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June 15, 2010

Canada-Newfoundland and Labrador Offshore Petroleum Board
5th Floor, TD Place
140 Water Street,
St. John's, NL A1C 6H6

Doc. No.: HUS-CPB-EC-LTR-00146

Attention: Darren Hicks

Dear Mr. Hicks:

**Subject: Addendum to Husky Energy's Labrador Shelf Seismic Program,
Environmental Assessment (EA) Report**

Husky Energy appreciates the comments on the above referenced environmental assessment (EA) report, received from the Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB) on May 10, 2010.

In order to satisfy the requirements of the Canadian Environmental Assessment Act (CEA Act) and to complete the Screening Report, the attached Addendum to the EA report addresses those comments received.

If you have any further comments or questions, please call David Pinsent at (709) 724-3997.

Yours sincerely,

HUSKY OIL OPERATIONS LIMITED



SueAnn Thistle,
Manager; Health, Safety, Environment and Quality

dp/st/pk

Attachment: Addendum to Husky Energy's Labrador Shelf Seismic Program

cc: Francine Wight, David Pinsent, Kathy Knox- Husky Energy
Elizabeth Young – C-NLOPB

GENERAL COMMENTS

Compensation Plan

COMMENT: *A compensation plan is mentioned for potential interactions with the fishery resulting in loss of damaged fish gear. Please provide specific details on the compensation plan and whether local (including aboriginal) fishery organizations of fishermen have been consulted in the development of this plan.*

RESPONSE: The Husky Fisheries Damage Compensation Program (EC-M-99-XPR-00026-001) is on file with the CNLOPB. This was developed for Husky operations on the East Coast to apply equally to all fishing areas. The claim process is evidence-based and makes no distinction based on origin of the claim. Should loss or damage occur during the upcoming survey, the claim process outlined in the plan will be followed. A Single Point of Contact for fishers to call will be provided to initiate the process, if required. This process is implemented with the necessary engagement of both the FFAW and One Ocean.

Cumulative Effects

COMMENT: *With the recognition that there may be three concurrent seismic programs in the project area, the NG would like to see much more quantitative analyses with respect to the potential cumulative effects of these operations.*

RESPONSE: While the EA does assess the potential cumulative effects of three concurrent surveys; Husky recognizes that this is a very unlikely event. A quantitative analysis of potential cumulative effects could be estimated but would not be meaningful without the specific operational plans from each operator to determine whether there was any potential for spatial and temporal overlap of potential effects. If this situation was to arise, Husky with the other two operators would conduct this analysis, in order to determine whether sound interference would be an issue for outputs from the survey.

Environmental Effects

COMMENT: *In general, the relative uncertainties with respect to seismic effects and underwater noise should be acknowledged in a realistic and open manner. These uncertainties are readily acknowledged by experts in the field, as they are trying to put in place research programs and processes to fill gaps in knowledge with respect to underwater noise, especially effects on marine life. Given the expert recognized and accepted gaps in knowledge that exist with respect to underwater noise, the residual environmental effects to VECs should be re-visited, especially the level of confidence that is associated with each residual adverse environmental effect rating. One would assume that, generally speaking, absence of knowledge (i.e. knowledge gaps) would not lend themselves to extremely high levels of confidence with respect to predictions of adverse environmental effects.*

RESPONSE: As the long-term far-field environmental effects on behaviour are uncertain for marine mammals, the level of confidence will be changed to Moderate for the Marine Mammals and Species at Risk VECs.

COMMENT: *Although a general outline of the project area was indicated, the NG would like to have information on specific proposed seismic survey lines in order to more accurately evaluate project footprint and seismic survey impacts.*

RESPONSE: Please see the following figure, which will be included as Figure 3-1.

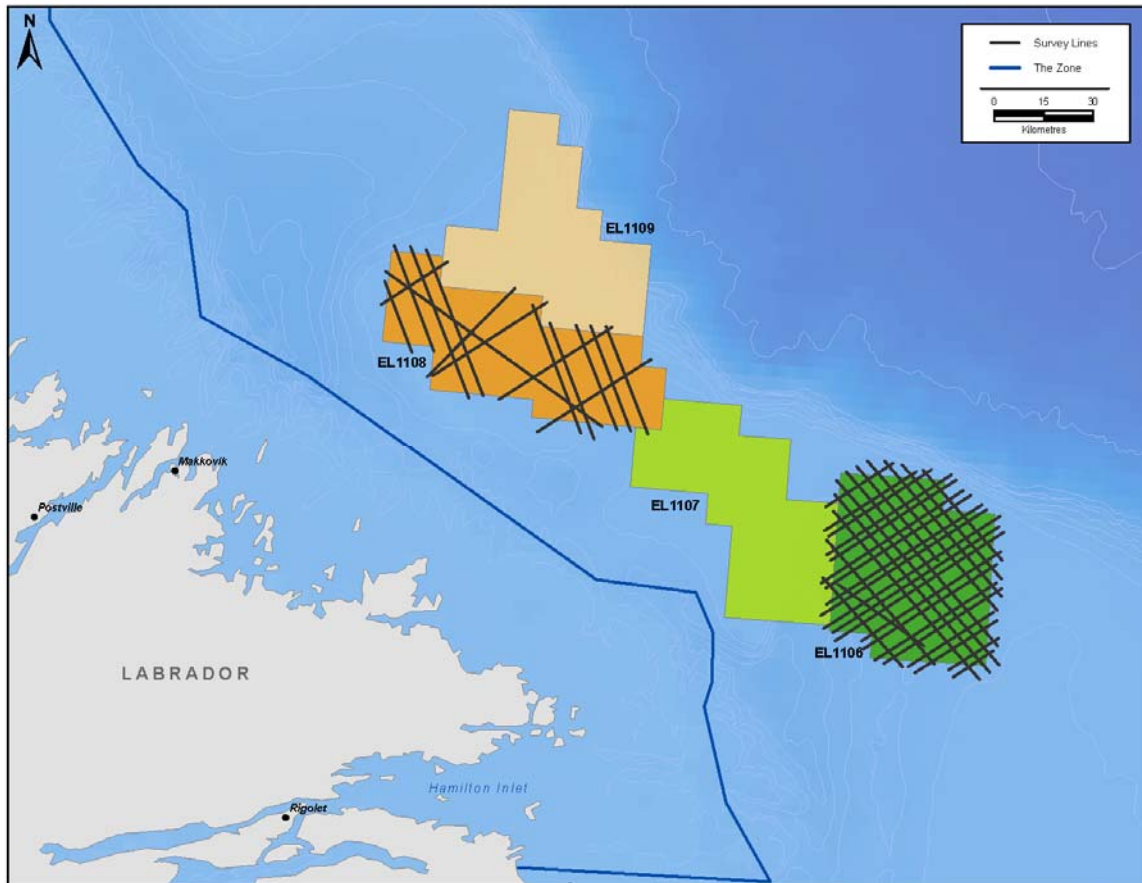


Figure 3-1 Proposed Seismic Survey Lines on Experimental Licenses 1106 and 1108

Fish and Shellfish

COMMENT: *The evaluation of risks for fish and shellfish in relation to magnitude, geographical extent and other factors is generally rated as non-significant. Although it is recognized that this ranking is acceptable in the context of CEAA guidelines and information presently available in relation to risk, it is important to note that these guidelines also require a somewhat major impact at the population level before being ranked as significant. It is also noted that rankings in this assessment are based on old information dealing with mortalities or grossly overt effects. In this respect, it is now commonly accepted that there is a major knowledge gap related to the potential for sub-lethal effects and whether or not injuries may occur.*

RESPONSE: Please refer to Existing Knowledge Section 7.2.3, which acknowledges information gaps and scientific uncertainties. We also summarize the considerable knowledge that does exist, which is the basis for our impact predictions. Please note that the significance criteria is not population based. (see Section 7.2.5).

COMMENT: *The EA report also states that follow-up and monitoring are not recommended at this time for fish and shellfish during seismic surveys. This is reasonable for this area as it would be difficult to clearly define which species should be monitored as well as the protocols*

for doing so. For example, generic knowledge gaps such as effects on molting (which is a common knowledge gap for crustaceans) or potential effects on reproduction in halibut under chronic conditions of exposure could not be addressed under such a monitoring plan. Furthermore, both these commercial species are found and fished at great depths in the water column (~200 to 500 m) where sound and particle velocity would be greatly attenuated. With respect to behavioral impacts, crustaceans, namely lobster and snow crab, do not appear to be affected in the sense of scaring and related movement similar to some (but not all) fish species and there is some field evidence indicating there is no effect on catch rates of shrimp. However, this report also draws attention to an Australia study in which no effect was noted on lobster populations in areas of seismic surveys. Such a statement from this study can be misleading, since it was noted that a seismic induced impact in the 50% range would be required before being statistically resolved from natural mortality and fishing.

