

Husky Energy - Sydney Basin Seismic Program, 2009-2018 Environmental Assessment Report

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 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.

Noted. Husky will record and provide seabird data electronically during the survey and suggest a meeting between Husky, C-NLOPB and CWS to discuss the details.

Marine Navigation

The proponent should promulgate actual work locations as per Navigation to Ship notices (NOTSHIPS) and check potential Department of National Defence activity each season through the Staff Officer for Environmental Assessment.

Agree. Husky will contact Carol Lee Giffin or Deanna Brewster (Acting Staff Officer), National Defence, Formation Safety and Environment

Based on the information that Marine Forces Atlantic, also known as MARLANT, currently holds, the following sites have potential for the presence of Unexploded Ordnances (UXOs):

- Disposed Naval Mines - 47.25N, 059.66W
- UXO and Mines - 46.17N, 059.44W
- United States patrol boat – 46.41N, 060.33W
- Disposal Area – (potential mustard gas) 46.30, 058.65W.

The noted locations will be plotted for exploration drilling program. Seismic program with a towed array is not a bottom-founded activity. Physical disturbance of the seafloor is not expected during the described seismic activities.

Please see attached Figure 1-1.

Commercial Fisheries

The commercial fishery is very important to many communities on the south coast of Newfoundland. Fishing activity occurs throughout most of the year (April to November) on the south coast and a variety of marine species is commercially harvested. The Burgeo Bank, in particular, is an important fishing ground for many local harvesters. The fishery is being actively prosecuted at the time that Husky Energy is proposing to conduct its program in 2010. It is therefore important that Husky maintain regular communication with the FFAW to keep apprised of ongoing developments with this, and other fisheries in the area.

Husky Energy (Husky) fully agrees with the commentary opposite. Through the petroleum liaison position, operational plans are communicated with the FFAW. Husky has also documented in the environmental assessment report, engagement with fishers, the FFAW in St. John's and Corner Brook, One Ocean and others with an interest in the project both in South Western Newfoundland & Labrador and Nova Scotia.

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	<p>Husky will continue to engage as the project moves forward and in future years as described.</p>
<p>There is some inconsistency in the fisheries information noted in the document with respect to Atlantic Cod that requires clarification. Atlantic Cod spawn from April to June in the project area and migration of the stock is still occurring up until the end of May. June is not an ideal time to conduct seismic activity during both of these sensitive periods in the life history of the species but it is better than April or May. August would be a preferred time if the company is considering timing requests of the fishing industry to conduct their seismic program. It is also noteworthy that while some cod may be caught in the project area as by-catch from the redfish fishery there is a directed fishery for cod in the region that occurs from May to November.</p>	<p>The points listed are not consistent with input received from the FFAW or the fishers consulted in the area on the Southwest Coast of the Island of Newfoundland. Those sources indicated that June would be a preferred month to run the survey based on both spawning and expected fishing activity in the area. We understand that the dominant fishery in the project area is redfish which occurs in August but not June. As well, fishers and DFO indicated the majority of cod spawn in March, April and May.</p> <p>Cod is both a by-catch and is the subject of a directed fishery in the north-easterly portion of the project area as noted in the report.</p>
<p>Some fisheries comments in the report are a little dated, although referenced accordingly, with 2007 information being the most recent. The fisheries data in the report is dated as well. As noted in the document however fisheries data with respect to catch is sporadic for midshore fisheries and incomplete for 2008 and 2009 offshore data. Therefore, the deployment of an FLO onboard the seismic vessel will be important in this seismic program. Additionally, the eastern portion of the project area may require some additional mitigative measures, such as the use of a fisheries guide vessel to scout for fishing gear prior to and/or during seismic activities, if necessary.</p>	<p>Fisheries catch data for 2008 and 2009 were incomplete at the time of report submission. Four years of complete catch data are used to characterise trends in fishing effort and locations. This data usage is standard practice in environmental assessments in Atlantic Canada.</p> <p>Operationally under the Guidelines, programs will use a fisheries liaison officer either on the seismic or picket/chase vessel. The use of a picket/chase vessel is committed to in the environmental assessment report. Mitigative measures committed to in the EA will be adhered to.</p>
<p>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. 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 various components of the seismic program to avoid potential conflict at sea.</p>	<p>As referenced previously and in the environmental assessment report, Husky has consulted with fishers and others in Burgeo and Port aux Basques in late 2009. This included the FFAW representatives in the area who also attended the other meetings held.</p>

