



Canadian Environmental
Assessment Agency

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December 21, 2018

Sent by E-mail

Dave Pinsent
Senior Environmental Advisor
Husky Energy
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351 Water St., Suite 105
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Dear Mr. Pinsent,

SUBJECT: Husky Energy Exploration Drilling Project – Information Requirements

The Canadian Environmental Assessment Agency (Agency) has completed its technical review of the 2018 Environmental Impact Statement (EIS) and associated EIS Summary for the proposed Husky Energy Exploration Drilling Project. The Agency also received submissions from government experts, the public and Indigenous groups and has analyzed their comments. The Agency determined that additional information is required, as per the information requirements (IRs) attached. In addition to IRs, a list of clarifications that are required to ensure correct interpretation of project information and effects analysis is attached.

With the issuance of these IRs, the federal timeline within which the Minister of Environment and Climate Change's decision must be made is paused as of December 22, 2018. Once you have submitted responses to all IRs, the Agency will take up to 15 days to evaluate if the information provided is complete. If, at that time, the Agency determines the responses to be complete, it will commence a technical review of the additional information and the timeline for the environmental assessment will resume the following day. For further information, please consult the Agency document on Information Requests and Timelines:

<https://www.canada.ca/en/environmental-assessment-agency/news/media-room/media-room-2016/information-requests-timelines.html>.

The responses to IRs may be in a format of your choice; however, the format must be such that the

responses to individual IRs can be easily identified. You may wish to discuss certain IRs with the Agency or other government experts, as necessary, to obtain clarification or additional information, prior to submission of the responses. Working directly with government experts in this manner will help to ensure that IRs are responded to satisfactorily. The Agency can assist in arranging meetings with government experts, at your request.

The IRs and your responses will be made public on the Canadian Environmental Assessment Registry Internet site.

Please confirm receipt of this message and contact me if you require further information.

Sincerely,

<Original Signed By>

Amanda Park
Project Manager – Atlantic Region
Canadian Environmental Assessment Agency

Cc: Elizabeth Young, Canada - Newfoundland and Labrador Offshore Petroleum Board
Darren Hicks, Canada - Newfoundland and Labrador Offshore Petroleum Board
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Allison Denning, Health Canada
Jason Flanagan, Transport Canada
Veronica Mossop, Natural Resources Canada
Carla Stevens, Major Projects Management Office
Vanessa Rodrigues, Parks Canada
Carol Lee Giffin, Department of National Defense

Attachment:

Attachment 1 - Information Requirements and Required Clarifications for the Husky Energy Exploration Drilling Project.

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**Husky Exploration Drilling Project
Information Requirements and Required Clarifications from Environmental Impact Statement Review:
December 21, 2018**

INTRODUCTION

The Canadian Environmental Assessment Agency (Agency) has completed its technical review of the Environmental Impact Statement (EIS) and associated EIS Summary for the proposed Husky Exploration Drilling Project. The Agency also received submissions from government experts, the public and Indigenous groups and has analyzed their comments. The Agency determined that additional information is required, as per the information requirements (IRs) below. In addition to IRs, a list of clarifications that are required to ensure correct interpretation of project information and effects analysis can be found below.

ACRONYMS AND SHORT FORMS

Agency	Canadian Environmental Assessment Agency
BOP	Blowout Preventer
CH ₄	Methane
C-NLOPB	Canada-Newfoundland and Labrador Offshore Petroleum Board
CO ₂	carbon dioxide
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
DFO	Fisheries and Oceans Canada
ECSAS	Eastern Canada Seabirds at Sea
ECCC	Environment and Climate Change Canada
EEZ	Exclusive Economic Zone
EIS	Environmental Impact Statement
EL	exploration licence
FFAW	Fish, Food and Allied Workers
FPSO	floating production, storage and offloading
FSC	food, social and ceremonial
GHG	greenhouse gas
IR	information requirement
KMKNO	Kwilmu'kw Maw-klusuaqn Negotiation Office
MFN	Miawpukek First Nation
MODU	mobile offshore drilling unit

MTI	Mi'gmawe'l Tplu'taqnn Incorporated
N ₂ O	nitrous oxide
NAFO	Northwest Atlantic Fisheries Organization
NO _x	nitrogen oxide
NRA	NAFO Regulatory Area
NRCan	Natural Resources Canada
OSV	Offshore Supply Vessel
PAM	passive acoustic monitoring
PLONOR	Pose Little or No Risk to the Environment
PNET	probable no effect threshold
ROV	remotely operated vehicle
SAR	Species at Risk
SARA	Species at Risk Act
SBM	synthetic based mud
SOCC	Species of Conservation Concern
SOCP	Statement of Canadian Practice with Respect to the Mitigation of Seismic Sound in the Marine Environment
VC	valued component
VOC	volatile organic compound
VSP	vertical seismic profiling
WNNB	Wolastoqiyik Nation of New Brunswick
WREP	White Rose Extension Project

ATTACHMENT 1: INFORMATION REQUIREMENTS AND REQUIRED CLARIFICATIONS FOR THE HUSKY EXPLORATION DRILLING PROJECT

Information Requirements

IR Number	External Reviewer ID	Reference to EIS	Context and Rationale	Specific Question/ Information Requirement
Project Description				
IR-01	EFN-24; KMKNO-02, -07	Section 2.5.2 Drilling	<p>Section 2.5.2 of the EIS states that more than one well may be drilled simultaneously. It is unclear throughout the effects analysis how simultaneous drilling was considered. For example potential overlapping effects of dual sources of noise or light were not assessed in the analysis of effects. No further information is provided, nor does the effects analysis consider project effects from batch drilling.</p> <p>Elsipogtog First Nation stated that while there is no food, social and ceremonial (FSC) fishery within the project area, species of FSC value may migrate through the study area. It was noted that mitigation measures proposed apply primarily to minimizing direct conflict with harvesters, Elsipogtog First Nation required a discussion of measures to be taken to avoid behavioral impacts to migrating species from numerous mobile offshore drilling units (MODUs) operating simultaneously.</p>	<p>Provide the following information on the proposed Project and associated environmental effects:</p> <ul style="list-style-type: none"> clarify circumstances under which simultaneous drilling could occur; and provide additional information assessing the environmental effects of simultaneous drilling on relevant valued components (VCs). <p>Update proposed mitigation and follow-up, as well as significance predictions, as applicable.</p>
IR-02		Section 2.5.2 Drilling	<p>Section 2.5.2 of the EIS states that each well is anticipated to take up to approximately 80 days to drill but can be completed much quicker. No further information is provided on what factors may contribute to drilling more quickly (or slowly).</p>	<p>Discuss the factors that contribute to the length of time it takes to drill a well, including specific information on the anticipated impacts harsh weather may contribute.</p>
IR-03	MFN-14	Section 2.5.2.3 Chemical Use and Management	<p>The EIS Guidelines states the proponent should identify the quantity and type of chemicals (or constituents) that may be used in support of the proposed Project that are:</p> <ul style="list-style-type: none"> included on the Canadian Environmental Protection Act's List of Toxic Substances; not included on the OSPAR Pose Little or No Risk to the Environment (PLONOR) list of chemicals and have a PARCOM Offshore Chemical Notification Scheme Hazard Rating of A, B or purple, orange, blue, or white; or not included on the PLONOR list of chemicals and have not been assigned a PARCOM Offshore Chemical Notification Scheme Hazard Rating. <p>In addition, alternatives to the above-referenced chemicals should be discussed.</p> <p>Section 2.5.2.3 of the EIS lists the maximum amount of reagents and petroleum products potentially stored on Husky's current MODU.</p> <p>It is not clear that the chemicals and volumes on the current MODU are representative of an exploration drilling project. Alternative chemicals (e.g. through alternative means of operating or use of less-toxic alternatives) are not discussed.</p>	<p>Provide the rationale for representing the chemicals and volumes for the Project with those that are used on the current MODU. Include a discussion on alternative means or use of less-toxic alternatives.</p> <p>Revise the reagents and volumes that may be used and assess associated environmental effects, including accidents and malfunctions, as applicable.</p>

IR Number	External Reviewer ID	Reference to EIS	Context and Rationale	Specific Question/ Information Requirement
IR-04	C-NLOPB-05	Section 2.5.1 Well Site / Geohazard / Geotechnical Surveys	Section 2.5.1 of the EIS states that wellsite/geohazard/ geotechnical surveys are conducted in advance of initiating drilling to identify and avoid unstable areas and hazards or potential hazards in the immediate vicinity of proposed well locations. The distinction between each of these activities is unclear.	Provide a detailed description (including objectives, timing, and means) of each of the following: <ul style="list-style-type: none"> • wellsite surveys; • geohazard surveys; and • geotechnical surveys. The descriptions for each survey types should encompass all of the activities that may be undertaken by the proponent.
IR-05		Section 2.5.5 Decommissioning and Abandonment	Section 2.5.5 of the EIS states that in the case of well abandonment, Husky's preferred method of wellhead severance is to use a mechanical cutting system but that in some circumstances this method may not be effective and shaped charges must be used. The proponent states: <i>If shaped charges must be used, then the design objective will be that only the size of charge needed to achieve the task in hand will be used. Use of charges will only be used after the Drilling Superintendent, the C-NLOPB [Canada-Newfoundland and Labrador Offshore Petroleum Board] and any of its relevant advisory agencies thoroughly review the application; approval is granted on a case-by-case basis.</i> No information is provided on the likely size and type of shaped charges that may be used, nor how recovery would be completed.	Provide a description of the likely size and type of shaped charges to be used in cases where necessary for well abandonment. Describe recovery of the wellhead after use of shaped charges.
IR-06	NCC-08; MFN-17; PNIN-08	Section 6.2.10.3.1.5 Well Abandonment; Section 2.5.5 Decommissioning and Abandonment	Section 6.2.10.3.1.5 states "the final design and method for well abandonment has not been finalized; however all activities and methods regarding well abandonment will be conducted in compliance with all C-NLOPB applicable regulations and guidelines." The statement is in contrast to Section 2.5.5 of the EIS, which indicates that the wellhead will be abandoned by plugging using a cement mixture and the well removed so there are no protuberances above the seabed. In addition, Section 2.5.5 of the EIS describes suspension or abandonment as two possible scenarios for exploratory wells, stating that operators are required to provide detailed plans to the C-NLOPB for monitoring of suspended wells, but that there is no requirement for on-going monitoring of abandoned wells. The NunatuKavut Community Council stated that monitoring and inspection of abandoned wells would be important to verify the integrity of the wellhead.	Confirm that all wellheads, when abandoned would be below the surface so that nothing protrudes above the seabed. With respect to the activities associated with well abandonment and/or suspension, provide the following information: <ul style="list-style-type: none"> • Specify the anticipated lifespan of the well abandonment and suspension techniques. Explain whether they would be sustainable to ensure the long-term protection of the environment, describing how integrity of the abandoned or suspended well is ensured. Describe monitoring, including frequency, of suspended and abandoned wells.
IR-07		Section 5.2.3.4 Boundaries	Section 5.2.3.4 of the EIS describes spatial boundaries. The project area is defined as the immediate area within which project activities and components may occur. Well locations have not been identified but will occur within exploration licences (ELs) 1151, 1152 and 1155 within the project area. The spatial boundary of the project area has been delineated to account for all activities related to drilling a well, including transit of Offshore	Discuss the rationale for a study area that is not fully inclusive of the project area. Discuss how the area potentially effected by routine shipping activities and potential accidents and malfunctions are accounted for in the spatial boundaries of the environmental assessment.