RESPONSE: Acknowledged

COMMENT: There are also significant gaps in knowledge with respect to long-term impacts of seismic activity on fish behaviour and shellfish distribution patterns. Although studies have not directly linked seismic activity with fish or shellfish mortality, it is unknown whether behavioural changes as a result of seismic activity may affect migration or reproduction. This uncertainty should be acknowledged and incorporated into the EA. Moreover, in terms of mitigation with respect to this gap in knowledge, the precautionary principle should be incorporated within the EA to responsibly mitigate effects on the environment and fishery.

RESPONSE: It is acknowledged within the EA that there is some uncertainty; however, existing knowledge does suggest behavioural effects are short-term. Please refer to Section 7.1.3.1, where behavioural effects are discussed.

Husky will comply with the Geophysical, Geological, Environmental and Geotechnical Program Guidelines, specifically, the mitigation in the Statement of Canadian Practice with Respect to the Mitigation of Seismic Sound in the Marine Environment pertaining to planning seismic surveys to avoid diverting aggregations of fish or groups of marine mammals (including species at risk) from known migration routes or corridors, spawning fish from a known spawning area or displacing a group of breeding, feeding or nursing marine mammals, if it is known there are no alternate areas available to those marine mammals for those activities (section 5).

Fisheries

COMMENT: The commercial fishery is very important to many communities on the south coast of Labrador. While the membership of the Fish, Food and Allied Workers' (FFAW/CAW) Union live in communities as far north as Fish Cove Point (just north of Cartwright), our Labrador members fish in NAFO divisions 2J, 2H and 2G for crab, shrimp, turbot, cod, etc. As well, our harvesters in 4R (northern Newfoundland) have rights to fish in 2J, and our northeast coast fishers still have fishing rights off the coast of Labrador as well. We also have members who fish quotas for the Natuashish Government in 2H.

RESPONSE: The following text was added to Section 5.5.2 (immediately after Figure 5-12): While the membership of the FFAW Union live in communities as far north as Fish Cove Point (just north of Cartwright), Labrador members fish in NAFO divisions 2J, 2H and 2G for crab, shrimp, turbot, cod, etc. As well, FFAW Union harvesters in 4R (northern Newfoundland) have rights to fish in 2J, and northeast coast fishers still have fishing rights off the coast of Labrador

as well. The FFAW Union also have members who fish quotas for the Natuashish Government in 2H.

COMMENT: *As such, one of the industry's concerns with a multi-year seismic program being proposed is the need for frequent communication between the industry and the oil and gas company, in this case Husky Energy. Harvesters are spread out over a wide geographic area and communication is vital to the safety of all involved. There is a need for good planning and further consultation directly with the fishing industry several months prior to the start of the various components of the seismic program to avoid potential conflict(s) at sea. This should be coordinated with the FFAW and include consultations in communities such as Cartwright and Port Hope Simpson, where the majority of the harvesters fishing in the project area live.*

RESPONSE: Husky will communicate operational plans with the FFAW through the Petroleum Liaison position well in advance of the seismic program. Please refer to Section 2.3 for information on the stakeholders consulted for this project. Consultation (a mix of public and specific meetings) was conducted in Happy Valley-Goose Bay, Nain, Rigolet, Postville, Hopedale, Cartwright Makkovik, the Innu Leadership in St. John's and a public meeting with Sheshatshiu Innu as part of an joint-operators session. publishing a Canadian Coast Guard "Notice to Shipping" and a "Notice to Fishers" via the Okalakatiget Society Radio and the CBC Radio program Fisheries Broadcast

COMMENT: *While historical fishing patterns have been documented, fishing activity can change from year to year and during the season as well. As an example, turbot is becoming more of an important commercial species and many harvesters have geared up to fish turbot in 2010. (There is limited mention of this species in terms of potential conflicts in the document). This fishery uses fixed gear which may introduce more potential interactions between the fishing and oil and gas sectors in the coming years. The fishery is also being actively prosecuted at the time that Husky Energy is proposing to conduct its program. It is therefore important that Husky Energy maintain regular communication with the FFAW to keep apprised of ongoing developments with this, and other fisheries in the project area.*

RESPONSE: The highlighted information was added to the report in Section 5.5.2. As stated in the response to the previous comment, Husky will coordinate through the Petroleum Liaison with the FFAW so that information flows to its members. A FLO will be included as part of the vessel crew to make note of any gear interactions and communicate operational issues to Husky and the FFAW during the survey.

COMMENT: *The unknown long term effects of seismic activities continue to concern harvesters as well. There have been reports from harvesters that fish behaviour has been affected following seismic blasts and shellfish have disappeared from areas following seismic work being undertaken. While the research has not determined any direct mortality of fish or shellfish attributable to seismic activity, as the document describes, there may be behavioural changes that could affect migration and/or reproductive and spawning activities as well as movement of the exploitable biomass in an area. The possibility that the fishery could be impacted in the future from seismic programs validates the concerns of harvesters.*

RESPONSE: It is acknowledged within the EA that there is some uncertainty; however, existing knowledge does suggest behavioural effects are short-term. Please refer to Section 7.1.3.1, where behavioural effects are discussed.

COMMENT: *Further to this, several companies have, or are in the process of indicating their interest in conducting seismic programs in the same timeframe as Husky Energy. The potential for seismic surveys to be conducted concurrently increases the risk for potential conflicts with fishing vessels and gear. This also increases the potential impact of seismic activity on important fish and shellfish resources.*

RESPONSE: A maximum of two surveys could occur at same time (2011 to 2017); only Husky will be conducting a survey in 2010. Husky will attempt to discuss coordination among operators for future programs.

COMMENT: *With respect to accidental oil spills or other discharges, however unlikely they may occur during seismic programs, it is understood that these events will be prevented through the application of mitigative measure. It is important to note however that while the impacts of an oil spill or accidental discharge may be localized on the marine environment there could be longer term negative impacts on Newfoundland and Labrador seafood products in the global marketplace with reports of product tainting. Concern heightens further as a project proceeds to the drilling and development stages. [Not part of this EA] Accidental oil spills and discharges significantly threaten the fishing industry.*

RESPONSE: Acknowledged

COMMENT: *In terms of timing of the seismic program identified by Husky Energy, the project area may be actively fished by harvesters. The same narrow window of opportunity for seismic work is also the same window when fishing takes place. It is also important to note that an industry post-season crab survey takes place in 2J in the fall of the year. There is also an industry crab survey conducted in 2H in the fall of the year but that is not coordinated by the FFAW.*

RESPONSE: Acknowledged. Highlighted text added to report at end of Section 5.5.2

COMMENT: *To mitigate potential conflicts with fishing vessels and fishing gear we recommend the company consider utilizing a fishing industry guide vessel as well as a Fisheries Liaison Officer during the program. The FFAW has a guide vessel program in place to mitigate safety concerns between the fishing and oil and gas industries. A fishing guide vessel would be better suited than a chase or picket vessel as they have experience with vessel traffic and gear deployment on the fishing grounds where the seismic activities are taking place. The fishing guide vessel could also serve to provide a communication “platform” for the fishing industry during the seismic program.*

RESPONSE: Husky will have two trained MMOs (one Labrador resident and one resident from the Island of Newfoundland) and an FLO on the crew. The FLO will be stationed on the seismic vessel, as per the Statement, and will serve to mitigate impacts to the fishing industry.

COMMENT: *It is extremely important to the Nunatsiavut Government (NG) that the aboriginal fishery (offshore and nearshore) is not disturbed or negatively affected by the proposed seismic program. The area proposed for seismic activity is extremely important to the Nunatsiavut fishery and will probably become more important in the future. As a mitigating factor, the NG recommends that the Torngat Joint Fisheries Board have input into the EA process and the seismic program during its implementation.*

RESPONSE: Refer to new Figure 3-1 for an illustration of proposed seismic survey lines for this Project. Please refer to Section 2.3 for a description of consultation held for this Project. Operationally, Husky will engage with the Torngat Joint Fisheries Board via notifications.