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<p>This should be coordinated with the FFAW and may include the need for consultations in communities such as Port aux Basques and Burgeo. Fishing activity can change from year to year and during the season. Fishing activity/plans after 2010 should be investigated prior to work being conducted in subsequent years of the seismic program outlined for 2010-2018.</p>	<p>Husky will continue to keep those individuals contacted informed and will through the use of the FFAW, One Ocean, Notices to Mariners and the CBC Fisheries Broadcast keep the fishing community and others informed of the onset, progress and completion of the survey.</p> <p>Husky concurs that communications and consultations need to take place over the ensuing years of the overall project. In as much as Husky has plans to undertake drilling activities in the area over the same time frame encompassed by the seismic program there will be opportunities to speak and meet repeatedly with fishers and other interested parties in the area.</p>
<p>The unknown long-term effects of seismic activities continue to concern harvesters as well. There have been reports, some of which have been noted in the document, from harvesters that fish behaviour and catch rates have been affected following seismic blasts. While the research has not determined any direct mortality of fish or shellfish attributable to seismic activity on the individual level, 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. This could have impacts on the population as a whole and therefore fishing opportunities in the years to come. The statement that "none of the proposed seismic surveys will result in population effects on fish" seems contradictory (Page 6-57). Perhaps the word unlikely should be added to the sentence.</p>	<p>Correction: It is unlikely that the seismic surveys will result in population level effects on fish.</p>
<p>1.0 Introduction, pg 1-1 – Reference to the CNSOPB as an RA is missing.</p>	<p>Noted</p>
<p>1.2 Relevant Legislation and Approvals, pg 1-3 – An authorization to conduct a geophysical program is also required from the CNSOPB and should be included in this section.</p>	<p>Noted</p>
<p>1.2 Canada-Newfoundland and Labrador Benefits, pg 1-3 - Reference to the CNSOPB as an RA is missing.</p>	<p>Noted</p>
<p>3.3 Project Overview, pg 3-5 – This is the first time that VSP surveys and CSEM has been mentioned. They were not included in the Project Description or in Section</p>	<p>In keeping with assessment practices in recent years at the request the offshore petroleum boards, all seismic-</p>

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<p>2.1 C-NLOPB Scoping Requirements. It appears that VSP surveys have been assessed (please confirm) however this is the only time CSEM has been mentioned.</p>	<p>related activities associated with exploration programs on the lease were included. CSEM had been included initially but it was removed during project planning. This single reference to this activity was unintentionally left in.</p>
<p>3.3.3 Project Components 3-D Surveys, 2nd para., line 6, pg 3-7 – “It is estimated that the survey vessel will require a turning radius of 10 to 15 kilometres outside the identified Study Area”. Section 3.2 states that the Study Area includes the turning radius for streamer deployment. All activities, including the area normally defined for line changes, should be included in the Study Area and assessed.</p>	<p>Typographic error: Should read: “...10 to 15 kilometres outside the identified Survey Area.” The Study Area is defined in paragraph 2, page 4-4.</p>
<p>3.3.3 Project Components Helicopters, 2nd para., lines 2-5, pg 3-10 – “For the duration...on their helideck”. What is proposed if helicopters are not available?</p>	<p>Correction. No anticipated helicopter support required.</p>
<p>3.3.3 Project Components Support Vessels, lines 2, pg 3-10 – It has been previously stated that a chase or picket vessel “will” be used.</p>	<p>Should read....”A chase or picket vessel will be required...” The use of this vessel is stated as a mitigation measure throughout the report.</p>
<p>3.3.4 Emissions and Waste Discharges, pg 3-12 - Which program was used to produce the acoustic modeling predictions presented here, and referenced in section 6.3? Was the output produced, or reviewed, by a specialist in acoustics? It is expected that acoustic modeling presented in EAs be completed by qualified acoustic specialists to ensure accuracy.</p>	<p>The acoustic model used in this assessment is not patented, but a computer program. The model was developed by the author in consultation with geophysical engineers with the objective of providing a tool to compliment existing literature. This model has been used in the following assessment reports:</p> <ul style="list-style-type: none"> • <i>Environmental Assessment of Seismic Exploration in the Stonehouse Area for Encana. 2003</i> • <i>Well site Survey EL2409 Mariner Block for Canadian Superior Energy. 2004</i> • <i>3D Seismic Survey for Chevron EL2359. 2004.</i> • <i>Vertical Seismic Survey at Cree EL2361 for ExxonMobil. 2004.</i> • <i>Environmental Assessment for Seismic Survey on the Scotian Shelf for Defence Research and Development Canada. 2005</i> • <i>Environmental Assessment of Geophysical Surveys for Exploration Licences 1097, 1098, 1103 and 1104</i>

