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BAB 3990-5

April 30, 2010

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

Dear Mr. Hicks:

**Subject:    Husky Energy Labrador Shelf Area Seismic Survey Program 2010- 2017  
                  Environmental Assessment Report**

Fisheries and Oceans Canada (DFO) has reviewed the document entitled '*Husky Energy Labrador Shelf Area Seismic Survey Program 2010- 2017 Environmental Assessment Report*', dated February 2010 and offer the following comments for your consideration.

#### **General Comments**

It was noted that in order to avoid excess duplication in relation to the description of the biological and physical environment, the environmental assessment (EA) report often refers to an earlier report by Sikumiut. For the most part, this is reasonable unless it is 'critical' in relation to ranking of risks.

#### *Fish and Shellfish*

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.

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.

#### *Marine Mammals*

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.

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.

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.

Additionally, it is noted the 30-minute ramping up is a recognized mitigation measure for seismic surveys within the Statement of Canadian Practice with Respect to The Mitigation of Sound in the Marine Environment. However, it should be noted that some uncertainty still exists as to the efficacy of this strategy as there have been no formal field studies of this ramp- up procedure to date that address past recommendations (DFO 2004) for further analysis and evaluation of the effectiveness of these mitigations measures. For example, the possibility remains that ramp up may actually have the opposite effect in some cases (e.g., see Gordon et al. 2004; Lawson and McQuinn 2004).

#### *SARA Species*

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.

It is recommended that a quality review of this document be undertaken prior to submission. Some specific comments which require revision or clarification include:

*Section 5.5.1 Data and Information Resources*

*Page 126*

1<sup>st</sup> para- It states "These are for the management areas *that most closely approximate* study area". Please clarify what is meant by *that most closely approximate*.

*Section 5.5.5.3 Longlines (Baited Trawl)*

*Page 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*.

*Section 5.5.6.4 Greenland Halibut*

*Page 147- 148*

Last para- 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*."

*Section 7.5.5 Environmental Effects Analysis*

*Page 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* '.

*Section 7.5.5.3 Loss of Income*

*Page 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...* "

**Specific Comments**

*Section 4.4.1 Sea Temperature and Salinity*

*Page 39*

1<sup>st</sup> and 2<sup>nd</sup> para- 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.

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.

*Section 4.4.3 Currents*

*Page 54*

Table 4-6- The last column should be 'MEAN velocity direction' instead of '*velocity direction*'.

*Page 55*

Last sentence- 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.

*Section 5.1.1 Species Listed in the SPECIES AT RISK ACT*

*Page 79*

2<sup>nd</sup> para- 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.

*Section 5.1.1.2 Marine Mammals and Sea Turtles- Blue Whale*

*Pages 84-85*

Note that the Recovery Strategy for Blue Whale is now finalized.

*Page 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.

*Whales*

*Pages 85 and, 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's marine megafauna survey - a component of the 2007 TNASS. DFO Canadian Science Advisory Secretariate Research Document 2009/031. iv + 29 p.*

*Section 5.1.2.1 Marine Fish- Atlantic Cod*

*Pages 92- 93*

Last para- 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.

### *Atlantic Walrus*

*Pages 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.

### *Section 5.2.3 Deep Sea Corals*

*Page 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.

### *Section 5.3 Marine Mammals and Sea Turtles*

*Pages 113- 115*

DFO scientists 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.

### *Section 5.5.5 Fishing Gear- Stern Otter Trawls*

*Page 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/fin-gp/peches-fisheries/ifmp-gmp/index-eng.htm>).

### *Section 5.6 Sensitive Areas*

*Pages 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.

*Page 154*

Figure 5-32 - 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.

*Page 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.

*Section 6.8 Cumulative Environmental Effects*

*Pages 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.

*Section 6.9 Follow- Up and Monitoring*

*Pages 162 and 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.

*Section 7.1.2 Potential Interactions*

*7.1.2.2 Marine Mammals and Sea Turtles*

*Page 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.

*Section 7.1.3 Existing Knowledge*

*7.1.3.1 Marine Fish*

*Page 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.

*Page 173*

3<sup>rd</sup> para- 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.

*Page 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.

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.

*Page 174*

The reference for *Kenchington et al* (2001) is missing from the reference list.

*Page 175*

2<sup>nd</sup> para- Reference to Hastings and Popper (2005) seems out of place. Perhaps this should be incorporated earlier in this section.

#### *Section 7.1.3.2 Marine Mammals and Sea Turtles*

*Page 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.

*Page 176*

4<sup>th</sup> para- In a few instances there seems to have been a problem which leads to words including the letters “all” to be substituted with “al.l”. 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*.

*Page 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.

*Page 186*

3<sup>rd</sup> para- Moein *et al.* (1994) reference is missing from the reference list.

*Page 187*

3<sup>rd</sup> para- 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.

#### *Section 7.1.4 Environmental Effects Management*

##### *7.1.4.2 Marine Mammals and Sea Turtles*

*Page 188*

The effectiveness of mitigation for detecting organisms such as sea turtles may be harder to detect visually and should be studied more extensively using passive acoustic monitoring.

#### *Section 7.1.5 Environmental Effects Analysis*

*Page 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.

*Section 7.2 Marine Fish and Fish Habitat*

*7.2.1 Assessment Boundaries*

*Page 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.

*Section 9.3 Environmental Effects Assessment of Accidents and Malfunctions*

*9.3.1.2 Marine Mammals and Sea Turtles*

*Page 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.

*Section 9.3.6 Sensitive Areas*

*Page 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.

Thank you for providing DFO the opportunity to comment on this EA document. If you have any questions or comments regarding the above, please contact Elizabeth Bennett, Senior Biologist, Marine Section by phone at 772-0853 or by e-mail ([elizabeth.bennett@dfo-mpo.gc.ca](mailto:elizabeth.bennett@dfo-mpo.gc.ca)).

Yours truly,



Carole Grant  
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Map of Gilbert Bay Marine Protected Area