Marine Mammals

COMMENT: *With respect to marine mammals, timing of the seismic surveys has been specifically noted where Husky Energy proposes to undertake 2-D and 3-D seismic and follow-up geo-hazard surveys on its exploration acreage on the Labrador Shelf, with the potential for a 2-D seismic survey in the summer of 2010, while other surveys (2-D, 3-D or geo-hazard and Vertical Seismic Profiles) may occur at various times between 2010 and 2017. Given that the Environmental Studies Research Fund (ESRF) plans to support marine mammal and marine seabird surveys in this area in late summer and early fall of 2010 and 2011, it would be beneficial for Husky Energy to notify the scientific proponents regarding their plans and operations. It should be noted that if there is seismic activities occurring in the area at the same time as the ESRF survey, the results will not provide useable 'baseline' data that can be used to determine the impact of further exploration in the area.*

RESPONSE: Acknowledged. Husky agrees that it will need to provide information and notices to ESRF.

COMMENT: *Since the seismic survey includes the acquisition of data using a large airgun seismic array, as well as single-beam echosounder, multibeam echosounder, side-scan sonar, chirp / pinger sub-bottom profiler, sub-bottom profiler, there is a possibility that these activities could affect marine mammals in the operations area. While the operational mitigations will help to reduce potential impacts, marine mammals and sea turtles will still be able to detect the variety of sound sources proposed.*

RESPONSE: Acknowledged

COMMENT: *Also with respect to potential marine mammal occurrences, the proposed use of multiple Marine Mammal Observers (MMOs) to monitor operations during daylight operations, rather than a single Fisheries Liason Observer (FLO) which has been used in some other more extensive seismic surveys is highly recommended. However, the decreased horizontal visibility in the summer months due to fog as well as during nighttime operations, reduces the efficacy of MMOs significantly. The use of a picket vessel is an excellent mitigation if it can be used in advance of the seismic vessel and can be manned by experienced MMOs; from this arrangement the operation is better placed to detect and avoid marine mammals.*

RESPONSE: Husky is planning to have two MMOs and one FLO, as part of the seismic survey crew. It is preferred that the FLO have training in marine mammal observation as well. In order

to comply with the Statement, the MMO must be in the vicinity of the sound source at all times, therefore they have to be placed on the seismic boat, however the FLO will be on the picket vessel for this summer seismic program.

Navigation

COMMENT: *Husky Energy should submit work locations and timings as required to ensure the appropriate Notice to Shipping is promulgated prior to their activities occurring. DND will be transiting through the area during the summer of 2010; therefore, it is suggested that Husky Energy consult the Staff Officer Environmental Assessment each season to verify potential DND activity. There are no recorded shipwrecks or avoidance zones in this area based on information currently held at MARLANT.*

RESPONSE: Thank you for the information with respect to shipwrecks and avoidance zones. Highlighted text added to report in Section 8.3. Husky will include DND contacts Carol Lee Griffin or Deanna Brewster, as part of its notification process.

Observers

COMMENT: *As stated in the Environmental Assessment, observers will play a key role in ensuring mitigation measures should the proposed seismic program proceed. It is strongly suggested that the Proponent incorporates Inuit observers onboard the seismic vessels. Inuit are keen observers of the ocean and many have previously been employed as observers onboard marine vessels in these sorts of capacities.*

RESPONSE: Acknowledged. Husky is planning to use Labrador residents, proving the required expertise is available.

Picket Vessel

COMMENT: *The NG recommends that the Proponent use a local fishing guide vessel rather than a picket vessel to reduce conflicts with fishing vessels and gear. This would result in local employment opportunities while providing more effective communications with fishing vessels due to intimate knowledge of the local area and fishery.*

RESPONSE: Husky intended to use a local guide vessel, instead of a picket vessel however, in recent discussions with Transport Canada, Husky was advised that local fishing vessels operating in this role would not comply with the requirements of the Canada Shipping Act, and therefore would not qualify to replace picket vessels. We will however look to the local area to provide observers if they meet the training and qualification requirements.

SARA Species

COMMENT: *Given this document is intended to deal with the seismic program from 2010-2017, it raises questions in terms of considering species at risk. During that timeframe it is possible that more species could be added to Schedule 1 of SARA; COSEWIC will assess new species (examples of upcoming species assessments include Atlantic Cod, Deepwater and Acadian Redfish, and Loggerhead Sea Turtle); new Recovery Strategies, Management Plans or Action Plans could be posted for listed species; and critical habitat could be identified; etc. There could be a lot of changes over this time period that may affect a species' status and its requirements under SARA. It is important to know how this will be addressed by the proponent.*

RESPONSE: Husky conducts an annual update including a review of SARA / COSEWIC to note any new species / management reports / etc., that may be updated.

Seabird Data Collection

COMMENT: *This survey provides a good opportunity to collect additional seabird data from the area, as committed to by the proponent in the EA Report.*

RESPONSE: Acknowledged

COMMENT: *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: Husky will record and provide seabird data electronically during the survey and suggests a meeting between Husky, CNLOPB and CWS, to discuss the details.

Species at Risk

COMMENT: *Section 5.1 states that there are no known sensitive areas or critical habitats in the project area now. The proponent should commit to re-evaluate this issue before planned operations as sensitive areas and critical habitats may be identified during the course of the proposed program.*

RESPONSE: *Husky conducts an annual update including a review of SARA / COSEWIC to note any new species / management reports / etc. that may be updated.*

Report Quality

COMMENT: *A quality review of this document should have been undertaken prior to submission. Some comments, which require revision or clarification, include: Section 5.5.1 Data and Information Resources, 1st para., pg 126 – It states “These are for the management areas that most closely approximate study area”. Please clarify what is meant by that most closely approximate.*

RESPONSE: The sentence should read: These are the management areas that most closely approximate the study area. (i.e., they overlap with the Study Area).

COMMENT: *Section 5.5.5.3 Longlines (Baited Trawl), pg 136 – In some cases, longlines are not anchored but are suspended by buoys at either end when then set to drift for a time (when longlines are set in this way, it is referred to by some fishers as “fly and set”). Please clarify what is meant by either end when the set.*

RESPONSE: The sentence should read: In some cases, longlines are not anchored but are suspended by buoys at either end, then set to drift for a time (when longlines are set in this way, it is referred to by some fishers as “fly and set”).

COMMENT: *Section 5.5.6.4 Greenland Halibut, last para., pgs 147 – 148* – It states “In NAFO 2J the biomass *index for is also increasing and* has substantially increased from 2006 to 2007. Please clarify what is meant by *index for is also increasing*.”

RESPONSE: *The sentence should read: In NAFO 2J the biomass index for Greenland halibut has substantially increased from 2006 to 2007.*

COMMENT: *Section 7.4 Seabirds, line 7, pg 202* – Please clarify what is meant by “those the not-listed species”.

RESPONSE: The sentence should read: This VEC considers environmental effects of the Project resulting from vessel mobilization, seismic operations, and vessel demobilization for those species (and their habitat) that are not considered at risk but that may interact with the Project.

COMMENT: *Section 7.5.5 Environmental Effects Analysis, pg 208* – Please clarify what is meant by the following statement “An adverse environmental that is not significant adverse environmental effect is one that does not meet the above criteria”.

RESPONSE: Replace with the following definition: A not significant adverse environmental effect is defined as an adverse effect that does not meet the above criteria.

COMMENT: *Section 7.5.5.3 Loss of Income, pg 210* – Please clarify what is meant by the following statement “Sound from a seismic array can result in fishing avoiding the sound by temporarily moving out of the vicinity of the source...”.

RESPONSE: The sentence should read: Sound from a seismic array can result in fish avoiding the sound by temporarily moving out of the vicinity of the source....