IR Number	External Reviewer ID	Reference to EIS	Context and Rationale	Specific Question/ Information Requirement
			<p>Supply Vessels (OSVs) and helicopter traffic to/from St. John's and vessel traffic associated with geohazard/environmental surveys.</p> <p>The study area is described as the area within which residual environmental effects from operational activities and accidental events may interact cumulatively with the residual environmental effects of other past, present, and future (certain or reasonably foreseeable) physical activities.</p> <p>Figure 2.1 shows the project area boundary extending into the St. John's area, reflecting vessel routes. However, the study area does not extend to the Newfoundland coast and is therefore not inclusive of the entire project area. It is not clear how a study area that does not encompass the full project area considers the potential effects of routine shipping activities, as well as potential accidents and malfunctions in the nearshore environment.</p>	
IR-08	MFN-25	Section 1.1 Project Overview	<p>Section 1.1 of the EIS states that "[t]hese activities will be supported by Husky's existing infrastructure (Harvey's Marine Base, OSVs, and helicopters)... If a different contractor is selected for supply base services over the duration of this Project, all permitting, and approvals will be the sole responsibility of the supplier and therefore not included in the EIS." Miawpukek First Nation (MFN) indicated that the proponent has not adequately described the vessel traffic, port use and potential navigation impacts in and around other harbours on the south shore of Newfoundland.</p>	<p>Confirm that potential transit routes would originate only in St. John's, not in other ports in Eastern Newfoundland. If other ports and transit routes are to be included, update the effects analysis and mitigation, as appropriate.</p>
Alternative Means				
IR-09	KMKNO-01,-06	Section 2.5.4 Well Testing; Section 2.9.1.5 MODU Lighting and Flaring	<p>Section 2.5.4 of the EIS states that wells may be tested by multiple methods to gather additional details on potential reservoir and to assess the commercial potential of a discovery. The proponent states that two drillstem tests may be expected to be required from ten exploration wells.</p> <p>Other offshore exploration projects within the region have identified (depending on the type of data required) formation testing while tripping as an alternative to well testing, which does not require flaring. This has not been presented by Husky as an alternative.</p> <p>In addition, it is noted in Section 2.9.1.5 of the EIS that when well flow testing is carried out, flaring is required to safely dispose of hydrocarbons that may come to the surface. It is not clearly explained why flaring is the only option to safely and efficiently dispose of hydrocarbons that come to surface. Clarification is required on the technical feasibility of reduced flaring.</p>	<p>In accordance with Agency guidance on evaluation of alternative means, provide the following:</p> <ul style="list-style-type: none"> • clarification on the technical feasibility of reduced flaring; and • clarification if well testing while tripping or any other type of test were considered as alternative means. <p>If reduced flaring and/or well testing while tripping or another type of well test was considered, provide an assessment of the alternative means: how they are carried out, how they might interact with the environment, and potential environmental effects. If well testing while tripping was not considered, provide a justification as to why it was not identified as an alternate to well testing with flaring.</p>
IR-10		Section 2.6.2 Other Waste	<p>The EIS Guidelines require the proponent to include a discussion on how wastes and potential associated toxic substances would be minimized, and any alternatives that would enable the proponent to achieve waste management objectives, and adopt best practices in waste management and treatment.</p> <p>Section 2.6.2 of the EIS provides information related to the treatment and testing of waste to ensure compliance with guidelines and/or requirements, but provides no discussion of how the</p>	<p>With respect to waste generated and disposed of from the exploration activity, provide additional information on the alternatives that were examined with respect to waste management, and the measures that were considered with respect to minimizing waste generated.</p>

IR Number	External Reviewer ID	Reference to EIS	Context and Rationale	Specific Question/ Information Requirement
			proponent would minimize waste or possible alternatives that would allow achievement of defined objectives.	
Air Quality				
IR-11	NRCan-04,-05; ECCC-01	Section 2.6.3.1. Atmospheric Emissions; Section 6.6.10.3 Characterization of Residual Project-related Environmental Effect	<p>The EIS Guidelines require an estimate of the direct greenhouse gas (GHG) emissions associated with all phases of the Project. The proponent is required to justify all estimated emissions and emission factors used, provide the estimation or derivation method, and disclose and describe all assumptions and emission intensity factors used.</p> <p>Section 2.6.3.1 of the EIS provides emission estimates for the Project based on the White Rose Extension Project (WREP) Air Emissions Study, 2012, and considers them representative of the emissions that could be released from the proposed Project. It is not clear how the WREP emissions data is applicable to estimate the emissions for an exploration drilling project given that WREP was a production project and the current project is for exploration. Items that are unclear include:</p> <ul style="list-style-type: none"> the GHG estimates in the EIS document are for a MODU during operation activities rather than an exploration MODU. Information on emission factors used in the estimation of GHGs from MODU operation (CO₂, CH₄, N₂O) in the EIS document or the corresponding referenced report were not adequately described; power generation GHG estimates in Table 3-13 in Appendix B are not included in the list of activities in Table 2.14 of the EIS; Section 2.4.3.3 of the EIS states that an average of five helicopter trips per week from St. John's to the MODU is anticipated. However, predicted helicopter air emissions for the WREP are based on three round trip flights per week; Section 6.6.10.3 of the EIS states that flaring during exploration drilling is required during a drillstem test, and that two drillstem tests are anticipated over the life of the Project. It is not clear how flaring emissions for an exploration drilling is comparable to the predicted flaring emissions of the WREP; and Table 2.14 of the EIS provides the estimated GHG emission values on an annual basis. The assumptions are not clear as to the number of wells to be drilled and the number of drillstem tests to be conducted in that period. 	<p>Provide assumptions and supporting evidence for emission estimates, including specific emission factors used. Discuss the applicability of using emission estimates from a production project WREP for the current exploration Project.</p> <p>Provide the rationale for not including power generation (Table 3-13 in Appendix B) in the GHG emission estimates in the EIS. Update if this is an omission.</p> <p>Update the predicted GHG emissions as appropriate based on the additional information above and the anticipated number of helicopter trips.</p> <p>Provide the assumed composition being flared, volumes being flared, and emission factors used to obtain the final total emission rates.</p> <p>Clarify the units in Table 2.14, explicitly state the number of wells drilled assumed, the number of helicopter trips assumed, the number of vessel trips assumed, the number of drillstem tests assumed, and the amount of power generated assumed. Standardize these units to a specific time frame (e.g. annually).</p>
IR-12	NRCan-6	Section 2.0 Project Description; Section 2.6.3.1 Atmospheric Emissions	Section 3.1 (Part 2) of the EIS Guidelines requires the proponent to describe the contributions of the Project on atmospheric emissions, including activities such as routine or upset flaring, routine drilling, testing, shipping, etc. However, volatile organic compound (VOC) emission estimates are not presented in the EIS even though VOC emission factors are readily available.	Provide an estimate of total VOC emission from the sources identified in Table 2.7, or provide a rationale for the exclusion of the total VOC emissions in the assessment.

IR Number	External Reviewer ID	Reference to EIS	Context and Rationale	Specific Question/ Information Requirement
Fish and Fish Habitat / Marine Mammals and Sea Turtles				
IR-13	DFO-05	Section 4.2.1.2 Phytoplankton	The seasonal distribution and abundance of phytoplankton (measured as chlorophyll a concentration) in the project area is not provided in the EIS.	Provide data showing the seasonal distribution and concentration of phytoplankton in the project area.
IR-14	DFO-21, 22	Section 4.2.4 Marine Fish; Appendix D	The EIS Guidelines require that fish within areas that could be affected by the Project be described. There are inconsistencies in the species described in Section 4.2.4 and Appendix D. For example, American Lobster (Table 4.25), shrimp (<i>Argis</i> spp.), Silver Hake, Sea Raven, Marlin Spike and Longfin Hake (Table 4.22) are noted in Section 4.2.4, but not described in Appendix D. Black Dogfish and Greenland Shark are described in Appendix D, but are not noted in Section 4.2.4. Further, the majority of species descriptions in Appendix D do not provide the likelihood of occurrence in the study area. Species' relationships with the study area are required to assess the potential effects of the proposed Project.	Provide descriptions, including the relationship to the study area (e.g., likelihood of occurrence, timing, distribution, abundance), for all fish species that could be affected by the Project. Update the effects assessment, as applicable.
IR-15		Section 4.3.2.7.2.2 Salmon	Section 4.3.2.7.2.2 of the EIS it states that Atlantic Salmon have a large feeding ground and would only be found in large numbers if high concentrations of prey items circulated through the project area during the spring/summer season. No information is provided on the potential for this to occur. The EIS also states that it is expected that many individual salmon would not be in the "immediate project area," but "immediate project area" is not described.	Discuss the potential for high concentrations of prey items to circulated through the project area during the spring/summer season. Define the "immediate project area" as used to describe the occurrence of Atlantic Salmon in the project area.
IR-16		Section 6.1.10.3.1.3 Waste Management	Section 6.1.10.3.1.3 states that water-based mud is "sometimes considered less harmful to the environment, as it contains mainly water and cannot form surface sheens." However, no further information is provided to explain this statement.	Provide information to explain the circumstances in which water based mud would be considered less harmful to the environment, defining what "sometimes" means. Provide context to when water-based muds would be less harmful to the environment and when it would be more harmful to the environment.
IR-17	DFO-12, -17	Section 6.1.10.2 Mitigation; Section 6.1.10.3.1.4 Well Abandonment	Section 6.3.10.3.1.4 of the EIS states that shape charges (e.g. explosives) may be used as part of well abandonment. The explosives would be placed below the seafloor and detonated. The EIS states that the seafloor would absorb the shock pulse and energy of the explosion. The proponent does not provide, in the EIS, information relating to type or size of explosive that may be used. The proponent does not provide information on estimated level or extent of sound pressure that may occur as a result of the use of explosives. Fisheries and Oceans Canada indicated that the use of explosives in water must be in accordance with applicable Fisheries and Oceans Canada Guidelines (e.g. Wright and Hopky (1998) and http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html). A detailed blasting plan should be prepared and submitted for review prior to any required use of explosives. Mitigation measures should include measures that will be taken to dissipate the shock wave (e.g. bubble curtains), and if scaring charges will be used to scare fish (prey species for marine mammals) from the immediate area.	Provide information on the pressure level that may occur as a result of using explosives for well abandonment, specifically its effect on coral and sponges. Taking into account the information provided by Fisheries and Oceans Canada, update mitigation measures (in addition to the use of marine mammal observers) for fish, marine mammals and sea turtles that may be required in the event of blasting for wellhead removal.

