Hebron 2010 Geohazard Survey Environmental Assessment Addendum

Submitted by:

ExxonMobil Canada Properties

Date: May 20, 2010

Prepared by:

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Preface

This addendum addresses comments received from the Canada-Newfoundland Offshore Petroleum Board respecting the Hebron 2010 Geohazard Survey Environmental Assessment submitted to the C-NLOPB in March, 2010.

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LIST OF APPENDICES

1.0 GENERAL COMMENTS

For completeness, please include in ExxonMobil's response to these review comments the information provided to the C-NLOPB on April 21 and April 29, 2010 regarding the extension to the proposed program's Project Area. This information was provided in addition to the March 17, 2010 EA report and included an extension beyond the Hebron SDLs into the adjacent SDL1042 to accommodate the survey vessel's turning radius.

Response: ***Noted. The information provided to the C-NLOPB on April 21 and April 29, 2010 regarding the modification to the proposed Project Area to accommodate the survey vessel's turning radius is included In Appendix A.***

1.1 Seabird Data Collection

This survey provides a good opportunity to collect additional seabird data from the area, as committed to by the proponent in the EA Report in Section 3.1. It should also be indicated in Section 6.11, Monitoring and Follow-up.

Response: The following text has been added to Section 3.1.

Marine mammal and sea turtle monitoring and observation protocols will be consistent with the Geophysical, Geological, Environmental and Geotechnical Program Guidelines (C-NLOPB 2008). Seabird observations will be undertaken as per the pelagic seabird monitoring protocol developed by Canadian Wildlife Service (CWS), during the survey.

In an effort to expedite the process of data exchange, the Canadian Wildlife Service (CWS) would appreciate that the data (as it relates to migratory birds at risk) collected from these surveys be forwarded in digital format to the CWS office following completion of the study. These data will be centralized for the internal use of CWS to help ensure that the best possible natural resource management decisions are made for those species in Newfoundland and Labrador. Metadata will be retained to identify source of data and will not be used for the purpose of publication. The CWS will not copy, distribute, loan, lease, sell or use this data as part of a value added product or otherwise make the data available to any other party without prior express written consent.

Response: Data will be provided to CWS and where practical the data will be provided in digital format.

1.2 Marine Navigation

The proponent should promulgate actual work locations as per Navigation to Ship notices (NOTSHIPS) as the Department of National Defence will be transiting through the area en route to northern latitudes during the timeframe provided by ExxonMobil.

Response: ***Noted and thank you for the information regarding Department of National Defence plans. It is the intent of EMCP to provide work locations as part of the Navigation to Ship notices (NOTSHIPS).***

Based on the information that Marine Forces Atlantic, also known as MARLANT, currently holds, there are no concerns with shipwrecks or unexploded ordinates (UXO) in this area.

Response: ***Acknowledged and thank you for the information.***

1.3 Fisheries

The proposed project is tentatively scheduled to take place during shrimp and snow crab fisheries. These fisheries are expected to involve approximately 300 commercial fishing vessels fishing and/or transiting through the general offshore area during this time. As there is no temporary exclusion area from fishing in the area that ExxonMobil proposes to conduct their survey, the deployment of an FLO onboard the survey vessel, as noted in the EA Report, could effectively reduce any potential conflicts with fishing vessels or gear during the survey program. The FLO will serve as a communication link for the fishing industry during the geohazard program.

Response: ***Agree***

To avoid excess duplication in relation to the description of the biological and physical environment, the environmental assessment (EA) report often refers to earlier more extensive reports by LGL and Jacques Whitford. This is reasonable unless the information is critical in relation to ranking of risks.

Response: ***Agree***

1.4 Fish and Shellfish

It is recognized that geohazard surveys are quite small in terms of their geographic magnitude and duration and any effects on fish or shellfish during such surveys would likely be quite limited or insignificant. However, this report should have noted that there are still major uncertainties surrounding the risks associated with these activities in the absence of data. Questions remain regarding monitoring programs in relation to seismic and similar programs where airgun, multibeam and side scan sonar surveys of sound will be employed, and this point has been further highlighted in a European report on marine noise.

Response: ***Noted and acknowledge that due to existing data gaps with respect to the effects of seismic activities and/or the lack of data with respect to species-specific seismic effects, there are uncertainties associated with the***

undertaking of geohazard surveys even though geohazard surveys are of limited geographical magnitude and duration.

It is understood that little can be gained in relation to addressing knowledge gaps for biological effects under the conditions of most surveys and also that this particular survey is quite small in nature. However, the following paper, which found no evidence of acute mortalities in monkfish larvae exposed to seismic, may be of general interest in relation to potential larval effects: *Payne, J.F, J. Coady and D. White. 2009. Potential effects of Seismic airgun discharges on monkfish eggs (Lophius americanus) and larvae. Environment Studies Research Funds Report No 170, 32 p.*

Response: Acknowledged. The following paragraph incorporating information from the report, has been inserted after paragraph 4 on page 110.

Recent collaborative research was conducted by the Fish Food and Allied Workers (FFAW) Union and Fisheries and Oceans Canada (DFO) on the potential effects of sound on developing monkfish eggs (Payne et al. 2009). This study found that there were no significant differences observed between control and exposed larvae examined 48 to 72 hours post-exposure. This study recognizes the potential difficulty in collection of monkfish veils, so it was decided that research should also be conducted on capelin eggs. Although artificial fertilization was poor, no significant differences in mortality were observed between control and capelin eggs exposed to seismic energy and examined three days post-exposure to 20 airgun discharges (Payne et al. 2009). Payne et al. (2009) concluded it is unlikely that seismic surveys pose any real risk to either monkfish eggs or near-hatch larvae that may float in veils on the sea surface during monkfish spawning.