SPECIFIC COMMENTS

COMMENT: **4.4.1 Sea Temperature and Salinity, 1st & 2nd para., pg 39** – *In the discussion of sea temperature and salinity, it appears that similar information is described in both paragraphs. Also, it indicates that QC was carried out on the data, while the second paragraph does not and there is a discrepancy in the number of data points included in the analysis. Also, a brief description of any QC procedures should be provided in this section.*

RESPONSE: The first two paragraphs following Figure 4-4 in Section 4.4.1 have been deleted and replaced with the following two paragraphs:

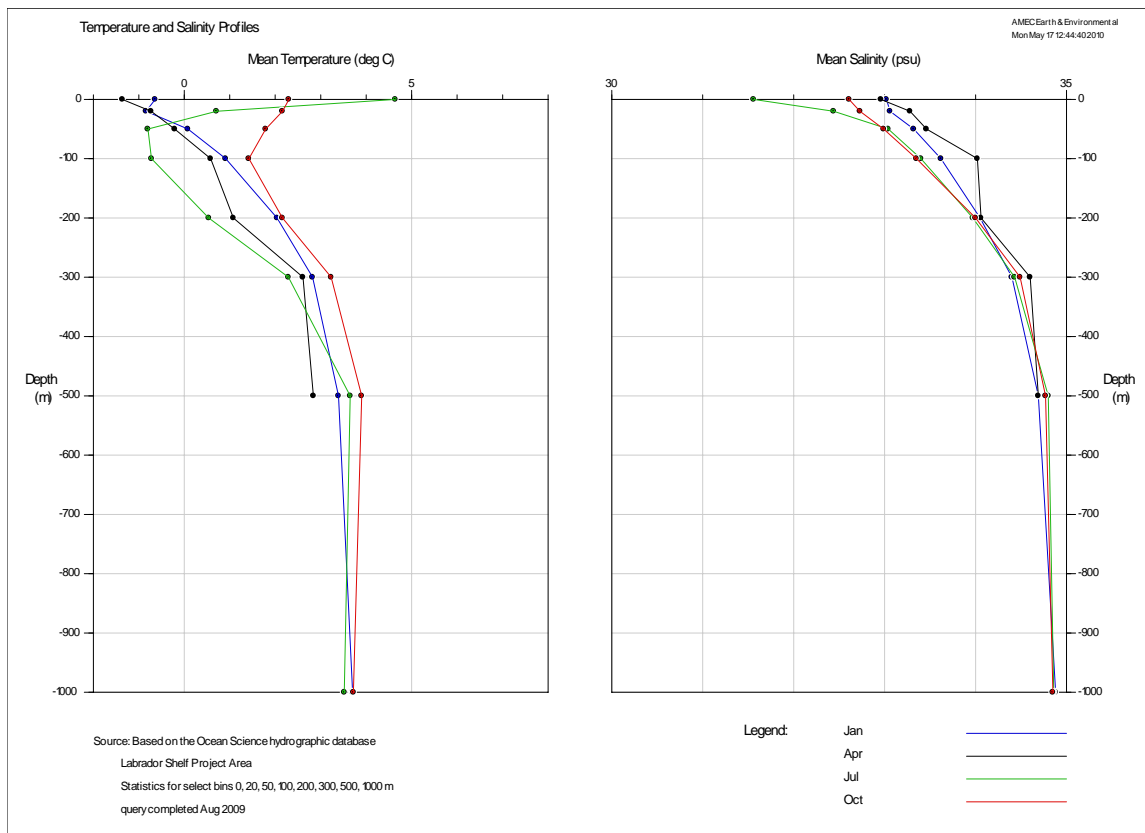
For this study, 29,192 (temperature, salinity, density) observations were extracted for the proposed Project Area boundary as shown in Figure 4-4. Following some additional data QC,

approximately 25,531 observations remained; these were averaged by depth with bin depth (or width) of 2 m for 0 to 25 m with steps of 5 m, bin depth of 2 m for 30 to 100 m with steps of 10 m, bin depth of 5 m for 125 to 500 m with steps of 25 m and bin depth 10 m from 600 to 1500 m every 50 m. The resultant temperature, salinity and density values were contoured to yield a monthly sectional view to 500 m depth as shown in Figure 4-5. There are some missing data for March, April and May especially at lower depths. Complete monthly statistics are provided in Appendix D. Seasonal temperature and salinity profiles for select depths are shown in Figure 4-6 and Table 4-1.

All current, temperature and salinity data were initially quality controlled by the originating source. Quality flags were then set based on monthly statistics: extremes greater than four standard deviations from the monthly mean (spikes); mean equal to the maximum, or minimum equal to the maximum; extremes out of range; or mean out of range; were all flagged. If further details on the original DFO database quality control are sought, the reader could please see the ODI link including reference to the Gregory (2004) research document on the database.

COMMENT: Last para. – The description states that the upper layer is colder and saltier than the lower layer. However, based on Figures 4.5 and 4.6, the upper layer is colder BUT FRESHER than the lower layer.

RESPONSE: Acknowledged. The sentence should read that the upper layer is colder and fresher than the lower layer. Also, note that the depth scale was incorrect in Figure 4-6. The corrected Figure 4-6 is provided.



Source: BIO Hydrographic Database 2009.

Figure 4-6 Mean Temperature and Salinity Profiles for Project Area

COMMENT: 4.4.3 Currents, Table 4-6, pg 54 – The last column should be ‘MEAN velocity direction’ instead of ‘velocity direction’.

RESPONSE: Edit made to Table 4-6 column title

COMMENT: 4.4.3 Currents, last sentence, pg 55 – The current in the region is southeastward based on Table 4-6. The use of “southeasterly” is inappropriate, which (in meteorology) means from the southeast, the exact opposite meaning.

RESPONSE: Last part of paragraph before Figure 4-16 revised as follows: On the Banks the current speed was generally lower than reported by the studies discussed above and ranged from 0.11 m/s near the surface to 0.06 m/s at 200 m, with a spike at 50 m to 0.13 m/s and a maximum of 0.88 m/s at 150 m. **In this region, the current followed the general flow of the adjoining regions which was to the southeast. An exception was on Saglek Bank, where the mean flow was directed towards the coast.**

COMMENT: 5.1.1 Species Listed in the SPECIES AT RISK ACT, 2nd para, pg 79 – Section 32 of SARA is not correctly described. Section 32 prohibits the killing, harming, harassing...etc. of an individual of a listed, extirpated, endangered or threatened species; Section 33 prohibits damage / destruction of residences; and Section 58 prohibits the destruction of critical habitat.

RESPONSE: Section 5.1.1: Text revised to reflect these edits

COMMENT: 5.1.1.2 Marine Mammals and Sea Turtles – Blue Whale, pg 84-85 – Note that the Recovery Strategy for Blue Whale is now finalized.

RESPONSE: Section 5.1.1.2: Text has been revised. DFO (2009a) has been replaced with Beauchamp et al. (2009).

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

COMMENT: 5.1.1.2 Marine Mammals and Sea Turtles – Blue Whale, pg 84 – The footnote at the bottom of this page is a personal communication attributed to Sue Forsey. Ms. Forsey recalls a phone conversation inquiring the status of Wolffish’s critical habitat. However, she was not asked for a personal communication and feels this quote is out of context and inaccurate, therefore it is recommended that this quote be removed from the document. Please refer to the Northern and Spotted Wolffish Recovery Strategy for further information on the identification of critical habitat for Wolffish. Also, if regulatory requirements change during the course of the seismic program (e.g. the identification of critical habitat in the study area for any species at risk), then it is the proponent’s responsibility to address them accordingly.

RESPONSE: Section 5.1.1.1: Footnote attributed to Sue Forsey deleted from report. The Wolffish Recovery Strategy (Kulka et al. 2007) is already cited in this section. Husky conducts an annual update including a review of SARA / COSEWIC to note any new species / management reports / identification of critical habitat, etc., that may be updated

COMMENT: 5.1.1.2 Marine Mammals and Sea Turtles – Whales, pgs 85 & 114 – *Population estimates are cited – there is an updated set of abundance estimates for cetaceans of Atlantic Coast. It is suggested that the authors refer to the following reference for more updated information:*

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

RESPONSE: Section 5.1.1.2: *Fin Whales. Text revised as follows:*

The best available population estimate is from the Canadian Trans North Atlantic Sightings Survey - 1,360 individuals, with approximately 890 estimated for Newfoundland and Labrador (Lawson and Gosselin (2009)).

Section 5.1.3: Minke Whale

Minke whales (*Balaenoptera acutorostrata*) occur worldwide and are the most common of the baleen whales. Minkes arrive in the inshore waters of Newfoundland and Labrador in April. Most stay only for the summer and fall as late as October or November; however, some individuals remain into the winter. Minke whales are common in shallow water, less than 200 m deep, but may also occur offshore in deeper waters. They are often solitary in the western North Atlantic, but may occur in groups of two or three. The best available population estimate is from the Canadian Trans North Atlantic Sightings Survey – 3,242 individuals, with approximately 1,315 estimated for Newfoundland and Labrador (Lawson and Gosselin (2009)).