IR Number	External Reviewer ID	Reference to EIS	Context and Rationale	Specific Question/ Information Requirement
IR-18	DFO-CL-48; KMKNO-17; WNNB-01, -02	Section 6.1.10.3.2.1 Presence and Operation of MODU; Section 6.1.10.3.1.2 Drilling Associated Surveys	<p>Section 6.1.10.3.2.1 of the EIS states that the effects of noise are typically temporary on fish, and that noise “is not expected to cause biological or physical effects if experienced outside critical reproductive periods.” However, no information was provided on the effects of noise on the reproductive periods of fish.</p> <p>Information on the fish species present in the project area, including the likelihood of occurrence and timing of respective spawning periods, was provided in Appendix D of the EIS. Fish species at risk and species of conservation concern were also highlighted. However, Wolastoqiyik Nation of New Brunswick (WNNB) indicated that while an understanding of fish and fish habitat in the project area was presented, no clear connection between the Project activities and the timing of vulnerable life history stages was made for these fish species. For example, even if the effect of activities is of low magnitude and spatial extent, should an activity occur during a sensitive period, such as at the time of spawning, stress-related impacts on spawning success (e.g. egg hatch) may occur. Under such circumstances, the proponent has not indicated whether project activities would be avoided during sensitive life history time periods for fish species including listed species.</p> <p>In addition, Fisheries and Oceans Canada noted that the proponent uses the references Sætre and Ona (1996) in the EIS to argue that the use of acoustics would have minimal effects on fish eggs and larvae in a field study using a single air gun. It is unclear how assumed conditions in the simulation are applicable to the proposed vertical seismic profiling (VSP).</p>	<p>Provide information on the effects of noise on fish during important reproductive periods and vulnerable life stages, as well as the potential mitigation measures that would be implemented if project activities were to occur during sensitive life history stages of fish.</p> <p>Discuss how assumed conditions in the Sætre and Ona (1996) reference are applicable to the proposed vertical seismic profiling.</p>
IR-19		Section 2.6.2 Other Wastes; Section 6.1.10.3.2.3 Waste Management	<p>Section 2.6.2 of the EIS states that cement may return to the seafloor at an estimated volume of 25 cubic metres per well. Section 6.1.10.3.2.3 states that should cement be discharged onto the seafloor, its volume would result in the cement covering the drill cuttings and therefore it would not affect additional benthic habitat. However, while the volume of cement may be less than the volume of drill cuttings no evidence is provided that cement would disperse in the same manner or pattern as drill cuttings, which are predicted to range from 100 metres to 12 kilometres from the drill center (Section 2.6.1.1.1).</p>	<p>Describe the dispersion of cement versus drill cuttings in the marine environment.</p> <p>Provide information related to dispersion of cement from the wellsite to provide validity to the statement that cement discharge will cover drill cuttings.</p>
IR-20	MTI-03	Section 6.6.10.3 Characterization of Residual Project-related Environmental Effects	<p>Section 6.6.10.3 of the EIS states that the potential exists for swordfish to be found in areas that overlap with the project area. Given the importance of the species, Mi’gmawe’l Tplu’taqnn Incorporated (MTI) raised concerns that the potential environmental effects of the project were not fully considered with respect to Swordfish.</p> <p>Comments from MTI state that Swordfish are known to only tolerate small environmental changes. Offshore activities have greater detrimental effects on populations when compared to other species (de Sylva et al, 2000)¹.</p>	<p>Provide an assessment of the potential effects of project activities to Swordfish, including any existing published research on biological and behavioural responses of Swordfish to sound, spills and light. Update the proposed mitigation and follow-up, as well as effects predictions, accordingly.</p>

¹ D. P. de Sylva, W. J. Richards, T. R. Capo and J. E. Serafy. 2000. Potential Effects of Human Activities on Billfishes (Istophoridae and Xiphiidae) in the Western Atlantic Ocean. Bulletin of Marine Science, 66(1): 187–198, 2000

IR Number	External Reviewer ID	Reference to EIS	Context and Rationale	Specific Question/ Information Requirement
IR-21	KMKNO-15	Section 6.6.8 Summary of Existing Conditions for Indigenous People and Community Values	Section 6.6.8 of the EIS indicates that migration routes for American Eel are possible through the project area. The Kwilmu'kw Maw-klusuaqn Negotiation Office (KMKNO) indicated that the EIS states that there is little information available on specific migration patterns of American Eel, and if American Eel were to occur within the project area, it is likely that they would be carried by currents on their way either to Greenland, Iceland, or to Newfoundland and Labrador.	Taking into account comments from the KMKNO provide additional information on the American Eel, including the following: <ul style="list-style-type: none"> a general description of American Eel migration patterns; and identification of any mitigation measures required to address concerns with American Eel or a rationale as to why the current assessment and mitigation remain valid.
IR-22	DFO-11, -CL 42, -CL 43, -CL 44	Section 6.1.10.3.1.3 Waste Management	Figures 4.23-4.26 provide coral and sea pen recordings from various surveys on the slopes of the Grand Banks, in the Flemish Pass and around the Flemish Cap. However, the ELs for this Project are largely on the Grand Banks. Based on baseline information provided in Table 4.19, the EIS states that sensitive benthic organisms (i.e. coral and sponge species) have been collected by Canadian research vessel surveys and are present in ELs 1151, 1152, and 1155; however no corresponding figures are provided. Further items with respect to baseline information on corals and sponges presented in Section 4.2.3 that require correction are the following: <ul style="list-style-type: none"> <i>Asconema</i> sponges are not mentioned in the EIS. Refer to Murillo et al. 2016 for depth distribution information; some soft corals and <i>Acanella arbuscula</i>, a gorgonian coral, are also found on soft mud substrates; and Figure 4-25 should include small gorgonians (i.e., <i>Acanella arbuscula</i>) and recent North Atlantic Fisheries Organization (NAFO) data. 	Provide an updated description, including figures showing the exploration licenses, of corals and sponges in the project area.
IR-23	DFO-01,-02,-24	Section 2.6.1.1.1 Drill Cuttings Deposition and Dispersion on the Grand Banks; Section 2.6.1 Drilling Waste	The EIS states that drill cuttings deposition is represented by modelling conducted in 2012 within the White Rose field which has similar water depths, oceanographic, and biological environments as the project area. However, a rationale of how the methods and specific inputs (water depth, cuttings particle size, well hole size, release depth, volumes released, oceanographic inputs, etc.) used in the drill cuttings dispersion model are each applicable, is not included within the EIS. The models were initiated for a well site in the center of the project area. It is unclear how dispersion footprints would change if other sites in the project area were selected. For example, would the oceanographic and other model inputs be similar/same throughout the entire project area. Furthermore, the revised 2015 dispersion model using new inputs for South White Rose Extension Drill Centre is mentioned but the modelling report is not provided. There is no figure provided showing the location of the modelled drill cuttings deposition sites relative to the project EL areas.	Provide rationale for how the model and inputs (water depth, cuttings particle size, well hole size, release depth, volumes released, oceanographic inputs etc.) used in 2012 modelling for WREP are each applicable to the current Project. Provide an analysis of how the dispersion footprints could change if the well sites were in different locations within the project area. Provide a reference for, or copy of, the original 2015 modelling report. Provide a figure with sufficient resolution showing the modelled sites for dispersion of drill cuttings in relation to the project area and exploration licences.

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IR-24		<p>Section 2.6.1.1.1 Drill Cuttings Deposition and Dispersion on the Grand Banks;</p> <p>Section 6.1.10.3.1.3 Waste Management</p>	<p>Sections 6.1.10.3 of the EIS presents information on the effects of drill cuttings on fish and fish habitat. Section 6.1.10.3.1.3 of the EIS states that for this project, the burial threshold was identified to be 10 millimetres or more and that this is where benthic communities comprised of sedentary or slow-moving species may be smothered. It is unclear what, if any, threshold is applied to the analysis in Section 6.1.10.3.2.3 on change in habitat quality and use.</p> <p>Section 6.5.10.3.1.3 of the EIS references more conservative thresholds: Smit et al who determined a threshold level of approximately 6.5 millimetres of sediment burial is required to cause mortality to benthic macrofauna and 6.3 millimetres used in Norwegian environmental risk assessment models for drilling activity on the Norwegian Continental Shelf.</p> <p>Similar exploration drilling projects in the area have noted that average burial depths of 6.5 millimetres are considered to be the predicted no effect threshold for non-toxic sedimentation based on benthic invertebrate species tolerances to burial, oxygen depletion and changes in sediment grain size. Further, some species may be more susceptible to shallower burial depths and a more conservative probable no effect threshold (PNET) of 1.5 millimetres has been applied.</p> <p>Inconsistent information is provided in the on the thickness and distribution of drill cuttings. For example, Section 6.1.10.3.2.3 (habitat quality) states that “the deposition of drilling waste from each well is similar in that a well-defined cuttings patch covering an area approximately 0.03 to 0.06 square kilometres is located up to 300 metres of the well”. However, in Section 2.6.1.1 this is cited as 100-200 metres of the drill centre.</p>	<p>Discuss the rationale for burial threshold of 10 millimetres versus the more conservative 6.5 millimetres and 1.5 millimetres thresholds.</p> <p>In a table format, provide percent settled, mean thickness, and maximum thickness, for each well modeled, at distance intervals of zero-10 metres, 10-100 metres, 100-200 metres, 200-500 metres, 500 metres to one kilometre, one-two kilometres, and maximum distance for remaining settling.</p>
IR-25	DFO-03, -11; MFN-07, -09, -10; KMKNO-05	Section 2.6.1 Drilling Waste	<p>In the EIS, there is no discussion of the probable no effect threshold (PNET) for sedimentation on more sensitive coral and sponge species; how this relates to dispersion modelling results; and specific mitigation measures (e.g. pre-drill benthic surveys, setback distance based on results of dispersion modelling) that are planned to avoid/mitigate impacts to sensitive species that may be present.</p> <p>With respect to drill cuttings dispersion modelling, the EIS states that “Further assessment is provided where there may be risk to sensitive habitat or vulnerable species (Section 4.2.9).” However, this information is not included.</p>	<p>Provide an updated effects analysis, including a discussion of the probable no effect thresholds, for fish and fish habitat, including coral and sponge species, and special areas. Relate the analysis to dispersion modelling results, and specific mitigation measures (e.g. pre-drill benthic surveys, setback distance based on results of dispersion modelling) that are planned to avoid and/or mitigate impacts, as well as follow-up and monitoring.</p>
IR-26	DFO-04; KMKNO-17	Section 2.6.3.2 Noise Emissions	<p>While Section 2.6.3.2 describes the extent of noise from continuous noise sources including helicopters, offshore supply vessels and the drill rig, it does not describe the extent of impulsive noise from vertical seismic profiling or blasting, which may be required as part of well abandonment.</p> <p>The EIS Guidelines require that all sources and extent of noise emissions be described in the EIS.</p>	<p>Provide a description of the extent of noise from impulsive noise sources from vertical seismic profiling and blasting for wellhead removal.</p>
IR-27	DFO-25	Section 2.6.1 Drilling Waste	<p>Synthetic-based mud (SBM) cuttings from White Rose were modeled to have a large component (up to 70%) of very coarse material (>9.5 millimetres). In the EIS, the SBM dispersion models did not include large particles and had >50% fines.</p>	<p>Provide a rationale for the differences between the parameterization for the two studies. Update effects assessment as necessary.</p>