1.5 Marine Mammals

In the description of marine mammals in the Project Study Area, it should be noted that sperm whales are attracted to fishing operations on the Grand Banks and therefore may approach other vessels as well. Additionally, the EA report does not mention that there are frequent sightings of fin whales on the Grand Banks during all seasons, and that blue whales (a *SARA* species) have also been sighted in the offshore area every year. There also seems to be an assumption within the EA report that there are no known special feeding areas or sensitive areas related to marine mammals in the area. This assumption cannot be completely warranted based on the lack of research effort in this area.

Response: Noted and the following edits have been made to address the above noted comments.

Section 5.2.2.1, first Paragraph, last sentence (page 43) revised: The size of the Northwest Atlantic population is currently unknown. However, Beauchamp et al. (2009) cites experts that estimate that the number of mature animals is unlikely to exceed 250 individuals and, as illustrated in Figures 5.4 to 5.6, are observed year round on the Grand Banks.

Section 5.2.2.2, second Paragraph (page 77) revised: Fin whales are found in oceans worldwide, making seasonal migrations between low-latitude wintering areas and high-latitude feeding grounds (COSEWIC 2005), but are most common in temperate and polar regions (Jefferson et al. 2008) and may be found year round on the Grand Banks (see Figures 5.4 to 5.6).

Section 5.5.2.1, first Paragraph, last Sentence (page 44) revised: It has been noted that sperm whales have been attracted to fishing operations on the Grand Banks and, therefore, may approach other vessels as well (C-NLOPB 2010).

With respect to feeding areas or sensitive areas, it is acknowledged that the related sentences should have incorporated a qualifier that identifies existing data gaps in some manner, such as "…that there are no known feeding areas or sensitive areas in part due to existing data gaps".

Also in the description of marine mammals, the report states that "*The best available abundance estimates for each of the marine mammal species in the Northwest Atlantic, as well as for eastern Newfoundland, are provided in Table 5.6* (*Page 73*)." It should be noted that there is an updated set of abundance estimates for cetaceans on the Atlantic Canadian coast by Lawson and Gosselin (2009) (*Lawson, J.W., and Gosselin, J.-F. 2009. Distribution and preliminary abundance estimates for cetaceans seen during Canada's marine megafauna survey - a component of the 2007 TNASS. DFO Canadian Science Advisory Secretariat Research Document 2009/031. iv + 29 p.*), which should be referenced where appropriate throughout the report. This report provides abundance estimates for the more common cetacean species in the northwest Atlantic.

Response: The paper by Lawson and Gosseline (2009) was reviewed and the following information is incorporated into Section 5.5, following Table 5.6 on page 74.

An aerial survey of cetaceans was conducted in the Northwest Atlantic during the summer of 2007 (Lawson and Gosseline 2009). The most common species sighted during the Newfoundland portion of this survey was the humpback whale, followed by minke and fin whales (Lawson and Gosseline 2009). It was noted that few small cetaceans were sighted in the Newfoundland and Labrador Strata despite good conditions and significant effort. This may have resulted from the late arrival of cetaceans in the Newfoundland and Labrador region in 2007, as borne out by reports from fisheries officers, fishers, and tour operators, and the fact that more marine mammal sightings were recorded late in the survey (Lawson and Gosseline 2009).

The operational mitigation measures (small operating area of 1 x 1 km survey area plus 2.5 x 2 km flow line route; 7 to 12 days for data acquisition, dependent on weather) will help to reduce any potential impacts on marine mammals. However, marine mammals and sea turtles will certainly be able to detect the variety of sound sources proposed. For this reason, the following comments have been put forward:

- It is recommended that the proponents employ multiple Marine Mammal Observers (MMOs) to monitor operations during daylight operations, rather than a single Fisheries Liaison Officer (FLO) or "Environmental Observer" which has been used in some other more

extensive seismic surveys (and as is proposed within). Notably, the decreased horizontal visibility in the summer months due to fog, and during nighttime operations, reduces the efficacy of MMOs significantly.

Response: ***The Geophysical, Geological, Environmental and Geotechnical Program Guidelines (C-NLOPB 2008) state that a marine mammal and seabird observation program be implemented, and that "such a program should involve a designated observer trained in marine mammal and seabird observations". ExxonMobil has committed to implement such a program and will follow the marine monitoring protocols as outlined in the ESRF Report #156 Recommended Seabird and Marine Mammal Observation Protocols for Atlantic Canada (2004).***

- Specific to sea turtles, there is a possibility that the loss of streamer fluid could taint marine invertebrate food sources of leatherbacks in a localized area. In the absence of this information, careful monitoring to ensure this does not take place, to the extent practicable, is important since the streamer fluid can disperse or evaporate rapidly and could otherwise go unnoticed upon release.

Response: ***The vessel that has been contracted by EMCP will be using gel-filled streamers.***

1.6 SARA

Throughout the report there is mention of species being listed by COSEWIC. However, it would be more appropriate to state that species are assessed or designated by COSEWIC and reserve the use of "listed" for species that are actually listed on Schedule 1 of SARA.