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	<p><i>Western Newfoundland for NWest Energy. 2008</i></p> <ul style="list-style-type: none"> • <i>Environmental Assessment for Investcan Energy Labrador Seismic Program. 2009.</i> <p>The author has prepared more than 30 environmental impact assessments for petroleum operators. Her education is M.Sc. in Engineering from Heriot-Watt University Institute of Offshore Engineering. Honours B.Sc. in Marine Biology from Dalhousie University.</p> <p>The estimated ranges of avoidance effect in this EA for cetaceans is in keeping (actually over conservative) with the observations in the survey undertaken by Encana Corporation on their seismic survey on Stonehouse Block. The predicted sound levels are in keeping with the precautionary principles of the safety radii as noted in literature and in studies undertaken on the Scotian Shelf.</p> <p>Further acoustic modeling with Jasco is being carried out to obtain information for operational use along with a study of received sound levels outside the Study Area by DFO, during the Husky Sydney Basin Seismic Survey.</p>
3.3.9 Potential Accidental Events, pg 3-21 - The CNSOPB must also be notified immediately of any accidental spills within CNSOPB jurisdiction.	Clarification: A spill would be reported immediately to the CCG, the C-NLOPB and the C-NSOPB.
3.3.9 Potential Accidental Events, pg 3-21 – It is important that any assessment of effects in this section are also discussed in “Section 6.0 Effects Assessment of Project Activities”. This also applies to mitigative measures.	<p>Please refer to the following sections on Accidental Events In Section 6.0</p> <p>Section 6.1.4.3 page 6-4</p> <p>Section 6.2.4.3 page 6-20</p> <p>Section 6.3.4.4 page 6-33</p> <p>Section 6.4.4.3 page 6-37</p> <p>Section 6.6.4.3 page 6-50</p>
3.3.9 Potential Accidental Events, 4th para., line 3, pg 3-21 – “Such occurrences	Please refer to the following sections on Accidental

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are rare ... assessment". Where in the environmental assessment?	Events In Section 6.0 Section 6.1.4.3 page 6-4 Section 6.2.4.3 page 6-20 Section 6.3.4.4 page 6-33 Section 6.4.4.3 page 6-37 Section 6.6.4.3 page 6-50
4.2.3 Temporal and Spatial Boundaries and Study Area, 2nd bullet, last line, pg 4-4 – "There is concern for cumulative effects on this stock". This statement is not appropriate in this section of the report.	Agreed
5.5.2 Benthos – Deep Sea Corals, pg 5-46 – Have there been any identified in the Study Area?	Deep sea corals have not been identified in the Study Area (Mortensen et al 2006 ESRF Report #143). The CAD-NAFO Coral Protection Zone is along the southwest Grand Banks Slope. The Study Area is not on the Grand Banks. This zone is well outside the Study Area as reiterated in Section 5.5.8.2 page 5-93.
5.5.3 Marine and Migratory Birds, Figures 5-41 to 5-44, pgs 5-49 -5-52 - These figures show the distribution of vulnerable pelagic seabirds over the year. The figures have grouped all "pelagic birds" together and do not indicate specifically which species have been included. It would be more useful to present separate maps for individual species (or species groups) showing distribution during different seasons. This would better indicate which species could be expected in the study area during a given season.	Table 5.8 lists the species that could be present in the Study Area by season. The purpose of the maps is a summary showing the density of all pelagic species seasonally. Importantly what is shown is that there are pelagic seabirds in the Study Area at all times over the survey time frame and does not give value of one species over another.
Also, there is no source listed for these figures. Environment Canada's Eastern Canadian Seabirds at Sea (ECSAS) program has conducted over 4,000 surveys consisting of 7,800 km of ocean track in the Newfoundland and Labrador offshore area since 2006. The most up-to-date data for the Sydney Basin should be included in the EA Report. This information is available by contacting Carina Gjerdrum at carina.gjerdrum@ec.gc.ca or (902) 426-9641.	CWS provided the seabird survey data (1969 to 2009) and seabird colony data from their internal database. Data was provided in January 2010 by Carina Gjerdrum at CWS.
5.5.3 Marine and Migratory Birds, Figure 5-45;pg 5-53 - The title of this figure indicates wintering locations, but it appears that only breeding colonies are shown. This should be clarified. It would be useful if the Important Bird Areas were identified on the map as well.	The legend should read: Harlequin Duck Overwintering Locations Important bird areas are discussed in Section 5.5.8.1