Section 5.1.3: Humpback Whale

The best available population estimate is from the Canadian Trans North Atlantic Sightings Survey – 2,080 individuals, with approximately 1,427 estimated for Newfoundland and Labrador (Lawson and Gosselin (2009)).

Lawson and Gosselin (2009) has been added to the list of references.

Stevick et al. (2001) and Allen et al. (1993) have been deleted from the list of references.

COMMENT: 5.1.2 Species with Committee on the Status of Endangered Species in Canada Status, Table 5-2, pg 91 - *The designation dates should be added to Table 5-2.*

RESPONSE: Section 5.1.2: A footnote has been added to Table 5-2 to indicate that the designation information is “as of May 2010”.

COMMENT: 5.1.2.1 Marine Fish – Atlantic Cod, last para., pgs 92 & 93 – *It states that COSEWIC assessed Atlantic cod as endangered in 2005, which is incorrect; the last COSEWIC assessment was in 2003. Also, the population which is being referred to should be specified. In the 2003 assessment, COSEWIC’s recommendations were: Newfoundland and Labrador population – endangered; Laurentian North population – threatened; Maritimes population –*

special concern; Arctic population – special concern. Also, there is a reference in this section to cod being on Schedule 3 of SARA. It should be noted that Schedule 1 of SARA is the list of species at risk, while Schedules 2 and 3 are lists of species that need to be assessed by COSEWIC.

RESPONSE: Section 5.1.2.1: The text has been revised as follows:

Schedule 1 of SARA is the list of species at risk, while Schedules 2 and 3 are lists of species that need to be assessed by COSEWIC. COSEWIC's Candidate List is a compilation of species in Canada that have yet to be assessed and are suspected of being at some risk for extinction or extirpation thereby indicating those species that have priority for assessment.

Section 5.1.2.1: The text has been revised as follows:

Atlantic cod were **re-assessed** by COSEWIC in **April 2010**. In the re-assessment, **COSEWIC's recommendations were Newfoundland and Labrador population – endangered and Laurentian North population – endangered. Both of these populations are listed as 'No Schedule/No Status' on SARA.** The primary limiting factor and threat to the Atlantic cod population is population depletion due to resource over-exploitation (COSEWIC 2010). Limiting factors to the recovery of Atlantic cod south of Cape Chidley, Labrador, include collapsed age structure, reduced area occupied by spawners; below-average recruitment rate for some areas; higher-than-expected natural mortality of adults in some parts of the range of each population; and decline in individual growth rate in some areas within each population (COSEWIC 2003a).

COMMENT: 5.1.2.2 Marine Mammals – Atlantic Walrus, pgs 97 & 98 – *While the Atlantic walrus was assessed as special concern by COSEWIC in 2006, it should also be mentioned that Atlantic walrus (Northwest Atlantic population) is listed on Schedule 1 of SARA as extirpated and that the Recovery Strategy for the Atlantic Walrus is in fact finalized, not proposed.*

RESPONSE: Section 5.1.2.2: *The paragraph was revised as follows:*

The Atlantic walrus (Northwest Atlantic population) is listed on Schedule 1 of SARA as extirpated. There is a Recovery Strategy for the Northwest Atlantic population of the Atlantic walrus; however, it determined that Recovery of this species is considered not technically or biologically feasible at this time (DFO 2008a).

The reference cited (DFO 2008a) was the final Recovery Strategy, “proposed” has been deleted from the sentence.

COMMENT: 5.2.3 Deep Sea Corals, pg 102 – *It is suggested that the authors refer to the following references for more information on the presence of cold-water corals in the study area:*

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.

Also, it should be noted that there is a sponge in the study area. DFO-Science held a science advisory meeting in March 2010; these results should be published in April 2010.

RESPONSE: Section 5.2.3: The following text has been revised:

Stony corals (scleractinians), sea anemones (actinarians), soft/leather corals (alcyonaceans), horny corals (gorgonaceans) and sea pens (pennatulaceans) are all included in the generic term “coral” (Gass 2003). Corals are typically found deeper than 200 m in canyons and along the edges of channels along the edge of the Continental Shelf and slope (Breeze et al. 1997). Hard (horny and stony) corals are restricted to deep water only; soft corals are distributed in both shallow and deep waters. Congregations of coral in the Study Area are referred to as coral “forests” or “fields” and most grow on hard substrate (Gass 2003). Others prefer sand or mud substrates (Edinger et al. 2007). The southeastern region between Hamilton Bank and Belle Isle Bank **on the Labrador Slope (14 identified species) is one of two identified “hotspots” for coral species richness in Newfoundland and Labrador (Campbell and Simms 2009). Other areas with a moderate diversity and high abundance of corals include the Saglek Bank (within the Study Area) and Hatton Basin (to the north of the Study Area (Campbell and Simms 2009).**

Section 5.2.3: The following text was added after Figure 5-6:

Also of note is the fact that large (up to 6,000 kg) catches of sponges have been recorded in deeper water along the Labrador Shelf (Campbell and Simms 2009). A National Science Advisory Process meeting was held in March 2010, on corals, sponges and hydrothermal vents in Canadian Waters; results of this Process should be published in the near future.

The following reference has been added to the list of references:

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

COMMENT: 5.3 Marine Mammals and Sea Turtles, pgs 113-115 – DFO scientist have sighted sperm whales along the coast of Labrador. Sperm whales and northern bottlenose whales are sighted commonly in association with fishing vessels to the north of the study area, which should be added to Table 5-5. This table could also include other cetaceans that have been sighted along the Labrador coast such as white-beaked dolphins and common dolphins.

RESPONSE: Section 5.3: Table 5-5 has been revised as follows:

Table 5-5 General Abundance of Each Species within the Study Area

Species	Rare	Occasional	Abundant
Humpback Whale			x
Minke Whale		x	
Sperm Whale		x	
Northern Bottlenose Whale		x	
White-beaked Dolphin		x	
Common Dolphin		x	
Blue Whale	x		
Fin Whale		x	
Bowhead Whale	x		
Sei Whale		x	
Beluga Whale	x		

Species	Rare	Occasional	Abundant
Long-finned Pilot Whale	x		
Sowerby's Beaked Whale	x		
Killer Whale	x		
Atlantic White-sided Dolphin	x		
Harbour Porpoise			x
Harp Seal		x	
Harbour Seal			x
Grey Seal		x	
Hooded Seal	x		
Ringed Seal		x	
Bearded Seal	x		
Walrus	x		
Atlantic Loggerhead Turtle			
Kemp's Ridley Turtle	x		
Leatherback Turtle	x		
Polar Bear	x		

The following new sections have been added to Section 5.3.1:

Sperm Whale

Sperm whales are widely distributed, occurring from the edge of polar pack ice to the equator, but are most common in tropical and temperate waters (Jefferson et al. 2008). Whitehead (2002) estimated a total of 13,190 sperm whales for the Iceland-Faroes area, the area northeast of it, and the east coast of North America combined, but Waring et al. (2009) only estimated a total of 4,804 sperm whales in the North Atlantic. Sperm whale abundance and distribution in an area can vary in response to prey availability, particularly mesopelagic and benthic squid (Jaquet and Gendron 2002; Jaquet et al. 2003). Sperm whales tend to occur in deep waters off the continental shelf, particularly areas with high secondary productivity and steep slopes (Jaquet and Whitehead 1996; Waring et al. 2001).

Northern Bottlenose Whale

Northern bottlenose whales occur only in the North Atlantic, predominantly in deep offshore areas, and have two (known) primary areas of concentration: Davis Strait off northern Labrador (Reeves et al. 1993); and The Gully and adjacent canyons of the eastern Scotian Shelf. The abundance of northern bottlenose whales in the Northwest Atlantic is unknown (Waring et al. 2009), but there are an estimated approximately 163 individuals in the Scotian Shelf population (Whitehead and Wimmer 2005). The Davis Strait population has no status under SARA and is considered not at-risk by COSEWIC (COSEWIC 2002b); however, the Scotian Shelf population is considered to be of Special Concern by COSEWIC and Endangered on Schedule 1 of SARA. Foraging appears to occur at depth, primarily for large and medium-bodied squid.