Response: ***Noted and agree***

1.7 Consultation

Although there was agreement that the proponent consult with the FFAW, the largest single allocation in the 3LNO area is Ocean Choice International (OCI) yellowtail (most activity takes place in 3NO). OCI does 'prospect' harvest for yellowtail flounder in other areas of the 3LNO allocation zone. This group can be consulted by contacting Mr. Bruce Chapman at the following address:
Mr. Bruce Chapman, Executive Director, Canadian Association of Prawn Producers/ Groundfish Enterprise Allocation Council, 1362 Revell Drive, Manotick, ON K4M 1K8, Tel: 613-692-8249, Fax: 613-692-8250, E-Mail: bchapman@sympatico.ca

Response: **OCI was consulted.** ***Derek Fudge of OCI was contacted*** **and provided coordinates of the geohazard study area. OCI noted that 4 vessels would be fishing in the 3L-3N area for groundfish at the same time as the proposed geohazard survey. Upon review of study area coordinates it was determined that there would not be any spatial overlap between the OCI fishing activities and the Hebron geohazard program.**

The harvesting of multiple species occurs within the planned study area; therefore, it is important that consultations with representatives of fish harvesters' operating within the project area are continued. This is needed to ensure minimal impacts to fishing operations and appropriate mitigation measures are employed.

Response: Noted

2.0 SPECIFIC COMMENTS

§3.0 Stakeholder Consultation, pg 17 - Please provide the list of regulatory agencies and stakeholders that were contacted regarding the proposed project. It appears that the only regulatory agency that was contacted was Environment Canada.

Response: ***Consultations included Environment Canada, DFO, Natural History Society, Canadian Parks and Wilderness Society, FFAW, One Ocean and other operators.***

§4.3.2 Wind Climate, Table 4.1, pg 17 – As pointed out, the wind variability changes with the height above sea level. Please provide the height where the measurement is collected at the two platforms.

Response: ***The height the measurements are collected is 139 m at Hibernia GBS, 50 m at Terra Nova FPSO and 82.5 m at GFS Grand Banks.***

§4.3.3 Air and Surface Temperature, Table 4.3, pg 19 - The information contained in this table may not be reliable. They present that the minimum sea surface temperatures in winter are -2.8 degree °C, based on information from the ICOADS data.

Response: ***This information was confirmed with Oceans Ltd and this temperature is not unexpected. Seawater freezing points varies with salinity. Seawater with a salinity of 35 ppt would expect to freeze at -2°C. However, wave action will limit to some degree the ability of seawater to freeze at -2°C; therefore, a temperature for seawater of -2.8°C is not unexpected.***

§4.3.9 Currents, 1st para., pg 21 - These ocean currents are "off Eastern Canada" not "in Eastern Canada".

Response: ***Agree. Sentence revised.***

The dominant currents off Eastern Canada are the West Greenland, Baffin, Labrador and Nova Scotia currents.

Table 4.4, pg 22 – The largest near-bottom current should be in fall and winter.

Response: ***Agreed. Sentence revised.***

The strongest surface and mid-depth currents occur in the fall to winter: the strongest currents near-bottom occur in the fall and winter.

3rd para - Additionally, the word 'mean' should be inserted after largest in the sentence the '*largest near-surface current speeds reached 0.25 m/s, with an associated maximum speed of 0.96 m/s in September at a depth of 18 m*'.

Response: ***Agree. Sentence revised.***

The largest mean near-surface current speeds reached 0.25 m/s, with an associated maximum speed of 0.96 m/s in September at a depth of 18 m.

§4.4.1 Sea Ice, 1st para, pg 25 - The description of ice-edge positions should be improved. Clarification is also required as to whether this paragraph is explaining the features in Fig. 4.4.

Response: ***First paragraph page 25 has been revised to provide more clarity. This paragraph was explaining the features of Figure 4.4.***

Figure 4.4 shows the frequency of pack ice coverage for the week of May 14, based on information from 1971 to 2000. This figure illustrates that the Grand Banks was ice-free for at least one year during this time period (as shown by the light blue color on Figure 4.4). The median ice edge position shown in dark blue is the ice edge for a hypothetically typical year showing half the time the ice is farther south and half the time farther north than the median line. The maximum ice positions shown in yellow are composites of the most advanced ice-edge positions recorded in each compass direction over the period of record.

§5.2 Species at Risk, pg 28 - In a few places Schedules 2 and 3 of SARA are mentioned. It would be useful to explain that Schedule 1 is the official list of species at risk, while Schedules 2 and 3 are lists of species to be re-assessed by COSEWIC. In addition, it would be useful to add the dates that each species were given their respective designations.

Response: ***Noted. Last paragraph, page 28 has been revised to include this sentence.***

Species listed on Schedule 1 of SARA are officially listed as a Species at Risk, while the species listed on Schedules 2 and 3 are species subject to reassessment by COSEWIC.

While it might be useful to add the dates when each species were given their respective designations, these designations may change at any time and is one of the reasons why the tables and document are dated.

§5.2.1.2 Atlantic cod (Newfoundland and Labrador Population), pg 33 - It should be noted that Atlantic cod are up for re-assessment by COSEWIC this month. On the COSEWIC website there is a link to Status Reports in preparation that will give an indication of upcoming species assessments.

Response: ***Note. While a species may be up for reassessment, there have been instances when these report submissions have been delayed or extended. It might be more appropriate to note that species on Schedule 2 or 3 are routinely reassessed and direct the reader to the appropriate web link for further information and updates.***

§5.2.2 Marine Mammals, pg 39 - Should specify that the two species of marine mammals listed on *SARA* which are being referred to are actually the Blue Whale and Fin Whale. This section also indicates that the North Atlantic Right Whale is excluded from the assessment, as it is not

likely to occur in the study area. The accuracy of this statement should be verified, as it appears that by looking at the maps in the Recovery Strategy it would seem possible that, although rare, they could occur in the study area.

