to rapid dispersal in the marine environment. While recovery with absorbents would be considered in a plan amendment, the most likely and practical response option is to have a work boat and/or picket vessel mechanically disperse the fluid to reduce the risk to wildlife.

EC-07, Section 5.6.5 Species at Risk, *In addition to the mitigations listed, strandings of Ivory Gull (regardless of injury) should be recorded by the seabird observer and submitted annually with the bird survey data mentioned in section 5.8.2.*

HMDC Response: All seabird strandings are typically reported as part of the MMO's duties.

EC-08, Section 5.8.2 Seabirds, *Quote: "Storm-petrels showing signs of possible oiling must be captured and released as per "Williams and Chardine" protocol." Any birds contaminated with oil should be kept in a separate box and not mixed with clean birds. Contact the Canadian Wildlife Service at 709-772-5585 for instructions on how to deal with contaminated birds.*

HMDC Response: Storm-petrels showing signs of possible oiling will be captured and released as per "Williams and Chardine" protocol." Any birds contaminated with oil will be kept in a separate box and not mixed with clean birds. The Canadian Wildlife Service at 709-772-5585 will be contacted for instructions on how to deal with contaminated birds.

EC-09, Section 5.8.2 Seabirds, *Quote: "Injured birds: Sabina Wilhelm, Canadian Wildlife Service (709-764-1957 sabina.wilhelm@ec.gc.ca) must be notified and contacted for instructions immediately upon discovery." The proper contact information for Sabina Wilhelm is (709) 772-5568, sabina.wilhelm@ec.gc.ca.*

HMDC Response: Sabina Wilhelm, Canadian Wildlife Service) will be notified and contacted for instructions immediately upon discovery of injured birds (709-772-5568, sabina.wilhelm@ec.gc.ca).

EC-10, Section 5.8.2 Seabirds, *Quote: "Dead Birds: Non-oiled birds found dead or that die before release should be identified, recorded and disposed of at sea." If more than 10 birds are found dead in the same event, they need to be collected and sent ashore to Canadian Wildlife Service personnel at Environment Canada. Details of how to undertake this are included in the attached protocol designed for handling non-oiled, dead birds (attached).*

HMDC Response: Non-oiled birds found dead or that die before release will be identified, recorded and disposed of at sea. If more than 10 birds are found dead in the same event, they need to be collected and sent ashore to Canadian Wildlife Service personnel at Environment Canada as per CWS protocols designed for handling non-oiled, dead birds.

Fish, Food and Allied Workers (FFAW)

Section 4.2.4.2 Other Fishes Caught in the Commercial Fishery, Atlantic Cod, page 37, *there are scientific opinions that differ from the perspective portrayed in the quoted DFO reports. Independent science has indeed argued/showed that there are in fact regions with significant spawning biomasses. Further, there is disagreement as to what is to be considered as an acceptable return in the biomass.*

HMDC Response: HMDC concurs with the FFAW that there are differing scientific opinions.

Section 4.3.4.1 Snow Crab, page 56, second paragraph, first sentence, *it is indicated that harvesting and seismic activities might overlap in space and time. This would not be acceptable for the FFAW – seismic activity should not be pursued on active fishing grounds.*

HMDC Response: Referring to Figures 4.9 to 4.23 in the EA, it is evident that at least in recent years fishing activity in the Project Area is relatively low. This further demonstrates the importance of the Annual Scope Review as a way to address any changes that may occur in the future. As described in the EA, HMDC will utilize a FLO, picket vessel, referral to the VMS, and other mitigation procedures to eliminate or at least minimize any potential conflicts with active fishers.

Section 4.3.4.1 Snow Crab, page 56, second paragraph, first sentence, *there was no indication that Ocean Bottom Cables would be used in the 2013 program, whereby the indicated discussion should not be pertinent for the 2013 discussion as is indicated.*

HMDC Response: The Project is scoped from 2013 to EF and OBC will likely be used at some point during that time to fill in any seismic data gaps. At present there is no plan to conduct an OBC survey in 2013.

Section 4.3.4.2 Northern Shrimp, page 59, first paragraph, *the concern of conflict should not be confined to gear, there is a real concern amongst harvesters that seismic activity has an impact on catch per unit effort or it changes a species distribution. A change to distribution during a season incurs significant costs for harvesters – likewise do potential decreases in catch per unit effort.*

HMDC Response: The potential effect of seismic on CPUE is a very complex research issue that is beyond the ability of a single operator to address. Referring to Figures 4.9 to 4.23 in the EA, it is evident that at least in recent years fishing activity in the Project Area is relatively low.

Section 4.3.4.2 Northern Shrimp, page 59, second paragraph, *there should have been a stronger reference in the document with regards to the opening on fisheries – the reference used is personal communication with a proponent staff member.*

HMDC Response: The reference is changed to "One Ocean Board Meeting Jan. 2013 Minutes".

Section 4.3.4.2 Northern Shrimp, Figure 4.23, page 62, *there should have been given a greater context to what is being depicted. It would be pertinent to note the timing of who fishes where and when. The cause of the volume harvested in January and February is due to the offshore fleet not having access to northern grounds at that time of year. However, there is no note of such facts in this document.*

HMDC Response: So noted that the relatively high catches shown for January and February are due to the offshore fleet not having access to northern grounds at that time of year. HMDC Project activities may occur from May through December.