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IR-28	C-NLOPB-07; DFO-15	Section 6.2.10.3.1.4 Supply and Servicing;	<p>The EIS states that underwater sound associated with Offshore Supply Vessel (OSV) traffic is not predicted to result in a change in risk of mortality for fish and fish habitat, and that fish are anticipated to temporarily avoid the immediate area of OSV traffic, thereby reducing the risk of fish mortality or physical injury due to vessel strikes or contact with propeller blades. Therefore, underwater sound associated with OSV traffic is not expected to be at levels that would cause health effects, injury or mortality to fish species. However, no information is provided to support these conclusions.</p> <p>Further, section 6.2.10.1.1 identifies a pathway of effects on commercial fisheries as underwater sound from supply and servicing potentially causing behavioural effects on fisheries species; however, there is no information provided on project specific effects predictions in section 6.2.10.3.1.4.</p>	<p>Provide information to support the conclusion that supply and servicing activities will not result in a change in risk of mortality, physical injury, or health of fish.</p> <p>Based on this information, update the effects analysis, proposed mitigation and follow-up, as well as significance predications, as applicable related to the effect of underwater sound from supply and servicing on commercial fisheries.</p>
IR-29	DFO-16	Section 6.3.10 Assessment of Residual Environmental Effects on Marine Mammals and Sea Turtles	<p>The EIS Guidelines require a description, assessment, and determination of the significance of potential effects from underwater noise on marine mammals and sea turtles (Part 2, Section 6.3.3, 6.3.4 and 6.6.3). The EIS presents underwater sound modelling results from drilling, helicopters and offshore supply vessel activities at a representative location within the White Rose field, a production project, which lies in the middle of the Husky Energy Exploration Drilling project area. Also, Section 6.3.10 of the EIS uses the results of existing underwater noise modelling completed for other exploration drilling projects to support Husky's effects assessment on marine mammals and sea turtles from the MODU, drilling-associated surveys (vertical seismic profiling), and supply and servicing.</p> <p>It is not clear how the existing sound effects analysis completed for other projects are representative of underwater sound effects from this project and what the predictions or worst-case scenario are for distances to sound level threshold exceedances for this project.</p>	<p>Provide the predicted spatial extent of where underwater sound will exceed injury and behavioral thresholds for the Project or a worst-case scenario. Provide the rationale on how previously predicted injury and behavioural thresholds from other exploration projects applies directly to the current project or how the worst-case scenario predictions from other exploration projects applies to Husky.</p> <p>Update the effects assessment as necessary.</p>
IR-30		Section 6.3.10.3.1.2 Drilling-Associated Surveys	<p>Section 6.3.10.3.1.2, page 6.55, states that "in the study area, drilling-associated surveys will include VSP [vertical seismic profiling] and geohazard surveys..." and that "the potential physical and physiological effects of noise from the geohazards equipment are of less concern than air gun pulses from 2D and 3D surveys given their relatively lower source levels, emission in a narrow beam, short duration of the geohazards program, and that some equipment operates at frequencies outside the range of marine mammal and sea turtle hearing abilities." The EIS does however, assume the sound from VSP is the same as that emitted from geohazard equipment and does not provide a comparison between sound from geohazard equipment and VSP equipment nor separate information on expected sound emissions for geohazard equipment. Modelling is provided from Scotian Basin for VSP surveys but no modelling is provided for geohazard surveys.</p>	<p>Provide a comparison of sound from VSP equipment to that of geohazard equipment or separate information on and assessment of sound levels expected to be emitted from geohazard equipment.</p> <p>Update the effects assessment as necessary.</p>
IR-31		Section 6 Environmental	<p>It is noted that the Scotian Basin and Nexen sound models, were conducted in relation to operation of a single drilling unit, while multiple drilling units may be operating simultaneously</p>	<p>Assess the effects of noise from operating multiple drilling units simultaneously, as proposed for the Project.</p>

IR Number	External Reviewer ID	Reference to EIS	Context and Rationale	Specific Question/ Information Requirement
		Effects Assessment	for the Project. The effect of noise from multiple drilling units operating simultaneously is not addressed in the effects assessment.	
IR-32		Section 6.3.12 Follow-up and Monitoring	Section 6.3.12 of the EIS states that given the low probability of encountering marine mammal and sea turtle species at risk, "... no sound monitoring is required for this Project." However, Section 6.3.11 states that there is scientific uncertainty regarding the potential effects of underwater sound on marine mammals and sea turtles and site-specific modelling was not carried out for the Project.	Provide rationale for the need for a follow up program to verify noise predictions taking into consideration the stated uncertainty with respect to potential effects of underwater sound on marine mammals. If follow-up is not proposed, provide a rationale, including consideration of the potential for underwater noise to have adverse effects on marine species and uncertainty related to effects predictions.
IR-33	KMKNO-23	Section 6.3.10.2 Mitigation	<p>Section 6.3.10.2 of the EIS states that mitigation measures applied during the Project's vertical seismic profiling surveys will be consistent with the <i>Statement of Canadian Practice with Respect to the Mitigation of Seismic Sound in the Marine Environment</i> (SOCP), while Section 6.5.10.2 states that VSP activity will be conducted in consideration of the SOCP and Husky Procedure EC-M-99-X-PR-00121-001. It is unclear whether all mitigation measures in the SOCP will be applied to the Project and what, if any, additional mitigation measures will result from the Husky internal procedure. Specifically, the EIS does not propose passive acoustic monitoring (PAM) for detecting marine mammals in the vicinity of the Project during VSP surveys. Deep-diving onontocete species spend most of their time underwater, and may be difficult to detect when at the surface. The concurrent use of visual monitoring and PAM can increase the likelihood of detecting deep-diving cetaceans. In addition, to increase the probability to accommodate deeper, longer diving behavior, a pre-ramp up watch period of 60 minutes in deep water areas where beaked and other deep diving whales may be present should be considered.</p> <p>The KMKNO expressed concern with the lack of PAM, in particular during periods of low visibility when mammal observers cannot effectively observe the entire safety zone (i.e. fog, nighttime).</p>	Identify the mitigation measures related to the SOCP that will be followed by Husky and any additional mitigation, if any, found in the Husky Procedure EC-M-99-X-PR-00121-001. Consider PAM for detecting deep-diving cetaceans in the vicinity of the Project during VSP surveys and the length of the ramp-up observation period. Describe whether PAM and a longer pre-ramp up watch would be included in the mitigation measures for the Project. If the proponent does not believe additional mitigation is required, provide associated rationale.
IR-34	WNNB-05	Section 6.3.10.2 Mitigation	<p>Section 6.3.10.2 of the EIS states "[s]hutdown procedures (i.e. shutdown of source array) will be implemented if a marine mammal or sea turtle species listed on Schedule 1 of SARA [Species at Risk Act], as well as all other baleen whales (i.e., mysticetes) and sea turtles are observed within 500 m of the wellsite..." and "when a member of the eastern Newfoundland (Sackville Spur) population of northern bottlenose whale is sighted within the safety zone." It is not clear whether shutdown would occur if any marine mammal or sea turtle species were present or how an observer will be able to distinguish between species if shutdown will only occur when a particular species is present.</p> <p>The WNNB expressed concern with the apparent discrepancy between the proposed 500 metre safety zone over which marine mammals will be monitored during VSP surveys and the acoustic modelling which indicated that the threshold for behavioural effects was between 584 metres (winter) to 677 metres (summer). WNNB asked for the modelled data to be used to define the safety zone and requested that the safety zone be larger than the distance to predicted thresholds.</p>	<p>Confirm how Schedule 1 SARA species such as baleen whales, sea turtles, or northern bottlenose whales would be identified. Clarify why the bottlenose whale is discussed separately. Clarify whether the VSP source array will be shut down as a precaution if there is a question as to the species observed.</p> <p>Discuss the feasibility of extending the safety zone during vertical seismic profiling.</p>