Response: ***Noted. Paragraph 1 of section 5.2.2 has been revised.***

Two species of marine mammals (blue whale and fin whale) are listed on Schedule 1 of SARA (Table 5.1); three species are designated as at risk by COSEWIC (Table 5.2). While the North Atlantic right whale (Eubalaena glacialis) (listed as Endangered under SARA and designated as Endangered by COSEWIC) may occur in the Site Survey Project Area, this would be a rare occurrence and for this reason, they are not included in this environmental assessment. It is also unlikely that the Gully population of the northern bottlenose whale (listed as Endangered under SARA and designated as Endangered by COSEWIC) would occur in the Site Survey Project Area; they are not included in this environmental assessment. The Atlantic population is designated as Not at Risk by COSEWIC and is not listed under SARA and are described in Section 5.5.2.3.

§5.2.5 Candidate List, pg 49 - Although it is useful to consider the COSEWIC candidate list of species, it would also be useful to look at the list of Status Reports in preparation. This is a list of species for which status reports are being developed and gives an indication of the upcoming COSEWIC assessments (*i.e*. these species are further along in the process than those on the candidate list). For example, cod and redfish are both up for assessment by COSEWIC this month.

Response: ***Noted. While a species may be up for reassessment, there have been instances when these report submissions have been delayed or extended. It might be more appropriate to note that species on Schedule 2 or 3 are routinely reassessed and direct the reader to the appropriate web link for further information and updates.***

§5.3.3 Benthos, pg 52 - The following documents may provide more information on corals. The status report, for example, has information on the NAFO Coral Protection Zone.

Gilkinson, K., and Edinger, E. (Eds.) 2009. The ecology of deep- sea corals of Newfoundland and Labrador waters: biogeography, life history, biogeochemistry, and relation to fishes. Can. Tech. Rep. Fish. Aquat. Sci. 2830: vi + 136 p.

Campbell, J.S. and Simms, J.M. 2009. Status Report on Coral and Sponge Conservation in Canada. Fisheries and Oceans Canada: vii + 87 p.

Response: ***Thank you. The following paragraph has been added.***

Deep-sea corals are recognized as an important component of deep-sea ecosystems providing habitat for a variety of fish species, including commercially-important species (Gilkinson and Edinger 2009). Their longevity and slow growth rates may result in recovery times from a disturbance in the tens to hundreds of years. While life histories and basic biological knowledge remains largely unresolved, thereby limiting the understanding of their ecological relationships, ongoing research by the DFO-Memorial

University deep sea corals research group is working to resolve some of these data gaps (Gilkinson and Edinger 2009).

Campbell and Simms (2009) would be added to some of the citations as they confirm information cited in this report.

§5.7 Sensitive Areas, pg 94 - The Site Survey project area falls within Canada's Newfoundland-Labrador Shelves Marine Ecoregion. This is important to note, as two primary uses of this biogeographic classification system are: i) assessing and reporting on ecosystem status and trends, and ii) spatial planning for the conservation of ecosystem properties and management of human activities. In addition, these areas and associated information will be useful in guiding the selection of future representative marine protected areas.

Response: Noted and paragraph 1 for Section 5.7, page 94 has been revised.

Much of the information in this section is drawn from the Hebron Comprehensive Study Report (EMCP in. prep.). The Site Survey Project Area is within an area currently being considered as part of an Integrated Management Plan for the Placentia Bay-Grand Banks Large Ocean Management Area (LOMA) and falls within Canada's Newfoundland-Labrador Shelves Marine Ecoregion. This is relevant as the biogeographic classification system is used for: i) assessing and reporting on ecosystem status and trends; and ii) spatial planning for the conservation of ecosystem properties and management of human activities. As part of the LOMA plan, DFO has identified Ecologically and Biologically Significant Areas (EBSAs) that may require special management measures. Some EBSAs are may be put forward as Areas of Interest for Marine Protected Area (MPA) status and other EBSAs are considered for protection under other management tools. EBSAs are tools that are used to highlight an area of high biological or ecological significance and as such additional protections or management strategies may be applied to these areas. None of the EBSAs overlap with the Site Survey Project Area. There are no MPAs within or immediately adjacent to the Site Survey Project Area.

1st para- It states that '*Some EBSAs are put forward…*' it may be better to reword as '*Some EBSAs may be put forward…*' and other EBSAs may be considered for protection under other management tools. It should also state that EBSAs are tools for highlighting an area that has a particularly high ecological or biological significance and that this may facilitate provision of a greater than usual degree of risk aversion in the management of activities within these areas.

Response: Noted and paragraph 1 in Section 5.7, page 94, has been revised as per previous response.

2nd para. – The "Placentia Bay-Grand Banks LOMA" is not illustrated in Figure 5.30.

Response: Noted. The figure has been revised and is located Appendix B.

§5.7.1 Ecologically and Biologically Significant Areas, 1st para., pg 96 - One of the conservation objectives within the Northeast Shelf EBSA is missing, namely Coral concentrations north of Tobin's Point. It is important to mention this, as the very next sentence

states that *'…. the area is also not considered particularly sensitive to disturbance as compared to other slope areas occurring in the region'*.