White-beaked Dolphin

White-beaked dolphins occur in cold temperate and sub-Arctic waters in the North Atlantic and have a more northerly distribution than most other dolphin species (Jefferson et al. 2008). There are an estimated 2,003 individuals in the Northwest Atlantic (Waring et al. 2009), but it is unknown how many occur off eastern Newfoundland. Prey items include squid, crustaceans, and a variety of small mesopelagic and schooling fishes like herring, cod, haddock, and hake (Jefferson et al. 2008).

Common Bottlenose Dolphin

Common bottlenose dolphins are distributed widely in tropical and temperate waters, occupying a variety of habitats (Jefferson et al. 2008). In the Northwest Atlantic, there are two morphologically and genetically distinct stocks, referred to as the coastal and offshore forms (Hoelzel et al. 1998). The offshore form tends to occur along the outer continental shelf and slope in the Northwest Atlantic while the coastal form occurs from New York to the Gulf of Mexico along the Atlantic coast (Waring et al. 2009). The population of the offshore form, potentially ranging into eastern Newfoundland waters, is estimated to contain 81,588 individuals (Waring et al. 2009). Common bottlenose dolphins consume a variety of fish species, cephalopods, and shrimp by employing a number of foraging strategies (Connor et al. 2000).

The following new references were added to the list of references:

Connor, R.C., R.S. Wells, J. Mann and A.J. Read. 2000. The bottlenose dolphin: Social relationships in a fission-fusion society. Pp. 91-126. In: J. Mann, R.C. Connor, P.L. Tyack and H. Whitehead (eds.). *Cetacean Societies: Field Studies of Dolphins and Whales*, University of Chicago Press. Chicago, IL.

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2002b. COSEWIC Assessment and Update Status Report on the Northern Bottlenose Whale *Hyperoodon ampullatus* (Scotian shelf population) in Canada. Committee on the Status of Endangered Wildlife in Canada, Ottawa, ON. vi + 22 pp.

Hoelzel, A.R., C.W. Potter and P.B. Best. 1998. Genetic differentiation between parapatric 'nearshore' and 'offshore' populations of bottlenose dolphin. *Proceedings of the Royal Society of London, Biological Sciences*, 265: 1177-1183.

Jaquet, N. and D. Gendron. 2002. Distribution and relative abundance of sperm whales in relation to key environmental features, squid landings and the distribution of other cetacean species in the Gulf of California, Mexico. *Marine Biology*, 141: 591-601.

Jaquet, N., D. Gendron and A. Coakes. 2003. Sperm whales in the Gulf of California: Residency, movements, behavior, and the possible influence of variation in food supply. *Marine Mammal Science*, 19: 545-562.

Jaquet, N. and H. Whitehead. 1996. Scale-dependent correlation of sperm whale distribution with environmental features and productivity in the South Pacific. *Marine Ecology Progress Series*, 135(1-3): 1-9.

Jefferson, T.A., M.A. Webber and R. Pitman. 2008. *Marine Mammals of the World: A Comprehensive Guide to their Identification*. Academic Press, London. 573 pp.

Reeves, R.R., E. Mitchell and H. Whitehead. 1993. Status of the northern bottlenose whale, *Hyperoodon ampullatus*. *Canadian Field-Naturalist*, 107: 490-508.

Waring, G.T., T. Hamazaki, D. Sheehan, G. Wood and S. Baker. 2001. Characterization of beaked whale (Ziphiidae) and sperm whale (*Physeter macrocephalus*) summer habitat in shelf-edge and deeper waters off the northeast US. *Marine Mammal Science*, 17: 703-717.

Waring, G.T., E. Josephson, C.P. Fairfield-Walsh and K. Maze-Foley. 2009. US Atlantic and Gulf of Mexico marine mammal stock assessments -- 2008. NOAA Technical Memorandum, NMFS-NE 210: 440 pp.

Whitehead, H. 2002. Estimates of the current global population size and historical trajectory for sperm whales. *Marine Ecology Progress Series*, 242: 295-304.

Whitehead, H. and T. Wimmer. 2005. Heterogeneity and the mark-recapture assessment of the Scotian Shelf population of northern bottlenose whales (*Hyperoodon ampullatus*). *Canadian Journal of Fisheries and Aquatic Sciences*, 62: 2573-2585.

COMMENT: 5.5.5 Fishing Gear – Stern Otter Trawls, pg 136 – Shrimp Trawls are mentioned in this section but the use of Nordmore grates, which are mandatory in the shrimp fishery are

not. (This information can be found on the DFO Website under the Northern Shrimp Integrated Fisheries Management Plan at the following link: <http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/ifmp-gmp/index-eng.htm>).

RESPONSE: Section 5.5.5: The text has been revised as follows:

It is mandatory that shrimp trawls use a Nordmore Grate to reduce the level of groundfish bycatch. This exclusion device allows larger fish to escape through an opening in the top of the net; the shrimp pass through and are retained in the cod-end of the net (DFO 2010).

The following has been added to the list of references:

DFO (Fisheries and Oceans Canada). 2010. Integrated Fisheries Management Plan: Northern Shrimp – Shrimp Fishing Areas (SFAs) 0-7 and the Flemish Cap. Available at URL: <http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/ifmp-gmp/shrimp-crevette/shrimp-crevette-2007-eng.htm>. Date Modified: 2010-02-04

COMMENT: 5.6 Sensitive Areas, pgs 153-155 – *The definition of Sensitive Areas in this document should include the known presence of sensitive species and habitats, etc. For example, cold-water corals and sponges are internationally/nationally recognized as sensitive to human impacts (including activities such as oil and gas). It is recommended that corals and sponges be included in discussions related to sensitive areas.*

RESPONSE: Section 5.6: The following text (last bullet) was revised as follows:

Coral Conservation Priority Area(Fishing Industry) Voluntary Coral Protection Zone: The Groundfish Allocation Enterprise Council/Canadian Association of Seafood Producers, under the auspices of NAFO, have voluntarily established the 12,500 km² Coral Protection Zone in NAFO Division 30, which is closed to all fishing using bottom contact gear (Campbell and Simms 2009). This area, off Cape Chidley, conserves large concentrations of species of large corals such as *Primnoa resedaeformis*, *Paragorgia arborea*, *Paramuricia placomus*, *Paramuricia grandis* and antipathorian species (Wareham 2009, in Gilkinson and Edinger 2009). Cold-water corals (and sponges) are nationally/internationally recognized as sensitive to anthropogenic effects. The following text was added to the end of this section:

The Study and Project Areas are located in the Newfoundland-Labrador Shelves Marine Ecoregion. The two primary uses of this biogeographic classification system are: assessing and reporting on ecosystem status and trends; and spatial planning for the conservation of ecosystem properties and management of human activities. In addition, these areas and associated information are useful in guiding the selection of future representative MPAs.

The following reference was added to the list of references:

Gilkinson, K. and E. Edinger (Editors). 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.

COMMENT: 5.6 Sensitive Areas, Figure 5-32, pg 154 – *The size and boundary of the Gilbert Bay (GB) Marine Protected Area (MPA) are difficult to identify in this figure, however it seems the area in this figure goes beyond the GB MPA boundaries (i.e. the Alexis Bay area, up to Port Hope Simpson is not included in this MPA). Please refer to the attached map of Gilbert Bay. Also, it should be noted that the Cape Chidley Coral Conservation Protected Area is incorrect. This is a volunteer closure by representatives from the fishing industry. It is recommended that the authors refer to Figure 10 in the following document:*

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

RESPONSE: Acknowledged. Revisions were made to Figure 5-32 to reflect changes to Gilbert Bay Marine Protected Area and the Voluntary Coral Protection Zone. Text revised to reflect voluntary nature of the closure. The following text was revised in Section 5.6 (Page 158, third bullet): Gilbert Bay (approximately 60 km²) was **designated** as a Marine Protected Area (MPA) under the Oceans Act in 2005 due to its distinct population of Atlantic cod.

COMMENT: 5.6 Sensitive Areas, pg 155 –*The study and project areas are both located in Canada's NL-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 MPAs.*

RESPONSE: Acknowledged. A note to this effect has been added to Section 5.6.