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IR-35	KMKNO-2; MTI-13; NCC-09	Section 2.4.3.2 Offshore Supply Vessels	Section 2.4.3.2 of the EIS states that offshore supply vessels follow established vessel traffic lanes (a straight-line approach to and from port) and that once in the vicinity of the project area, the offshore supply vessel will select the route most appropriate for reaching the destination. The KMKNO expressed concern regarding marine vessel routes and stated that although it may be common practice to follow a straight line approach, this must be altered if supply vessel routes heading in a straight line will unnecessarily affect species breeding grounds, feeding groups, or migration routes.	Describe under what circumstances, if any, that Husky would deviate from a straight line approach should there be a potential for an interaction between the vessel and marine mammals, sea turtles and/or migratory birds breeding grounds, feeding areas, and/or migration routes.
IR-36	KMKNO-22; MTI-13	Section 6.3.10.2 Mitigation	The KMKNO and MTI expressed concern that the mitigation measure proposed by the proponent that “project-related vessel traffic will avoid concentrations of marine mammals and sea turtles whenever possible. Vessels will maintain a steady course and safe vessel speed whenever possible, as sudden changes in these factors are known to increase behavioural effects in marine mammals” is insufficient. KMKNO has requested that vessel be required to reduce speeds to 10 knots when not in existing shipping lanes and/or when a marine mammal or sea turtle is observed or reported in the vicinity.	Define “safe vessel speed” and explain which environmental effects these speeds propose to address (e.g. avoidance of marine mammals, fishers). Explain the location of “existing travel routes” and under what circumstances vessels may deviate from these travel routes. Explain under what circumstances it would not be possible to travel at the defined safe vessel speed. Describe how concentrations of marine mammals and sea turtles would be avoided (e.g. will there be marine mammal observers on all supply vessels) and what would be considered a “concentration” of marine mammals and sea turtles.
IR-37	MTI-14	Section 10.1.4 Species at Risk (SAR)/Species of Conservation Concern (SOCC)	<p>MTI expressed concern with the proponent’s determination that there is a low potential for North Atlantic Right Whales to occur in the study area (Section 10.1.4, Table 10.2 of the EIS). The residual effects significance determination for the marine mammals and sea turtles VC, was based on assumptions associated with limited data. Much is still unknown (particularly for males) on locations where populations migrate (Moses and Finn, 1997). Some models predict that additional/unknown summering grounds may include areas off Newfoundland (Moses and Finn, 1997).</p> <p>Husky further states that underwater sound may result in some behavioural effects on individuals, but that mortality, injury, and population level effects are unlikely to occur. However, there is very little specific assessment of project-related activities (e.g. drilling, vessel transit, VSP) and components (e.g. MODUs, supply vessels) on the North Atlantic Right Whale. The primary threat facing this species is vessel strikes and noise disturbance can contribute to the likelihood of these events (Committee on the Status of Endangered Wildlife in Canada, 2013). This is particularly important given the recent deaths of North Atlantic right whales attributable to blunt force trauma. Given the lack of certainty and up-to-date data on North Atlantic Right Whale summering range, changes to migratory patterns, and unprecedented mortalities, further information is required to determine the significance of the environmental effects of the project.</p> <p>Project activities will include considerable marine travel (a minimum of 1 to 3 return transits a day between the onshore supply base and MODUs), and noise from drilling operations will occur 24 hours per day, intermittently between 2019 and 2027 (for periods of up to 80 days per wellsite). MTI is concerned that Husky has not provided a specific assessment on individual whale species. This data would fill the gap and allow for the confirmation that the environmental effects on North Atlantic Right Whales are not significant. MTI requested that the proponent</p>	<p>Discuss any proposed follow up measures planned by Husky to address the uncertainty of North Atlantic Right Whale presence and if the installation of hydrophones on MODUs to determine the number of Right Whales present in the area would be considered.</p> <p>Provide information on whether and how monitoring data would be shared with Indigenous groups.</p>

IR Number	External Reviewer ID	Reference to EIS	Context and Rationale	Specific Question/ Information Requirement
			install hydrophones on MODUs to pick up whale occurrences and contribute to species distribution data, additionally it would support the assessment of potential interactions and contribute to on-going monitoring and recovery efforts. MTI requested that this information be shared with interested Indigenous groups, including MTI.	
IR-38		Section 6.3.10.3.2.4 Well Abandonment	Section 6.3.10.3.2.4 of the EIS states “given the depth of the water at the wellhead, the delay of detonation based on MMO observations, the size of the charge, and its detonation below the sea floor, it is very unlikely that there would be exposure to sound pressure levels that would elicit physical injury to marine mammals and sea turtles.” However, Husky has not provided an effects assessment of detonation of a shape charge to remove a well head.	Provide an assessment of the environmental effects of the removal of a wellhead using shape charges on marine mammals and sea turtles. Describe any applicable mitigation measures that would be put in place during wellhead removal using shape charges.
Migratory Birds				
IR-39	ECCC-02,-03	Section 4.2.7 Migratory Birds; Section 4.2.7.2 Data Sources; Section 4.2.7.4 Significant Areas of Bird Habitat	<p>Environment and Climate Change Canada (ECCC) advises that in addition to the Eastern Canada Seabirds at Sea (ECSAS) database and Fifield et al. (2009), there are a number of additional recent scientific studies of tracking data that reveal the project area (specifically the Grand Banks) as an important area for breeding and over-wintering birds regionally, nationally, and internationally. These references are: Fort et al. 2013, Frederiksen et al. 2016, Hedd et al. 2011, Hedd et al. 2018 and McFarlane Tranquilla et al. 2013.</p> <p>Also, ECCC notes that the statement in Section 4.2.7 of the EIS that “ECSAS data obtained from EC-CWS cannot be used to calculate densities because they have not been corrected for detectability” is incorrect. ECCC advised that the capabilities of the ECSAS database have been incorrectly interpreted. The data can be used to calculate densities because distance sampling methods are used. The data allows the proponent to correct for detectability.</p> <p><u>References</u></p> <p>Fort, J., Moe, B., Strom, H., Grémillet, D., Welcker, J., Schultner, J., Jerstad, K., Johansen, K.L., Phillips, R.A., and Mosbech, A. (2013). Multicolony tracking reveals potential threats to little auks wintering in the North Atlantic from marine pollution and shrinking sea ice cover. <i>Diversity Distributions</i>. 19: 1322-1332.</p> <p>Frederiksen, M., Descamps, S., Erikstad, K.E., Gaston, A.J., Gilchrist, H.G., Grémillet, D., Johansen, K.L., Kolbeinsson, Y., Linnebjerg, J.F., Mallory, M.L., McFarlane Tranquilla, L.A., Merkel, F.R., Montevecchi, W.A., Mosbech, A., Reiertsen, T.K., Robertson, G.J., Steen, H., Strom, H., and Thorarinsson, T.L. (2016). Migration and wintering of a declining seabird, the thick-billed murre <i>Uria lomvia</i>, on an ocean basin scale: Conservation Implications. <i>Biological Conservation</i>. 200: 26-35.</p> <p>Hedd, A., Montevecchi, W.A., McFarlane Tranquilla, L.A., Burke, C.M., Fifield, D.A., Robertson, G.J., Phillips, R.A., Gjerdrum, C., and Regular, P.M. (2011). Reducing uncertainty on the Grand</p>	<p>Taking into account the references and information provided, provide further information on the potential effects of the Project on birds.</p> <p>Update the effects predictions, potential mitigation and follow-up, as well as significance predictions, as applicable.</p>

IR Number	External Reviewer ID	Reference to EIS	Context and Rationale	Specific Question/ Information Requirement
			<p>Bank: tracking and vessel surveys indicate mortality risks for common murre in the North-West Atlantic. <i>Animal Conservation</i>. 14: 630-641.</p> <p>Hedd, A., Pollett, I.L., Mauck, R.A., Burke, C.M., Mallory, M.L., McFarlane Tranquilla, L.A., Montevecchi, W.A., Robertson, G.J., Ronconi, R.A., Shutler, D., Wilhelm, S.I., and Burgess, N.M. (2018). Foraging areas, offshore habitat use, and colony overlap by incubating Leach's Storm-petrels <i>Oceanodroma leucorhoa</i> in the Northwest Atlantic. <i>PLoS One</i>. 13(5): e0194389. https://doi.org/10.1371/journal.pone.0194389</p> <p>McFarlane Tranquilla, L.A., Montevecchi, W.A., Hedd, A., Fifield, D.A., Burke, C.M., Smith, P.A., Robertson, G.J., Gaston, A.J., Phillips, R.A. (2013). Multiple-colony winter habitat use by murrens <i>Uria</i> spp. In the Northwest Atlantic Ocean: implications for marine risk assessment. <i>Marine Ecology Progress Series</i>. 472:287-303.</p>	
IR-40	ECCC-04, -05, -06, -08	<p>Section 4.2.7 Migratory Birds;</p> <p>Section 4.2.7.3 Seasonal Distribution and Abundance of Marine Birds;</p> <p>Section 4.2.7.3.3 Summer</p>	<p>With respect to marine-associated bird species classified on the International Union for Conservation of Nature (IUCN) Red List of Threatened Species as "vulnerable", ECCC advises that the EIS does not clearly explain the reason why Leach's Storm-petrel became listed as "Vulnerable" internationally. It is largely due to the fact that the three largest colonies in Newfoundland (Baccalieu Island, Great Island, and Gull Island) have shown declines of 40-50% over the past 20-30 years. It is also important to emphasize that the core foraging areas of the Leach's Storm-petrels breeding at Baccalieu Island and Gull and Great Island in Witless Bay overlap with the project area. Hedd et al 2018 is an important reference to provide additional information for this section.</p> <p>Section 6.4.8 of the EIS states "the peak seabird density is typically from July to September..." and that "...seabirds are least abundant during fall months, as species leave to migrate south for the winter." ECCC advised that Leach's Storm-petrel strandings peak on offshore installations in September and October, the timing of which coincides with the fledging period of this species. This period (specifically mid-September to mid-October) should not be considered as less important for seabirds, given that millions of Storm-petrels are likely passing through the project area as they cross the Atlantic and migrate south for the winter (Pollett et al. 2014).</p> <p>Table 4.33 of the EIS (Important Seabird Colonies in Eastern Newfoundland) includes an outdated estimate of the population size of Leach's Storm-petrel for Baccalieu Island. ECCC advises the current estimated population size of Leach's Storm-petrel for Baccalieu Island is 1.98 million pairs.</p> <p>Section 4.2.7 (pg. 4.100) of the EIS states that "The offshore distribution of birds that breed in nearby areas during the summer months (e.g. Leach's Storm-petrel) is restricted as they become central-place foragers while attending to nests and chicks." However, ECCC stated that although Leach's Storm-petrels are central-place foragers during the breeding season, tagging data has shown that they still range widely at this time of year, including throughout the study area. As a</p>	<p>Taking into account the information provided about the Leach's Storm-petrel, including the status of the species, provide further information on the potential effects of the Project on this species.</p> <p>Update the effects predictions, potential mitigation and follow-up, as well as significance predictions, as applicable.</p>