Response: ***The first paragraph on Page 96 has been revised and the following bullet has been incorporated.***

- ***Coral concentrations north of Tobin's Point.***

1st para - Within this paragraph DFO 2007d (*Placentia Bay-Grand Banks Large Ocean Management Area Conservation*) is referenced stating that the Northeast Shelf and Slope is ranked ninth of eleven EBSAs in this LOMA. While this is true, it is important to note that if the authors are referring to how the EBSAs are ranked in accordance with the conservation objectives, then the following document should also be referenced:

Placentia Bay-Grand Banks Large Ocean Management Area Science-Based Conservation Objectives. Canadian Science Advisory Secretariat Science Advisory Report 2007/042.

Within this document, the Northeast Shelf and Slope are ranked eighth in the Placentia Bay Grand Banks: EBSA Conservation Priority Matrix.

Response: ***Noted. First paragraph has been revised to recognize and cite both documents with different rankings.***

The Northeast Shelf and Slope is a low priority and is ranked either eighth or ninth of the eleven EBSAs in this LOMA depending upon document referenced. In DFO 2007d, it is ranked ninth, and in DFO 2007e it is ranked eighth on the list of conservation objectives within this LOMA.

§5.7.2 Northwest Atlantic Fisheries Organization Vulnerable Marine Ecosystems, pg 96 - It should be noted that Vulnerable Marine Ecosystems (VMEs) are candidate areas. Please refer to the end of this document for the list of candidate VMEs along with the Image of coral/sponge closed areas, which were announced in Sept 2009 and implemented in Jan 2010.

Response. ***Noted. These areas should be referred to as candidate Vulnerable Marine Ecosystems or candidate VMEs. Thank you for the list of candidate VMEs provided. It is noted that none of the VMEs are within the Site Survey Project Area.***

§6.5 Environmental Effects Assessment Criteria, pg 102 - The scales used for "magnitude" of potential effects, while arbitrary should include at least a note stating that an impact that might affect only 1% of individuals in a project area, might still be extremely important if the species is SARA-listed, or particularly vulnerable. Readers should be referred to Section 6.7.1.

Response ***Noted. Final paragraph in Section 6.5 has been revised.***

These criteria are used to provide a common basis for summarizing the potential environmental effects of each Project activity for each VEC. The magnitude scale must be interpreted with caution and in proper context as a low magnitude (affects 0 to 10

percent of individuals in the affected area) may have different consequences when applied to SARA-listed species as compared to a non SARA-listed species. Additional information regarding residual environmental effects significance criteria for Species at Risk is provided in Section 6.7.1.

§6.6 Mitigation Measures, Table 6.2, pg 103 – Please ensure that all mitigation measure identified in the report is included in this table.

Response: Table revised to include missing mitigations and is included in Appendix C

§6.7 Residual Environmental Effects Significance Criteria, pg 104 – Please finish the first sentence.

Response: Sentence Revised and completed.

A significant, adverse residual environmental effect is one that, after application of feasible mitigation and consideration of reasonable Project alternatives, will jeopardize the achievement of self-sustaining population objectives or recovery goals, is not consistent with applicable allowable harm assessments, will result in permanent loss of Species at Risk critical habitat as defined in a recovery plan or an action strategy or for which an incidental harm permit would not likely be issued.

§6.8.4 Accidental Events, pg 124 – A sentence should be included in the first paragraph reminding readers that interactions were evaluated in Section 6.8 between accidental events (i.e. loss of streamer fluid) and marine fish and fish habitat, commercial fisheries, and marine mammals and sea turtles and deemed impossible or extremely remote and not considered further and therefore not included in this section.

Response: Agree. Paragraph revised. The following sentence has been added to paragraph 1.

The interactions between accidental events (i.e., loss of streamer fluid) and marine fish and fish habitat, commercial fisheries and marine mammals and sea turtles were evaluated in Section 6.8 and deemed impossible or extremely remote and as such are not considered for further assessment and therefore are not included in this section.

§6.11 Monitoring and Follow-up, pg 129 – Observations of seabirds should be included as part of the monitoring activities.

Response: Noted and Agree

3.0 REFERENCES:

The following references were used in the preparation of the responses.

Campbell, J.S. and Simms, J.M. 2009. Status Report on Coral and Sponge Conservation in Canada. Fisheries and Oceans Canada: vii + 87 pp.

Gilkinson, K., and Edinger, E. (Eds.) 2009. The ecology of deep- sea corals of Newfoundland and Labrador waters: biogeography, life history, biogeochemistry, and relation to fishes. Canadian Technical Report of Fisheries and Aquatic Sciences, 2830: vi + 136 pp.

Lawson, J.W., and Gosselin, J.-F. 2009. Distribution and preliminary abundance estimates for cetaceans seen during Canada's marine megafauna survey - a component of the 2007 TNASS. DFO Canadian Science Advisory Secretariat Research Document, 2009/031: iv + 29 pp.

Payne, J.F, J. Coady and D. White. 2009. Potential effects of Seismic airgun discharges on monkfish eggs (Lophius americanus) and larvae. Environment Studies Research Funds Report, No 170: 32 pp.

APPENDIX A

Revised Project Description

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Tel: (709) 752-6444
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ExxonMobil

April 21, 2010 No: L-HE-CNO-100421-01

Ms. Elizabeth Young
Environmental Assessment Officer
Canada-Newfoundland and Labrador Offshore Petroleum Board
140 Water Street
5th Floor TD Place
St. John's NL A1C 6H6

Dear Ms. Young:

Re: Hebron 2010 Geohazard Survey Environmental Assessment – Update

ExxonMobil Canada Properties (EMCP) is pleased to provide an update with regard to the *Hebron 2010 Geohazard Survey Environmental Assessment* presently under review.