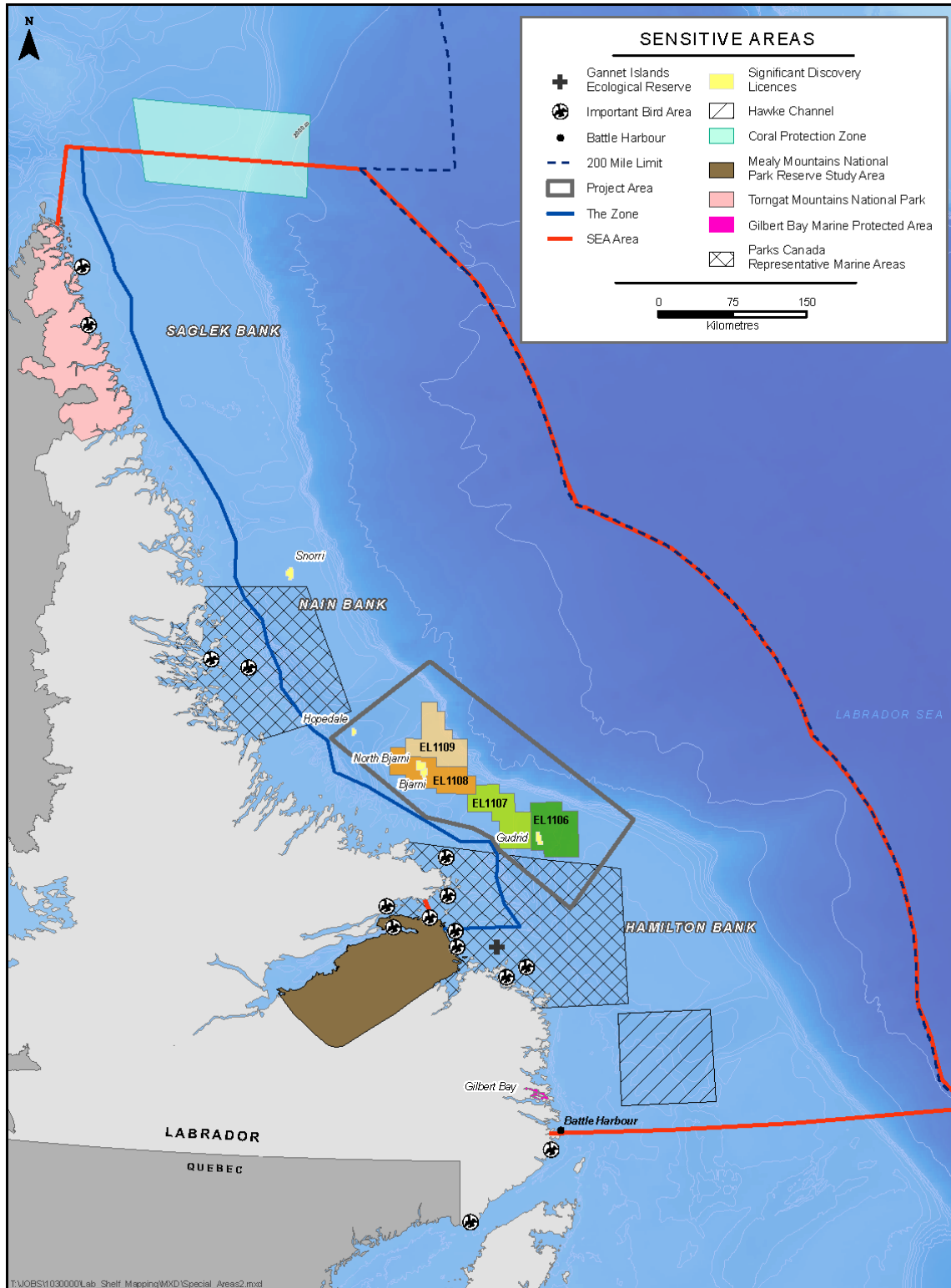


Figure 5-32 Sensitive Areas in the Vicinity of the Project

COMMENT: 6.2.2 Temporal, pg 156 – *The temporal scope of the assessment has previously been identified as 2010 to 2017.*

RESPONSE: Acknowledged. Correction has been made.

COMMENT: 6.8 Cumulative Environmental Effects, pgs 161-162 – *With potentially three contiguous seismic operations on the Labrador coast (even if 50 km distances are maintained between operations) there will be an increased risk of large-scale marine mammal displacements, and higher ambient noise levels if operations are not planned to maximize distance between sound sources. Any efforts to schedule operations to reduce or eliminate concurrent underwater sound production must be encouraged.*

RESPONSE: While the EA does assess the potential cumulative effects of three concurrent surveys; this is a very unlikely event. A quantitative analysis of potential cumulative effects would not be meaningful without the specific operational plans from each operator to determine whether there was any potential for spatial and temporal overlap of potential effects.

COMMENT: 6.9 Follow-up and Monitoring, pgs 162 & 188 – *More than a single MMO is likely required to ensure efficacy of this mitigation method. Even two observers will be hard-pressed to maintain rest and hence effectiveness for a 30+ day operation*

RESPONSE: Husky will have two trained MMOs as part of the seismic crew and prefers to provide an FLO with MMO training.

COMMENT: 7.1.2.2 Potential Interactions – Marine Mammals and Sea Turtles, pg 167 – *Although potential interactions with helicopters and sanitary/domestic waste are not indicated for marine mammals and sea turtles, they are discussed later in section 7.1.2.1 (Page 175). They should be provided in this section as well.*

RESPONSE: Revisions made to Table 7-2 to indicate check marks for sanitary/domestic waste and helicopter.

COMMENT: 7.1.3.1 Existing Knowledge – Marine Fish, pg 170 – *This section contains a fairly thorough review of the available literature on the effects of seismic sound on marine fish. However, it should be noted that many of the cited sources are from the “grey” literature, including previous consultant’s reports and summaries of oral presentations. There could be more emphasis on the fact that there have been few recent peer-reviewed studies and these studies may be of limited value as they do not always deal with species of interest and are not always conducted under natural field conditions.*

RESPONSE: Acknowledged.

COMMENT: 7.1.3.1 Existing Knowledge – Marine Fish, pg 172-173 – *The suggestion that the effect of masking may be less severe because of the “pulsed” nature of the seismic sound seems to be rather speculative. These effects could potentially occur over a wide geographic area and may not be immediately apparent.*

RESPONSE: The text as written, reviews relevant literature, but does acknowledge the uncertainty.

“These results suggest that the presence of intermittent, audible air gun shots would not necessarily impair fish in receiving and appropriately interpreting other biologically relevant sounds from the environment (US Minerals Management Service 2004). The degree of masking and the biological significance of masking are unknown.”

COMMENT: *This section is of a very general nature and could more explicitly examine how these studies may be applied to the species at risk noted to occur in the proposed Study Area. Interactions with spawning and migration routes could be more clearly delineated.*

RESPONSE: The following information has been added to the report (Section 7.1.3.1, Pages 172-173).

Spawning periods and times when pelagic larvae of commercially important fish species are present in the Study Area are provided in Tables 7-3 and 7-4, respectively. Most commercial species spawn in the spring and summer and most larval and juvenile pelagic life stages are present in the late summer and fall.

Table 7-3 Spawning Times of Commercial Fish and Shellfish Species in the Study Area

Species	Spawning Period
American Plaice*	April
Atlantic Cod*	March to May
Atlantic Halibut	February to April
Greenland Halibut	January to March
Redfish	November to February
Scallops, Iceland	April to August
Skate	Year round
Snow Crab	February to April
Witch Flounder	March to September
Wolffish*	July to February (species dependant)
Roughhead Grenadier*	March to July, Year round
Northern Shrimp	March to May
* SARA-listed or COSEWIC-designated. Source: Labrador Shelf SEA Section 7.8.22 (Sikumiut 2008).	

Table 7-4 Time of Year when Pelagic/Sensitive Life Stage is Present in the Water Column within the Study Area

Species	Pelagic/Sensitive Life Stage Period
American Plaice*	Unknown – temperature dependent
Atlantic Cod*	Year round
Atlantic Halibut	May and June
Greenland Halibut	Unknown
Redfish	April to August
Scallops, Iceland	August to October
Skate	Year round
Snow Crab	Year round
Witch Flounder	Year round
Wolffish*	Unkown
Roughhead Grenadier*	Year round

Northern Shrimp	June to May
* SARA-listed or COSEWIC-designated. Source: Labrador Shelf SEA Section 7.8.22 (Sikumiut 2008).	