IR Number	External Reviewer ID	Reference to EIS	Context and Rationale	Specific Question/ Information Requirement
			<p>result, the offshore distribution of the Leach’s Storm-petrel would not be considered “restricted” during this time of year, as was stated in the EIS.</p> <p><u>References</u></p> <p>Hedd, A., Pollett, I.L., Mauck, R.A., Burke, C.M., Mallory, M.L., McFarlane Tranquilla, L.A., Montevicchi, W.A., Robertson, G.J., Ronconi, R.A., Shutler, D., Wilhelm, S.I., and Burgess, N.M. (2018). Foraging areas, offshore habitat use, and colony overlap by incubating Leach's storm-petrels <i>Oceanodroma leucorhoa</i> in the Northwest Atlantic. PLoS One. 13(5): e0194389. https://doi.org/10.1371/journal.pone.0194389</p> <p>Pollett, I.L., Hedd, A., Taylor, P.D., Montevicchi, W.A., and Shutler, D. (2014). Migratory movements and wintering areas of Leach’s Storm-Petrels tracked using geolocators. <i>Journal of Field Ornithology</i>. 85(3): 321-328.</p>	
IR-41	ECCC-09; MTI-17; NCC-11; KMKNO-24	Section 6.4.10 Assessment of Residual Environmental Effects on Migratory Birds	<p>Section 6.4.10 of the EIS states: <i>“The frequency and duration of flaring events will be restricted to the amount necessary to characterize the well potential (DST) and as required to maintain safe operations. Flaring will occur in accordance with the Drilling and Production Guidelines (C-NLOPB and C-NSOPB 2017), which requires a DST not to begin at night. A high-pressure spray of seawater between the MODU and the flare is routinely used as a heat dissipating curtain which will also act as a deterrent to seabirds in the area.”</i></p> <p>It is unclear how the frequency and duration of flaring events could be restricted.</p> <p>In addition, ECCC identified the following mitigation measures that require consideration:</p> <ul style="list-style-type: none"> notification to the C-NLOPB at least 30 days, as per the C-NLOPB’s Measures to Protect and Monitor Seabirds in Petroleum-Related Activity in the Canada-Newfoundland and Labrador Offshore Area, in advance of flaring to determine whether the flaring would occur during a period of migratory bird vulnerability along with a description of how the proponent plans to prevent harm to migratory birds; and avoiding nighttime flaring, flaring during peak Storm-petrel fledging (mid-September to mid-October), and during the day when visibility is low due to fog. <p>Section 6.4.10.3.11 of the EIS states that <i>“Short-duration flaring by the MODU during well testing may attract migratory birds and result in increased mortality risk through incineration or energy reserve depletion. Seabirds have been observed to circle flares for days, eventually dying of starvation (Bourne 1979).”</i></p> <p>Environment and Climate Change Canada noted that the discussion in Section 6.4 “Migratory Birds” is lacking in information regarding the episodic nature of mortality through incineration by flares. Studies have tried to examine mortality at flares, but may have not documented much mortality because these types of events are infrequent. However, the Canaport liquid natural gas facility had a single-event mass mortality of an estimated 7 500 birds in 2013, illustrating the episodic nature of these types of events.</p>	<p>Taking into consideration the information provided by ECCC, provide additional information on the measures to be taken to mitigate the effects of flaring on migratory birds, including:</p> <ul style="list-style-type: none"> describe the potential available options to restrict flaring to the minimum required to characterize a well’s hydrocarbon potential and as necessary for the safety of the operation describe how flaring will be minimized during nighttime, poor weather conditions, and during periods of bird vulnerability; confirm if flare shield will be used during all flaring events; confirm if there will be consultation with outside departments, such as the C-NLOPB, with respect to the timing of routine flaring; and provide additional information regarding the episodic nature of incineration at flares. <p>Update proposed mitigation accordingly.</p>

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			<p>The KMKNO noted that given the reported episodic mortality at flares, mitigation such as the use of flare shields, should be required to minimize the potential effects of flaring on migratory birds.</p>	
IR-42	ECCC-10; MTI-15; WNNB-08	Section 6.4.10.3.1.1 Presence and Operation of MODU	<p>Section 6.4.10.3 of the EIS states that “<i>assuming a typical offshore platform scenario of 30 kW of artificial lighting, birds may be attracted from distances up to 5 km from the source.</i>” ECCC advised that the EIS overstates the result of the cited paper. Poot et al. 2008 states that their study design could not rule out that birds were attracted to fully lit oil platforms at much greater distances.</p> <p>WNNB noted that the proponent recognized that “The type and intensity of lighting are expected to be important factors in determining the magnitude of adverse effects on migratory birds.” (page 6.73 of the EIS). However, alternative means of lighting and flaring, other than standard mitigations of downward pointing lights and a water curtain, that are specifically designed to reduce or eliminate light attraction are not discussed in the EIS. Further, commitments to deploy specific mitigation measures for seabird fatal light attraction, such as spectral lighting, are not provided in the EIS even though its advantages have been well-described (Poot et al. 2008, Marquenie et al. 2014).</p> <p>WNNB stated that it is unclear whether peer-reviewed literature associated with spectral modified lighting was reviewed and considered by Husky and why the information and recommendations contained within Ronconi et al. 2015, which was referenced in Section 6.4, were not considered.</p>	<p>Provide evidence to support the statement that bird attraction is limited to five kilometers given that the Poot et al. 2008 study could not eliminate the possibility that birds are attracted at greater distances. If birds could be attracted beyond 5 kilometers, discuss implications for the assessment of associated effects.</p> <p>Discuss the type and intensity of lighting in relation to potential adverse effects on migratory birds and alternative means of lighting and flaring as mitigation including spectral modified lighting. Provide a discussion on the effectiveness of proposed mitigation in various weather conditions.</p>
IR-43	ECCC-11, -23 MTI-18; WNNB-08, -09	Section 6.4.10.2 Mitigation; Section 6.4.12 Follow-up and Monitoring	<p>ECCC has advised that until an adequate estimate of strandings and mortality at offshore infrastructure is obtained, there is uncertainty as to the level of effects on birds.</p> <p>Further, WNNB indicate that Husky states that mortality rates are generally considered to be underreported.</p> <p>Sections 6.4.10.2 and 6.4.12 of the EIS states that routine checks for stranded birds will be conducted on the MODU and OSVs; however, information is lacking concerning how the proponent would implement search protocols and document search efforts for stranded migratory birds. The EIS refers to protocols for handling stranded birds, but handling protocols are distinct from systematic searching protocols.</p> <p>ECCC advised that systematic deck searches for stranded birds undertaken by trained observers are more effective as mitigation than opportunistic searches. These systematic searches should occur at least daily (preferably at dawn), with search efforts documented and observations recorded (including notes of efforts when no birds are found). ECCC has expertise in this area and is available to be consulted in the development of systematic monitoring protocols.</p> <p>Additionally, ECCC stated that “Best Practices for Stranded Birds Encountered Offshore Atlantic Canada” (Environment Canada 2015) and the “Leach’s Storm-petrel: General Information and Handling Instructions” (Williams and Chardine 1999) are both superseded by</p>	<p>Taking into consideration the information provided by ECCC, describe the design and implementation of a follow-up program in relation to the potential effects of the Project on birds. Confirm whether the proponent intends to:</p> <ul style="list-style-type: none"> • develop a systematic monitoring protocol to search for and document stranded birds on the drilling installation and the platform supply vessels for the duration of the drilling program, including search efforts and frequency; • engage ECCC expertise in the development of systematic monitoring protocols, • have its Environmental Observers engaged in seabird observations trained by ECCC, • verify the accuracy of predictions with respect to birds, based on the data collected; and • annually report monitoring information, including data related to mortality, stranding and injury, and if the information will be shared with responsible government departments and Indigenous groups. <p>Discuss the need for and feasibility of using bird stranding and mortality data as an adaptive management tool.</p>

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			<p><i>"Procedures for handling and documenting stranded birds encountered on infrastructure offshore Atlantic Canada" (2017).</i></p> <p>https://www.cnlopb.ca/wp-content/uploads/mkiasseis/bestpracbird.pdf</p> <p>MTI has recommended additional monitoring and mitigation measures be considered for birds. For example, data on the number of bird strandings and deaths could be used as an adaptive management tool to determine the effectiveness of or need for additional mitigation.</p> <p>Both WNNB and ECCC indicated an interest in the sharing of data collected not only from the monitoring program, but also related to bird distribution.</p>	<p>Confirm that the document <i>"Procedures for handling and documenting stranded birds encountered on infrastructure offshore Atlantic Canada" (2017)</i> would be used in all applicable instances.</p>
IR-44	ECCC-25; KMKNO-26	Section 6.4.10.3.2.4 Supply Servicing and Servicing	<p>Section 6.4.10.3.1.4 of the EIS states that OSVs helicopters will not interact with any bird colonies or Important Bird Areas while conducting supply and servicing operations within the project area, as no such areas are located within the project area or surrounding study area. However, the Agency notes that while the study area, as defined by the proponent in Figure 4-33, does not extend to the coast, there are Important Bird Areas along the eastern coast of Newfoundland in the vicinity of St. John's. No information is provided on the proximity of anticipated helicopter and vessel routes to Important Bird Areas, colonies listed in the table of "larger" colonies identified in Table 4.33, and the coastal Ecologically and Biologically Significant Areas.</p> <p>ECCC's document, "Seabird and waterbird colonies: avoiding disturbance" (URL: https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/seabird-waterbird-colonies-disturbance.html), provides guidelines for buffer distances between vessels and helicopters and bird colonies.</p> <p>ECCC advises that it is important that helicopters maintain a minimum distance of at least 300 m vertically and horizontally from any island or colony that is occupied by seabirds and waterbirds.</p> <p>Further, the KMKNO indicated that mitigation proposed by the proponent for marine mammals and sea turtles with respect to vessel speed and helicopter altitude would apply to mitigating effects of the Project on migratory birds.</p>	<p>Update the effects analysis of operational support vessels and helicopters on Important Bird Areas and Ecologically and Biologically Significant Areas considering a study area that would include the zone of influence of shipping, extending to the shoreline of Newfoundland.</p> <p>Taking into consideration the information in the document "Seabird and waterbird colonies: avoiding disturbance" describe mitigation measures in relation to potential environmental effects from operation support vessels and helicopter use within the project area and zone of influence. Include information on specific altitude and lateral distance limits that would be used to avoid sensitive sites.</p>
IR-45	ECCC-23	Section 6.4.12 Follow-up and Monitoring	<p>Section 6.4.12 of the EIS states that the proponent's follow-up and monitoring would include routine checks for stranded birds on the MODU and OSVs. For similar projects in the area, commitments have been made to have trained environmental observers on supply vessels for live bird monitoring and observation.</p> <p>ECCC has developed a pelagic seabird monitoring protocol called the ECSAS program, that is recommended for use by experienced observers for all offshore projects and is available at http://publications.gc.ca/site/eng/389623/publication.html for the proponent's consideration.</p> <p>ECCC has advised that bird distribution data should be collected during proposed activities. To verify the effects predications, a data collection effort should be designed in consultation with ECCC and be carried out by an individual who is appropriately trained and dedicated to recording</p>	<p>Confirm whether bird distribution data will be collected from vessels and the MODU during project operations and, if not, confirm how follow up monitoring will be carried out to verify effects predictions.</p> <p>Confirm if the ECSAS protocol will be used when developing a protocol for pelagic seabird monitoring.</p>