As details of the planned survey program have been refined, it has been determined that the survey vessel's turning radius for nine of the lines will extend beyond the Hebron SDLs into the adjacent SDL1042, hence slightly extending the Site Survey Project Area. The encroachment is approximately 1.5 km.

The geographic area needed for turning the vessel has been included in the Environmental Assessment as per Section 3.1 of the Scoping Document issued for the proposed survey's assessment. The environmental assessment is based on two areas, the smaller Site Survey Project Area, i.e. the four Hebron SDLs where data will be collected, and the larger Regional Area, which includes the Grand Banks.

The primary interaction between the survey vessel and the environment while turning will be the presence of the vessel and its associated routine discharges. The mitigation measures identified in the *Hebron 2010 Geohazard Survey Environmental Assessment* provided to C-NLOPB on March 17, 2010 (Table 6.2 provided below), and consistent with those in the C-NLOPB *Geophysical, Geological, Environmental and Geotechnical Guidelines* (2008), including the *Statement of Canadian Practice with Respect to The Mitigation of Sound in the Marine Environment* will be implemented for the vessel during execution of turns outside the Hebron SDLs. Data will not be acquired while turning.

Table 6.2 Project-Specific Mitigation Measures

Potential Effect	Mitigation Measures
Noise	EMCP will use the lowest sound source in the airgun array that gives the best data The vessel will follow the ramp up procedures as outlined in the *Geophysical, Geological, Environmental and Geotechnical Program Guidelines* (C-NLOPB 2008) Mitigation measures will follow those outlined in the *Statement of Canadian Practice with respect to the Mitigation of Seismic Sound in the Marine Environment* (the Statement") (DFO 2007a) and include: • Ramp-up of the airgun array over a minimum of 20 minutes • Monitoring by a dedicated environmental / MMO during daylight hours that the airgun array is active • Shutdown of the airgun array when an endangered or threatened marine mammal or sea turtle is sighted within the 500 m safety zone and • Delay of ramp-up if any marine mammal or sea turtle is sighted within the 500 m safety zone • Using ramp-up procedures outside daylight hours, or in periods of low visibility, when visual observations may not be practicable
Light Attraction	The survey vessel crew will conduct routine checks for stranded birds and implement appropriate procedures for release that will minimize the effects of vessel lighting on birds (meeting bird salvage permit requirements, including release of stranded birds and reporting such information to the Canadian Wildlife Service) The ramping up process will also allow birds to move away from the noise source before it reaches maximum volume (MMOs will also record bird sightings during the survey)
Vessel Presence / Routine Discharges	The survey vessel will conform to the *Canada Shipping Act* and MARPOL 73/78 *International Convention for the Prevention of Pollution* from ships, which dictates the handling and disposal of wastes EMCP has a detailed Waste Management System (detailing standard pollution prevention policies and procedures) and requires all contractors to apply it to their operations Vessel will have an Automated Identification System EMCP will publish a Canadian Coast Guard "Notice to Shipping" and a "Notice to Fishers" via the CBC Radio program Fisheries Broadcast EMCP will request a 1 nautical mile (nm) Closest Point of Approach from all vessels
Accidental Events	
Loss of Hydrocarbon	No fuel transfer at sea Any accidental spills will be immediately reported to the C-NLOPB as per C-NLOPB (2009b)
Loss of Isopar-M from Streamer	During streamer maintenance, and/or repair (which take place on deck), there will be one full spill kit on available and a second spill kit on standby; a crew member will be dedicated to monitor for on-deck spill events The streamers are inspected upon deployment and recovery The streams are constantly monitored for loss of ballast / balance, which is an indirect streamer monitoring procedure (there is no direct monitoring for loss of fluid) Use of solid streamers if possible
Entanglement	Streamers are only 600 m long, with a radar reflector on the tail buoy of the streamer EMCP will have a Fisheries Damage Compensation Program in place for

Potential Effect	Mitigation Measures
	damaged gear attributable to the geohazard survey EMCP will have three MMOs on board; including a Fisheries Liaison Officer (FLO) trained as an MMO EMCP will have a Single Point of Contact EMCP will publish a Canadian Coast Guard "Notice to Shipping" and a "Notice to Fishers" via the CBC Radio program Fisheries Broadcast EMCP will request a 1 nautical mile (nm) Closest Point of Approach from all vessels

The assessment has found that, with mitigations implemented, the residual effects of the presence of the survey vessel are not significant for any of the VECs (Species at Risk, marine fish and fish habitat, commercial fisheries, marine birds and Sensitive Areas).

The assessment of effects of an accidental event during the survey is based on loss of fluid from the streamer (a worst case approach) and has also been found to be not significant. As a result of further detailed survey planning, EMCP is able to confirm in this update, that the streamer will be gel-filled, which further reduces potential effects of an accidental event.

If you have any questions regarding the update, please contact Ms. Kim Coady (709-752- 6441, Kimberly.Coady@esso.ca) or Ms. Leslie Grattan (709-752-6445, leslie.grattan@exxonmobil.com).