COMMENT: 7.1.3.1 Masking, pg 173 – *The reference should be (US Minerals Management Service 2004.*

RESPONSE: Acknowledged. Edit made to report

COMMENT: 7.1.3.1 Existing Knowledge – Marine Fish, 3rd para., pg 173 – *The authors make note that there have been no documented incidences of fish kills (repeated in Section 7.1.5.1), however, since these type of studies have been limited there is a possibility that fish kills may have occurred but were not observed/reported.*

RESPONSE: Acknowledged.

COMMENT: 7.1.3.1 Existing Knowledge – Marine Fish, pg 174 – *The reference for Kenchington et.al (2001) is missing from the reference list.*

RESPONSE: Acknowledged. The following reference was added to the reference list.

Kenchington, E.L.R., J. Prena, K. Gilkinson, D.C. Gordon, K. MacIsaac, C. Bourbonnais, P. Schwinghamer, T.W. Rowell, D.L. McKeown and W.P. Vass. 2001. Effects of experimental otter trawling on the macrofauna of a sandy bottom ecosystem on the Grand Banks of Newfoundland. Canadian Journal of Fisheries and Aquatic Sciences, 58: 1043-1057.

COMMENT: 7.1.3.1 Existing Knowledge – Marine Fish, 2nd para., pg 175 – *Reference to Hastings and Popper (2005) seems out of place. Perhaps this should be incorporated earlier in this section.*

RESPONSE: Section 7.1.3.1 discusses the environmental effects of sound on fish, and since Hastings and Popper (2005) reviewed the available scientific information on bioacoustic impact on fish up to 2005, the citation is provided.

Hastings M.C., and A.N. Popper. 2005. Effects of Sound on Fish. Report for Jones and Stokes, Sacramento, CA.

COMMENT: 7.1.3.2 Marine Mammals and Sea Turtles, pg 175 – *Evidence that whales continue calling or that “masking” effects will be limited seems to have a high level of uncertainty. Literature on whales seems to be slightly better than fish, however still a lot of reliance on ‘grey’ literature.*

RESPONSE: Acknowledged. If the reviewer(s) know of any other studies, please provide a citation for them.

COMMENT: 7.1.3.2 Marine Mammals and Sea Turtles, 4th para, pg 176 – *In a few instances there seems to have been a problem which leads to words including the letters “all” to be*

substituted with “al.”. It seems there was a search and replace where in all instances where there was a word ending in ‘et’ directly preceding the word all, it was replaced with et al.

RESPONSE: Acknowledged. Edit made to report.

COMMENT: 7.1.3.2 Marine Mammals and Sea Turtles, pg 182 – *As suggested elsewhere, the impulsive nature of seismic sounds could still mask baleen whale communication as the low-frequency sounds of the arrays “smear” into longer duration impulses at greater distances from the array source. Also, multipath and bottom sound reverberence effects can cause multiple and overlapping sound impulses at greater distances. Thus, it is simplistic to assume that the impulsive and “short duration” nature of an airgun source cannot result in masking of baleen whale sounds over larger received areas.*

RESPONSE: Acknowledged that more information is known about the potential environmental effects of sound in the near-field.

COMMENT: 7.1.3.2 Marine Mammals and Sea Turtles, 3rd para., pg 186 – *Moein et al. (1994) reference is missing from the reference list.*

RESPONSE: Acknowledged. The following citation was added to the reference list.

Moein, S.E., J.A. Musick, J.A. Keinath, D.E. Barnard, M. Lenhardt and R. George. 1994. Evaluation of Seismic Sources for Repelling Sea Turtles from Hopper Dredges. Report from Virginia Institute of Marine Science, [Gloucester Point], VA, for US Army Corps of Engineers. 33 pp.

COMMENT: 7.1.3.2 Marine Mammals and Sea Turtles, 3rd para., pg 187 – *The mitigation efficacy of limiting vessel speeds in the operational area is unproven. However, given the data on injury and ship strikes as it relates to vessel speeds this approach is a proactive strategy that should be commended.*

RESPONSE: Acknowledged, thank you.

COMMENT: 7.1.3.3 Seabirds, last sentence, pg 188 – *Please finish the sentence.*

As Ivory Gull do not spend measurable time under water (unlike the Alcidae (see Section 7.4.3 for more detail on the potential environmental effects of sound on seabirds).

RESPONSE: Acknowledged. The sentence should read:

As Ivory Gull do not spend measurable time under water (unlike the Alcidae), **the environmental effects of sound on seabird Species at Risk are expected to minimal** (see Section 7.4.3 for more detail on the potential environmental effects of sound on seabirds).

COMMENT: 7.1.4.2 Marine Mammals and Sea Turtles, 1st para., last line, pg 188 – *Please insert “Some” before “Mitigation requirements...”.*

RESPONSE: Acknowledged. Edit made to report.

COMMENT: 7.1.4.2 Marine Mammals and Sea Turtles, 2nd bullet, pg 189 – *Please identify where in the Guidelines this statement is found.*

RESPONSE: Acknowledged. This is a typo and the bullet has been deleted.

COMMENT: 7.1.5 Environmental Effects Analysis, pg 189 – *Based on the incomplete evidence available at this time, it seems that ranking the Level of Confidence as ‘high’ in the summary of residual environmental effects on species at risk (Table 7-7), marine fish and fish habitat (Table 7-8) and marine mammals and sea turtles (Table 7-9) for the effects of seismic array noise may not be warranted.*

RESPONSE: Acknowledged. As the long-term far-field environmental effects on behaviour are uncertain for marine mammals, the level of confidence has been changed to Moderate for the Marine Mammals and Species at Risk VECs.

COMMENT: 7.1.5.3 Seabirds, pg 194 – *Shouldn’t there be an environmental effects assessment table for Seabirds Species at Risk.*

RESPONSE: As there is only one seabird Species at Risk identified in the Study Area, and the fact that “[M]ost species of seabirds spend only a few seconds underwater foraging for food, so there would be minimal opportunity for exposure to noise associated with seismic shooting. The seismic survey will occur in ice-free waters and the Ivory Gull generally avoids ice-free waters....” The statement of significance was deemed sufficient.

COMMENT: 7.2.1 Assessment boundaries, pg 195 – *Although evidence regarding the effects on invertebrates is limited, some invertebrate species may have limited movement and ability to avoid seismic sound. This may lead to increased susceptibility to repeated exposures to seismic surveys within the Study Area.*

RESPONSE: Acknowledged.

COMMENT: 7.5.5.3 Loss of Income, 1st para, line 12, pg 210 – *“Of the two principal commercialin the Project Area”. LGL 2008 is referenced but the reason should be stated. This also applies to Section 8.5.5 on page 216.*

RESPONSE: Acknowledged. The reference has been deleted from both sections (7.5.5.3 and 8.5.5).

COMMENT: 7.7 Follow-Up and Monitoring, pg 212 – *A “qualified” seabird observer should be on board the vessel. Operators are expected to implement a seabird and marine mammal observation program throughout survey activities as per the Geophysical, Geological, Environmental and Geotechnical Program Guidelines (C-NLOPB 2008).*

RESPONSE: *It is Husky’s preference that MMOs also be a qualified seabird observer.*

COMMENT: 9.3.1.2 Marine Mammals and Sea Turtles, pg 219 – *It is possible that loss of streamer fluid could taint marine invertebrates (an important food of leatherback sea turtles) in a localized area. Careful monitoring to ensure this does not occur is important. Since the streamer fluid disperses or evaporates rapidly, it is anticipated that this would not be a significant impact.*

RESPONSE: Acknowledged. Text revised as follows:

If the seismic vessel uses a fluid-filled streamer, the floatation fluid is compartmentalized into 100-m self-contained units. Therefore, a single leak in a streamer should result in a maximum loss 208 L of Isopar M (note, potential maximum volume lost revised in report in Section 9.1 (last paragraph)

Sea turtles are potentially more susceptible to the environmental effects of oiling, but such effects are thought to be sublethal (Husky Oil Operations Limited 2000); **they could potentially ingest tainted invertebrates (an important food source).**

COMMENT: 9.3.6 Sensitive Areas, pg 221 – *The assumption that there are no known special feeding areas or sensitive areas for marine mammals in the proposed project area is likely a reflection of the lack of research effort in this area.*

RESPONSE: Acknowledged.