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			marine bird observations. ECCC-CWS can provide training on Eastern Canada Seabirds at Sea (ECSAS) protocol.	
IR-46	WNNB-07	Section 4.2.7 Migratory Birds	WNNB states that the information in the EIS is largely based on data from Programme Intégré de Recherches sur les Oiseaux Pélagiques (PIROP) and ECSAS databases and that it is unclear why existing monitoring data from Husky's White Rose project were not provided in support of the EIS.	Describe monitoring data that may be available from Husky's White Rose project, whether it was utilized in the EIS analysis, and if not, provide a rationale. Discuss how impact predictions in the EIS will be tested in the absence of baseline data and how potential changes in abundance or distribution of migratory birds in the project or study areas be detected.
Species at Risk				
IR-47	DFO-07	Section 4.2.4.4 Fish Species at Risk and Species of Conservation Concern; Section 4.2.5 Marine Mammals; Section 10.1.4 Species at Risk (SAR)/Species of Conservation Concern (SOCC); Appendix D, Section 2.4.2.3 Northern Bottlenose Whale	Section 6.1.5 of the EIS Guidelines requires inclusion of all potential or known federally listed species at risk and species designated by Committee on the Status of Endangered Wildlife in Canada (COSEWIC), and their habitat at the project site and within the areas that could be affected by routine project operations or accidents and malfunctions. Section 4.2.5 of the EIS indicates that there are two populations of the Northern Bottlenose Whale, the Scotian Shelf Population and the Davis Strait-Baffin Bay-Labrador Sea Population. Table 4.28 has the potential for occurrence in the study area listed as high for Northern Bottlenose Whale, with no differentiation between the two populations. However, Appendix D states that for the purposes of the environmental assessment, it is assumed that the northern bottlenose whales in the study area would belong to the Davis Strait-Baffin Bay-Labrador Sea population. Fisheries and Oceans Canada has advised that that with respect to the Northern Bottlenose Whale, the Davis Strait-Baffin Bay-Labrador Sea population may not be the only population present in the study area, as discussed in Appendix D of the EIS. Recent work completed in the Flemish Pass area has highlighted the potential presence of the Northern Bottlenose Whale - Scotian Shelf population. Section 4.2.4.4, Table 4.26 presents information on fish species at risk and of special conservation concern with potential to occur in the study area; however it is incomplete as not all listed Atlantic Salmon populations that may occur in the project area are included.	Provide additional information about the Northern Bottlenose Whale – Scotian Shelf population, including an analysis of potential effects of the Project on the population with consideration of the likelihood of interaction between the population and the Project. Update the effects assessment as necessary. Update Table 4.26 to include all Atlantic Salmon populations that may occur in the project area. Update Section 4.2.4.4 as applicable.
IR-48	DFO-20	Appendix D, Section 1.4, Species at Risk; Appendix D, Section 2.0, Marine Mammals	Section 6.1.5 of the EIS Guidelines requires inclusion of all potential or known federally listed species at risk and species designated by COSEWIC, and their habitat at the Project site and within the areas that could be affected by routine Project operations or accidents and malfunctions. In addition, Section 6.1.5 further requires a discussion of the residences, seasonal movements, movement corridors, habitat requirements, key habitat areas, identified and proposed critical habitat and/or recovery habitat (where applicable) and general life history of species at risk that may occur in the project area, or be affected by the Project.	Discuss the link between the characteristics of the exploration licences, project area and study area, and the life history requirements or stages of the fish and marine mammal species at risk identified in Appendix D.

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			Appendix D of the EIS provides species descriptions for species at risk, however, Appendix D does not provide the life history of species at risk, in particular for wolffish species, in the context of the characteristics of the project area / study area. The link between the various life history stages of the species and whether the ELs, project area or study area have the features that would support the noted life history stages/requirements are not clearly stated in the EIS.	
IR-49		Section 4.2.4.4 Fish Species at Risk and Species of Conservation Concern; Section 6.1.8 Summary of Existing Conditions for Fish and Fish Habitat	Section 6.1.8 of the EIS states there are two species at risk that have a high potential to be present year round on the Grand Banks and Flemish Cap: Northern Wolffish and Spotted Wolffish. Critical habitat proposed for Northern and Spotted Wolffish is comprised of several discontinuous critical habitat areas that support the life stages of either Northern or Spotted Wolffish. Cumulatively, the critical habitat for both species has approximately 655.80 square kilometers overlap with the project area. Figure 4-27 of the EIS illustrates the location of proposed critical habitat for Northern and Spotted Wolffish in relation to the location of the study area and ELs. The resolution of this figure illustrates an area of overlap between a portion of the proposed Spotted Wolffish critical habitat and EL 1151, however, this overlap is not discussed in the text of the EIS.	Discuss the overlap of the proposed critical habitat for Spotted Wolffish and the project area and EL. If there is an overlap of proposed Spotted Wolffish critical habitat with EL 1151 provide information on the extent to which the areas overlap (area and percent). Provide a higher resolution map that clearly shows the proposed critical habitat for Spotted Wolffish and any overlap with exploration licence 1151.
IR-50	DFO-CL-08,-CL-11,-CL-37	Section 4.2.5.4 Marine Mammal Species at Risk and Species of Conservation Concern; Section 10.1.4 Species at Risk (SAR)/Species of Conservation Concern (SOCC); Appendix D, Section 2.4.1.2 Fin Whale; Appendix D, Section 2.4.2.4 Sowerby's Beaked Whale	Fisheries and Oceans Canada noted that more up-to-date Action Plans are available than those that are referenced in section 10.1.4 of the EIS including the: <ul style="list-style-type: none"> Action Plan for the North Atlantic Right Whale (<i>Eubalaena glacialis</i>) in Canada: Fishery Interactions, 2016; Action Plan for the Northern Bottlenose Whale (<i>Hyperoodon ampullatus</i>), Scotian Shelf Population in Atlantic Canadian Waters, 2017; and Action Plan for the Leatherback Sea Turtle (<i>Dermochelys coriacea</i>) in Atlantic Canada, 2018. Table 10.2 of the EIS lists the following footnotes for the species at risk listed in the table: <ul style="list-style-type: none"> Action Plan anticipated in 2017; Recovery Strategy anticipated in 2017; and Management Plan anticipated in 2017. However, the information in this table is outdated and should be updated accordingly.	Taking into consideration the Action Plans noted by Fisheries and Oceans Canada, update information related to the Leatherback Turtle (Atlantic population), North Atlantic Right Whale and the Northern Bottlenose Whale (Scotian Shelf population), as necessary. Provide updated information on the Action Plans, Recovery Strategies and Management Plans of the species at risk listed in Table 10.2 of the EIS. Update the effects assessment, potential mitigation and follow-up, as appropriate, including a description of how mitigation measures are consistent with applicable action plans.
IR-51	DFO-CL-29	Section 6.1.10.4 Summary of	Section 6.1 of the EIS provides an effects assessment of fish and fish habitat, however Fisheries and Oceans Canada noted that it is not clear that the residual effects summary discussion in	Clarify whether the residual effects and determination of significance analysis considered species at risk. If species at risk are not considered, provide an effects

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		Project Residual Effects; Section 6.1.11 Determination of Significance	Section 6.1.10.4 or the determination of significance discussion in Section 6.1.11 includes species at risk (e.g. Northern and Spotted Wolfish).	assessment and determination of significance on fish and fish habitat species at risk, including Northern and Spotted wolfish.
Special Areas				
IR-52	DFO-8, - CL-13, - CL-14, - CL-15, - CL-34	Section 4.2.9 Special Areas; Section 6.5.8 Summary of Existing Conditions for Special Areas	<p>The EIS provides information on a total of 24 special areas that may occur in the study area. The Agency and Fisheries and Oceans Canada noted that several special areas that have been updated (e.g. governing bodies have revised the boundaries) are not identified and that some information presented is incorrect, therefore requiring clarification and revision including:</p> <ul style="list-style-type: none"> • areas closed to lobster fishing as conditions of fishing licenses, Marine Refuges, and Ecologically and Biologically Significant Areas within the Placentia Bay/Grand Banks Large Ocean Management Area have been updated but the EIS does not include these updates; • additional Ecologically and Biologically Significant Areas identified by the Conference of the Parties to the Convention on Biological Diversity located outside Canada’s Exclusive Economic Zone in the Northwest Atlantic, some of which overlap the Project and study area, are not included (https://www.cbd.int/ebsa/); • special areas identified as important to marine birds, including nearshore areas (e.g. Eastern Avalon Ecologically and Biologically Significant Area and Baccalieu Island) and offshore areas (e.g. Seabird Foraging Zone in the Southern Labrador Sea Ecologically and Biologically Significant Area), have not been included; • the location of canyons identified by NAFO (see Section 4.2.9.2.1 Canyons) in an updated figure; • the statement in section 4.2.9.4 that “there are five marine refuges within the Newfoundland and Labrador Shelves bioregion...” is incorrect; there are ten, including four Lobster Closures and the Hatton Basin Conservation Area (refer to: http://www.dfo-mpo.gc.ca/oceans/oeabcm-amcepz/refuges/index-eng.html); and • the Bonavista Cod Box is not a coral and sponge closure and should be removed. <p>In addition, the Agency and Fisheries and Oceans Canada note the following discrepancies:</p> <ul style="list-style-type: none"> • Figure 4-34 indicates that the Orphan Spur Ecologically and Biologically Significant Area is located in the study area, however it is not listed as one of the five Ecologically and Biologically Sensitive Areas in the study area in Section 4.2.9.1. Additionally, the Southwest Shelf Edge and Slope Ecologically and Biologically Sensitive Area is listed as within the study area in Section 4.2.9.1, however there is no overlap illustrated in Figure 4-34; • Section 4.2.9.2.2 of the EIS states that the Beothuk Knoll is in the project area but the corresponding figure (Figure 4-34) shows it as being located in the study area. The EIS also states the “Beothuk Knoll, located southwest of Flemish Cap and approximately 60 km from 	<p>Provide a comprehensive table and related figures with appropriate resolution that identify all special areas by type (e.g. Ecologically and Biologically Significant Areas identified by the Conference of the Parties to the Convention of Biological Diversity, Marine Refuges, Snow Crab Stewardship Exclusion Zones, Preliminary Representative Marine Areas, Canyons identified by NAFO, etc.) that could be affected by the Project. Include information on the distance from special areas to ELs and terminus of the transit route. The table and related figures should include the following:</p> <ul style="list-style-type: none"> • all special areas that occur within the study area including those previously not identified in the EIS; • special areas that are identified in the EIS but have been updated; • special areas important to marine birds; • clarification of whether Orphan Spur and Southwest Shelf Edge and Slope Ecologically and Biologically Significant Areas are located in the study area; • canyons identified by NAFO; • clarification of whether the Beothuk Knoll Vulnerable Marine Ecosystem is located in and overlapping with the study area; • the number of marine refuges in the Newfoundland and Labrador Shelves bioregion and what they are; • removal of the Bonavista Cod Box as a coral and sponge closure area; and • NAFO closures including Vulnerable Marine Ecosystems. <p>With respect to special areas that have not been included in the EIS or have been revised, provide a description, conduct an assessment of potential effects, proposed mitigation and follow-up, for routine activities and potential accidental events.</p>