Regards,

E. F. (Ted) O'Keefe
Regulatory Lead
Hebron Project

cc: J. E. O'Reilly

The following information was forward to C-NLOPB by Hebron on April 29, 2010

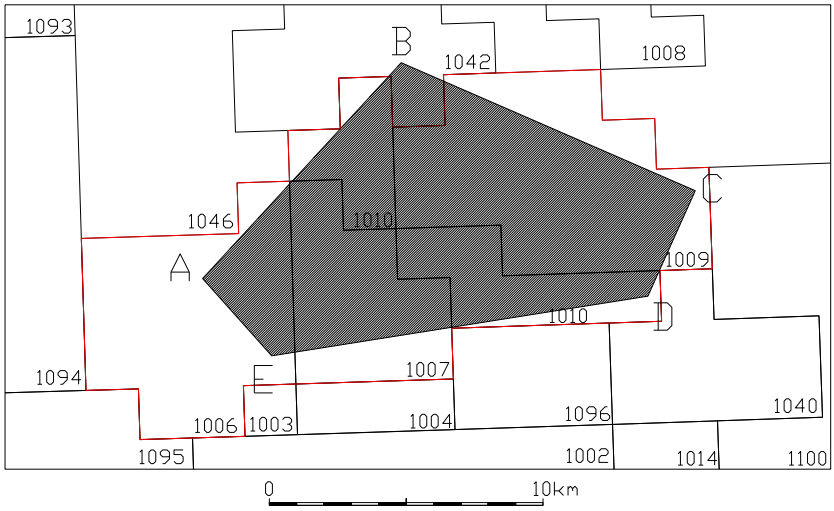


Figure 1. Approximate Hebron Development 2010 Site Survey operational area, MV Anticosti (scheduled 1 June – 15 July)

Hebron Survey Area Corner Coordinates (NAD83 UTM Z22)		
A	688,444 E	5,158,333 N
B	695,700 E	5,166,218 N
C	706,444 E	5,161,544 N
D	704,712 E	5,157,691 N
E	690,968 E	5,155,512 N

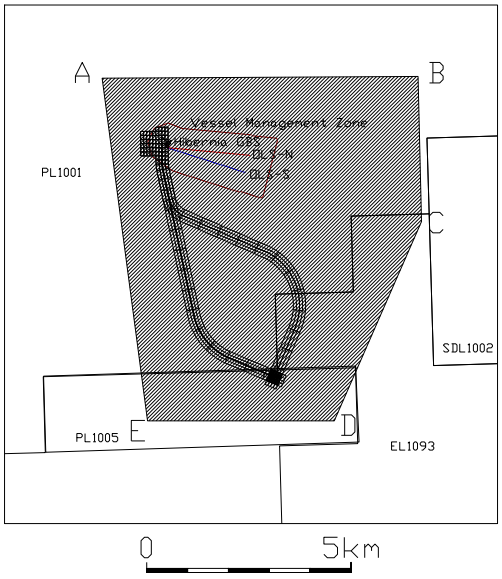
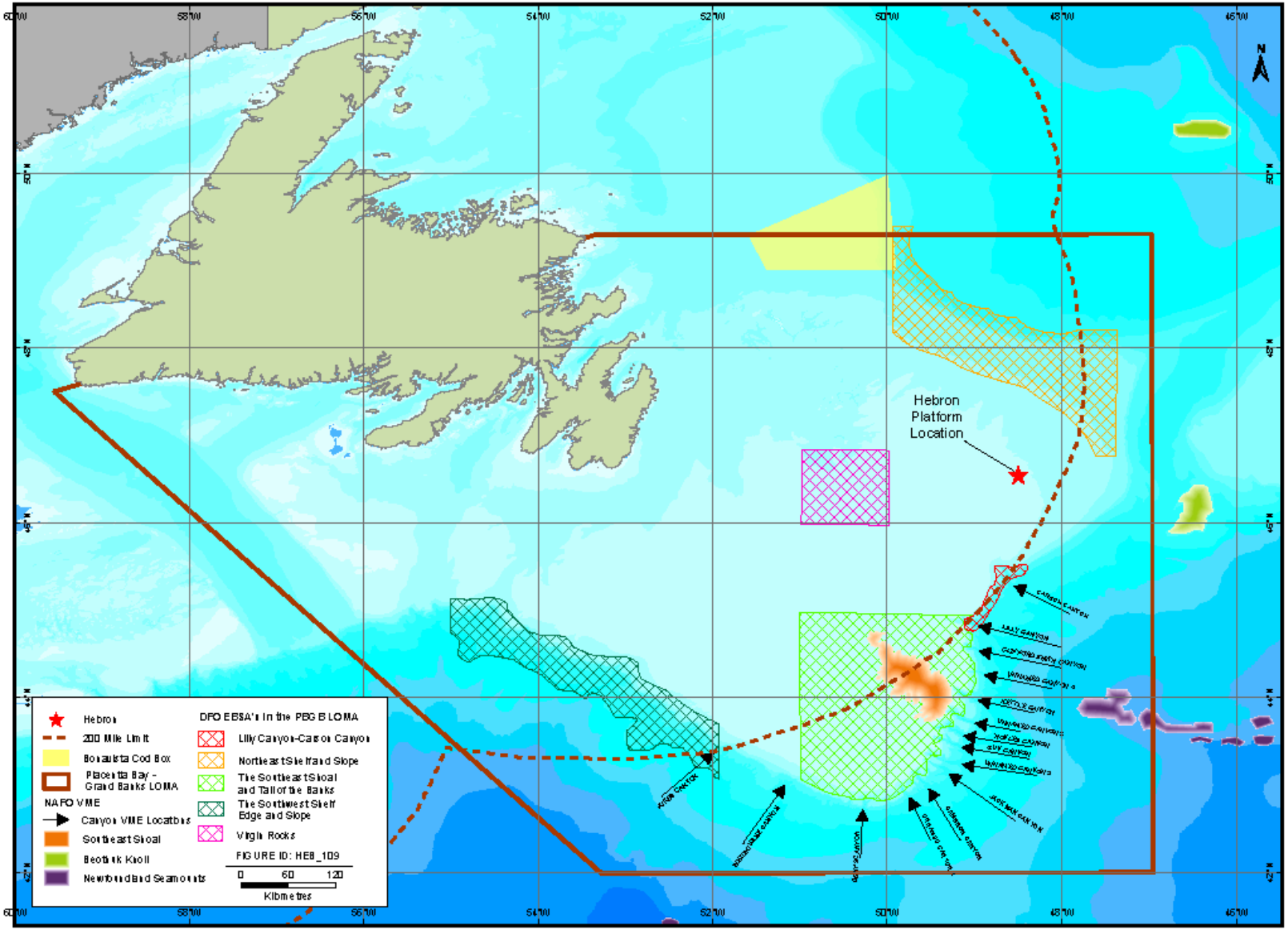