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	page 5-90 and shown on Figure 5-55.
5.5.3 Marine and Migratory Birds, Table 5.9, pg 5-54 - It appears that the total number of nesting pairs for Basque Island and Michaud Point does not correspond with the information presented in the table.	Typo: The total for the table should read "250"
5.5.3 Marine and Migratory Birds, 4th para., pg 5-54 – It should be noted that the Ivory Gull has been uplisted and is now listed as Endangered on SARA's Schedule 1. The prohibitions of SARA now apply for the Ivory Gull.	Agreed. Its updated listing is discussed in Section 5.5.74 on page 5-89.
5.5.6 Sea Turtles – Leatherback Turtle, Figure 5-54, pg 5-82 – A reference should be provided for this figure.	The text and figure title state that the data are from DFO. The source is from J. Lawson via pers.comm. at DFO.
5.5.8.1 Important Bird Areas (IBA), last para., line 2, pg 5-90 – The full address for the IBA website should be provided.	Full reference is provided in Section 10.0 References, page 10-11
5.5.8.3 Ecologically and Biologically Significant Area (EBSA), 2nd para., pg 5-93 – Should Figure 5-55 be Figure 5-56?	Agreed. The reference should be Figure 5-56.
5.5.8.6 National Marine Conservation Areas, pg 5-94 – Potential NMCAs are not identified on Figure 5-56.	This reference should be to Figure 5-55
6.1.2 Potential Issues, 1st sentence, pg 6-1 – This section should discuss potential issues. It is out of place to make this kind of statement at this point in the discussion.	Comment noted.
6.1.4.2 Noise Emissions, last para., last sentence, pg 6-4 – "Thus behavioural changes...in the Study Area". SARA species should be discussed in Section 6.5.	Comment noted. This discussion is on the effect of marine birds of accidental events in general - non-species specific. Ivory Gulls are unlikely to occur and Harlequin Ducks are outside the Study Area. The additional information in this section does not detract from the Section 6.5 and reduces the need to repeat the text in Section 6.1.4.2 verbatim in Section 6.5.
6.2.4 Effects Assessment and Mitigation, pg 6-14 – The CNSOPB has adopted mitigation measures listed within the <i>Statement</i> ; it is therefore expected that known	Comment noted. As outlined in 2 nd paragraph of page 6-14 Sections 5c and 5e of the <i>Statement</i> , the seismic

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fish spawning areas during peak spawning times be avoided throughout the life of the seismic program.	survey will be planned to avoid dispersing aggregations of spawning and migrating fish. The survey timing also complies with the advice received during stakeholder consultations.
6.2.4 Effects Assessment and Mitigation, pg 6-19 - A commitment to adhere to the <i>Statement</i> should be stated in the mitigation section.	Adherence to the <i>Statement</i> is noted in the Mitigation Section of the summary table – Table 6.5
6.2.7 Summary, Table 6.5, pg 6-22 - The mitigation listed is not consistent with that provided on page 6-19. The additional mitigation listed on page 6-19 should be added to Table 6.5.	Comment noted.
6.3.4.1 Vessel Presence, 1st para. & last para., pg 6-25 - SARA species should be discussed in Section 6.5.	Agreed
6.3.4.2 Noise Emissions, last para., pg 6-27 – Insert “some of” between “outline” and “the mitigation measures”. The correct guidelines reference is “Geophysical, Geological, Environmental and Geotechnical Program Guidelines (C-NLOPB 2008).	Comment noted: Text should read “The following points, related to marine mammals, outline some of the mitigation measures...”
6.3.4.2 Noise Emissions, 1st para., 1st line, pg 6-28 – Husky should conduct a marine mammal monitoring program for all marine mammals and not just species at risk.	This sentence should read “a marine mammals monitoring program during survey data acquisition.”
6.3.4.2 Noise Emissions, 1st para., line 4, pg 6-28 – The Guidelines should be correctly referenced (ESRF # 156).	Agreed. Reference should read “LGL. 2004”. Recommended Seabird and Marine Mammals Observational Protocols For Atlantic Canada. Environmental Studies Research Funds No. 156.
6.3.4.2 Noise Emissions, 1st para., line 12, pg 6-28 – The project activities should be included in the Study Area.	Sentence should read “..perimeter around the Survey Area....”
6.3.4.3 Behavioural Effects, last para., last sentence, pg 6-30 – SARA species should be discussed in Section 6.5.	Agreed
6.3.5 Cumulative Effects, 1st para., last line, pg 6-33 – SARA species should be discussed in Section 6.5.	Agreed