Figure 2. Approximate Hibernia South Extension (HSE) 2010 Site Survey operational area, MV Anticosti (scheduled 1 June – 15 July)

HSE Survey Area Corner Coordinates (NAD83 UTM Z22)		
A	667,802 E	5,181,403 N
B	675,535 E	5,181,446 N
C	675,620 E	5,177,904 N
D	673,484 E	5,173,038 N
E	668,913 E	5,173,038 N

APPENDIX B

Revised Figure 5.30


Hebron Platform Location
Hebron
200 Mile Limit
Bonavista Cod Box
Placentia Bay - Grand Banks LOMA
NAFO VME
Canyon VME Locations
Southeast Shoal
Beothuk Knoll
Newfoundland Seamounts
DFO EBSA's in the PBG B LOMA
Lilly Canyon-Carson Canyon
Northeast Slope and Slope
The Southeast Shoal and Tail of the Banks
The Southwest Shelf Edge and Slope
Virgin Rocks
FIGURE ID: HEB_109
0 60 120
Kilometres

Appendix C

Revised Table 6.2

Table 6.2 Project-Specific Mitigation Measures

Potential Effect	Mitigation Measures
Noise	EMCP will use the lowest sound source in the airgun array that gives the best data The vessel will follow the ramp-up procedures as outlined in the *Geophysical, Geological, Environmental and Geotechnical Program Guidelines* (C-NLOPB 2008) Mitigation measures will follow those outlined in the *Statement of Canadian Practice with respect to the Mitigation of Seismic Sound in the Marine Environment* (the "Statement") (DFO 2007a appended in full to the GGEGP GL) and include: • Ramp-up of the airgun array over a minimum of 20 minutes • Monitoring by a dedicated MMO during daylight hours that the airgun array is active • Shutdown of the airgun array when an endangered or threatened marine mammal or sea turtle is sighted within the 500 m safety zone • Delay of ramp-up if any marine mammal or sea turtle is sighted within the 500 m safety zone • Using ramp-up procedures outside daylight hours, or in periods of low visibility, when visual observations may not be practicable
Light Attraction	The survey vessel crew will conduct routine checks for stranded birds and implement appropriate procedures for release that will minimize the effects of vessel lighting on birds (meeting bird salvage permit requirements, including release of stranded birds and reporting such information to the CWS) The ramping up process will also allow birds to move away from the noise source before it reaches maximum volume (MMOs will also record bird sightings during the survey)
Vessel Presence / Routine Discharges	The survey vessel will conform to the *Canada Shipping Act* and MARPOL 73/78 *International Convention for the Prevention of Pollution* from ships, which dictates the handling and disposal of wastes EMCP has a detailed Waste Management System (detailing standard pollution prevention policies and procedures) and requires all contractors to apply it to their operations Vessel will have an Automated Identification System EMCP will publish a Canadian Coast Guard "Notice to Shipping" and a "Notice to Fishers" via the CBC Radio program Fisheries Broadcast EMCP will request a 1 nautical mile (nm) Closest Point of Approach from all vessels The survey vessel crew will conduct routine checks for stranded birds and implement appropriate procedures for release that will minimize the effects of vessel presence on birds (meeting bird salvage permit requirements, including release of stranded birds and reporting such information to the CWS)
Accidental Events	
Loss of Hydrocarbon	No fuel transfer at sea Any accidental spills will be immediately reported to the C-NLOPB as per C-NLOPB 2009b
Loss of Isopar-M from Streamer	During streamer maintenance, and/or repair (which take place on deck), there will be one full spill kit available and a second spill kit on standby; a crew member will be dedicated to monitor for on-deck spill events The streamers are inspected upon deployment and recovery The streams are constantly monitored for loss of ballast / balance, which is an indirect streamer monitoring procedure (there is no direct monitoring for loss of fluid) Use of solid streamers if possible
Entanglement	Streamers are only 600 m long, with a radar reflector on the tail buoy of the streamer EMCP will have a Fisheries Damage Compensation Program in place for damaged gear attributable to the geohazard survey EMCP will have a Fisheries Liaison Officer (FLO) EMCP will have a Single Point of Contact EMCP will publish a Canadian Coast Guard "Notice to Shipping" and a "Notice to Fishers" via the CBC Radio program Fisheries Broadcast EMCP will request a 1 nautical mile (nm) Closest Point of Approach from all vessels