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6.3.6 Monitoring and Follow-up, 1st para., 1st line, pg 6-33 – “If a concentration of marine mammals is observed in a particular area, it is possible for the survey to shift to another part of the Study Area until the concentration has moved away”. Could more detail be provided on how exactly this would work. This statement is also made in Table 6.8, pg 6-47.	There is operational flexibility during the survey program planning to adapt to potential obstructions such as marine mammal aggregations, groups of migrating marine mammals and concentrated fishing activity, as outlined in the <i>Statement</i>.
6.3.6 Monitoring and Follow-up, 1st para., pg 6-33 – SARA species should be discussed in Section 6.5.	Agreed
6.3.6 Monitoring and Follow-up, 2nd para., pg 6-33 – This commitment should be in Section 6.5.	Agreed
6.3.7 Summary, Table 6.6, Mitigation, 3rd bullet, pg 6-34 – Replace “whales” with “marine mammals”.	Sentence should read “...500 m zone from the array for marine mammals before ramp-up....”
6.4.6 Monitoring and Follow-up, 1st para., pg 6-38 – SARA species should be discussed in Section 6.5.	Agreed
6.5 Species at Risk, pg 6-39 - It would be useful to add the SARA status and schedules to the list of Species at Risk.	Provided in Section 5.5.7
6.5 Species at Risk, pg 6-39 – The Leatherback sea turtle should be included on the list.	Comment noted. An oversight that this single marine turtle species was missed in the list. Information is provided in Section 5.5.6 and 6.5.4 (page 6-45)
6.5.1 Boundaries, 3rd para., pg 6-40 – The temporal scope is defined in Section 4.2.3 as March to November for the period 2010 to 2018. Section 1.0 states any time of year. This section states any time of year. Please review report to ensure consistency.	Seismic activities will not occur annually from 2010 to 2018, but may occur “any time” in those years. When they occur in any particular year, it will be from June to November, but not continuous for all those months combined.
6.5.4 Effects Assessment, pg 6-41 - The EA should include a discussion of potential impacts to marine mammal and sea turtle Species at Risk within 500m of the vessel at night and during periods of low visibility (i.e. fog).	<p>The effects assessment is based on literature and complimented by modeling. The effects assessment is not affected by visibility.</p> <p>With reference to sections 11 and 12 under Operations in Low Visibility of the <i>Statement</i>, the seismic survey is not within an area identified in the environmental assessment as critical habitat for a vocalizing cetacean (nor sea turtles) as listed as endangered or threatened on Schedule 1 of the Species at Risk Act. The data to identify specific species by vocalization are not</p>

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	available to industry at this time.
6.5.6 Cumulative Effects, 1st para., line 3, pg 6-41 – “coast of Labrador”. What about the Sydney Basin area?	Sentence should read... “in the vicinity of the coast and the Gulf of St. Lawrence, the additional...”
6.6.4.2 Noise Emissions, pg 6-50- This section refers to St. Anns Bank as an AOI. At the present time, this area is a candidate AOI only and has not been officially named as an AOI by the Minister of Fisheries and Oceans.	Comment noted. It is described as such in 6.6, line 5 page 6-48.
7.0 Effects of the Environment on the Project, 2nd para., pg 7-1- It has been stated throughout the report that activities are planned for April, the first of March, and June. Please review report for consistency.	The original program schedule was from March to November. The environmental components have been assessed for that time period. Mitigation measures considered commencing in June, thus residual effects assessment considers a June start.
7.1 MET-Ocean, 4th para., line 2, pg 7-1- Replace “contract” with “contrast” if applicable.	Sentence should read “...By contrast, mean temperature may be...”
7.1 MET-Ocean, 1st para., last sentence, pg 7-2- “A review of the seasonal range and variation in these conditions would be appropriate for contingency planning”. Will Husky Energy be conducting a review and at what point?	Reviewing and forecasting ice conditions are a part of operations in Newfoundland waters for petroleum Operators. Husky Energy has undertaken an ice study in collaboration with C-Core of Memorial University in St John’s. Standard operational procedures include routine sea ice monitoring flyovers, as necessary.
7.2 Ice, 1st para., last sentence, pg 7-2- “Certainly a review and confirmation...”. Will Husky Energy be conducting a review?	Yes, Husky will be undertaking a review