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			<p>the nearest EL occupies 183 km² of the project area (Figure 4-34).” Figure 4-34 also shows this special area as being in the study area and not the project area. Table 6.24 lists Beothuk Knoll as being in the study area and a certain distance from the project area. It is not clear whether the Beothuk Knoll is located in the project area; and</p> <ul style="list-style-type: none"> • NAFO closures listed in Table 6.24 of the EIS, including Vulnerable Marine Ecosystems, do not align with the description given in section 4.2.9.2 Vulnerable Marine Ecosystems. 	
IR-53	NCC-15; KMKNO-16; QFN-05	Section 6.5.10.3.1.2 Drilling Associated Surveys	<p>The Agency requires an assessment of the potential environmental effects of routine Project operations (e.g. noise, light, water, sediment) on special areas that are both overlapping with the Project and on those to which potential effects may extend. It is not clear whether the potential effects on special areas outside the ELs but within the potential zones of influence for noise, light and cuttings disposal have been assessed.</p> <p>Qalipu First Nation and the KMKNO expressed concern about the effects of project related activities on special areas, which are adjacent to or overlap with the project area, in particular with respect to sponges and corals as they are easily disturbed and slow to recover.</p> <p>The NunatuKavut Community Council suggests that as a means by which to reduce the effects of operations on special areas, buffer zones around protected areas should be considered.</p>	<p>Within the context of the special areas identified above in IR 52, clarify how the analysis considered potential zones of influence of noise, light and routine discharges when identifying the special areas that could be affected by routine operations. If there is potential for effects to extend to special areas, provide an analysis of effects of routine project operations on special areas that, while not directly overlapping the project area or vessel and aircraft transit routes, may be within the zone of influence for effects from noise, light, and drill cuttings disposal.</p>
IR-54		Section 6.5.10.3.1.3 Waste Management	<p>The EIS states that in areas of deep water (greater than 600 metres), where drilling muds and cuttings are more dispersed, ecological recovery begins soon after drilling and can be well advanced within a year. However, the depths of the ELs for the Project range from 87 to 211 metres.</p>	<p>Given that the depths of the exploration licences in the Project range from 87 to 211 metres, provide information on ecological recovery in shallow drill sites.</p>
IR-55	KMKNO-18	Section 6.5.12 Follow-up and Monitoring	<p>Section 6.5.12 of the EIS states that “no follow-up is proposed to be implemented for routine Project activities” in relation to special areas. However, page 39 of the Agency’s EIS Guidelines states that “considerations for developing a follow-up program include whether the project will impact environmentally sensitive areas/VCs or protected areas or areas under consideration for protection.” Taking into account that the project area overlaps with the Northeast Shelf and Slope, which is recognized for supporting spotted wolffish and Greenland halibut populations, providing a feeding area for marine mammals, and containing important coral areas, it is not clear why no follow-up program is being proposed.</p> <p>The KMKNO states that follow-up studies should be completed, including a monitoring program via seabed video and/or benthic sampling to determine infaunal recolonization rates following drilling.</p>	<p>Provide clarification as to whether a follow-up program would be carried out, should a wellsite be within, adjacent to, or near a special area (taking into account any additional special areas that were identified in IR 52 above) such that effects may occur within or extend to the special area at levels above the biological effects threshold for a species. Further discuss the need for follow-up depending on species types and assemblages as well as based on the mitigation implemented.</p> <p>Discuss the need for and feasibility of a seabed monitoring program to determine infaunal recolonization rates following drilling.</p>
IR-56		Section 6.3.10.3.1.3 Supply and Servicing	<p>Section 6.3.10.3.1.3 of the EIS states that “single or occasional overflights by helicopters would likely elicit a brief behavioral response by most marine mammals and sea turtles and therefore would be expected to result in a short-term and localized change in habitat quality and use.” However, it is not clear whether helicopters would be a regular occurrence over the duration of the Project.</p>	<p>Specify areas of environmental sensitivity that have been identified in relation to helicopter flight paths and describe the factors that influence helicopter operators’ ability to avoid them. Describe the potential environmental effects associated with and anticipated frequency of situations where sensitive areas/components cannot be</p>

IR Number	External Reviewer ID	Reference to EIS	Context and Rationale	Specific Question/ Information Requirement
				<p>avoided. Describe if there is any potential mitigation proposed to avoid disturbance to marine mammals and sea turtles.</p> <p>Provide the number of helicopter flights per day currently in the area and the number of additional helicopter trips required per day for this project.</p>
Indigenous Peoples				
IR-57	FFAW	Section 6.2.10.2 Mitigation	<p>In Section 6.2.10.2 of the EIS, the proponent proposes that any Project-related damage to fishing gear will be compensated in accordance with the <i>Compensation Guidelines Respecting Damages Related to Offshore Petroleum Activity</i> (C-NLOPB and Canada-Nova Scotia Offshore Petroleum Board).</p> <p>The proponent further states that “Husky has a gear/vessel damage compensation program to promptly settle claims for loss and/or damage that may be caused by Project-related activities such as drilling–associated surveys or OSV operations.” However, it is not clear if Husky’s compensation program is in addition to the Compensation Guidelines, or if Husky’s compensation program incorporates the <i>Compensation Guidelines Respecting Damages Related to Offshore Petroleum Activity</i>.</p> <p>In addition, Section 6.2.10.2 of the EIS details mitigation measures related to commercial fisheries. Husky states that “Procedures are in place so that any incidents of contact with fishing gear are clearly detected and documented (e.g. time, location of contact, loss of contact, and description of any identifying markings observed on affected gear).”</p> <p>However, no information with respect to information sharing, the availability of information and who is responsible for recording the information is provided.</p> <p>In addition, the Fish, Food and Allied Workers /Unifor Union stated concern with the timeframes and procedures required to compensate affected parties adequately, fairly and rapidly under the C-NLOPB/C-NSOPB’s <i>Compensation Guidelines Respecting Damages Related to Offshore Petroleum Activity</i>.</p>	<p>Clarify if Husky’s gear/vessel damage compensation program referenced in the EIS is an addition to the <i>Compensation Guidelines Respecting Damages Related to Offshore Petroleum Activity</i>, or if it is developed to incorporate the requirements of the <i>Compensation Guidelines Respecting Damages Related to Offshore Petroleum Activity</i>.</p> <p>With respect to Husky’s compensation program and the <i>Compensation Guidelines Respecting Damages Related to Offshore Petroleum Activity</i>, provide the following:</p> <ul style="list-style-type: none"> • Describe how harvesters are notified of the compensation plan(s) in place, and confirm that harvesters will be notified of the plans and how to report interactions prior to project activities commencing; • Provide a description of the procedures for reporting activities, including if reporting can be completed by harvesters as well as individuals on the MODU or operational support vessels; • Provide an analysis of the frequency and type of interaction between project activities and fishing gear/vessels based on compensation program statistics from other Husky operations, and; • Provide a discussion on the timelines associated with claims under Husky’s compensation program.
IR-58	KMKNO-21; NG-05	Section 6.2.10.2 Mitigation	<p>Section 6.2.10.2 of the EIS states that any project-related damage to fishing gear will be compensated in accordance with the <i>Compensation Guidelines Respecting Damages Related to Offshore Petroleum Activity</i> and Husky’s gear/vessel damage compensation program. However, the KMKNO and Nunatsiavut Government indicated that there was no information related to how the proponent intends to develop, or has developed, the compensation program in collaboration with potentially impacted parties, including commercial and commercial-communal harvesters. Nunatsiavut Government further indicated they would like to be involved in the development of the compensation program to ensure the protection of the groups interests in the region.</p>	<p>Discuss if, and how, commercial and communal-commercial harvesters and Indigenous groups will be engaged in the development of Husky’s compensation programs.</p>

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IR-59	KMKNO-27, -28; MFN-32, -34; MTI-01, -04, -08, -09; NCC-07, -13	Section 4.3.2.1 Approach and Key Information Sources	<p>Section 4.3.2.1 of the EIS states that “where limited information was available on aspects of individual Indigenous communities, such as community health or land and resource use, more general information has been provided at the regional or provincial level.” KMKNO indicated that the proponent should explain the rationale for not carrying out specific studies on current use of lands and resources for traditional purposes if limited secondary sources of information were available.</p> <p>The KMKNO indicated primary sources of information as possibly including traditional land use studies, socio-economic studies, heritage surveys or other relevant studies conducted specifically for the Project and its EIS. Often these studies and other types of relevant information are obtained directly from Indigenous groups. Secondary sources of information could include previously documented information on the area, not collected specifically for the purposes of the project, or desktop literature based information.</p> <p>Several Indigenous groups have indicated that the EIS does not use Indigenous Knowledge in its valued components baseline information or environmental effects analysis (e.g. in conclusions on interactions with Atlantic Salmon, Bluefin Tuna, swordfish, and the project area) and must be applied to assist in developing mitigation and environmental protection plans; and Project monitoring.</p>	<p>Provide a rationale for only using secondary sources of information, particularly related to land and resources use, fishing activity, health and socio-economic issues.</p> <p>Discuss whether Husky is considering collecting further Indigenous knowledge from Indigenous communities and if funding an Indigenous knowledge study is being considered. If so, please advise when this information would be available, and how it would be utilized, including how it could be used in the current assessment, the design and implementation of follow-up and monitoring programs, and further mitigations. If no additional Indigenous knowledge is planned to be collected, provide a rationale for why this would not be necessary.</p>
IR-60	KMKNO-09, -13, -30 MFN-27, -28; MTI-20; NG-05, -11	Section 9.2.10 Follow-up and Monitoring	<p>The MFN have indicated that it is not evident how the proponent intends to involve Indigenous groups in the development and implementation of spill and contingency plans. It was noted that:</p> <ul style="list-style-type: none"> the proponent should indicate how it will involve Indigenous groups in the development and implementation of the oil spill response plan and other contingency plans, including response, preparedness planning and exercises and training; the proponent should indicate if Indigenous groups will be provided with approved versions of contingency and response plans; and the proponent should be required notify Indigenous groups in the event of any accidental release. <p>Section 9.2.10 of the EIS states that “Husky will communicate with indigenous groups, fishers, and other ocean users before, during, and after drilling programs, and details of safety zones will be published in Notices to Shipping and/or Notice to Mariners, as appropriate. This will allow Indigenous groups, fishers and other ocean users to plan accordingly and mitigate potential space-use conflicts or environmental effects.” However, there was no information provided to indicate how issues and concerns raised by Indigenous groups would be taken into account.</p>	<p>Confirm the role of Indigenous groups in the development and implementation of oil spill response plans and other contingency plans, exercises and training. Confirm if Indigenous groups will be provided with versions of these plans when they are finalized.</p> <p>Clarify the feedback mechanisms in place that will demonstrate how issues and concerns raised by Indigenous groups, fishers and other ocean users will be taken into account during Project execution.</p>
IR-61	EFN-20, -34; KMKNO-11;	Section 11.4 Monitoring and Follow-up	<p>Section 11.4 of the EIS states that given the nature of the Project and existing knowledge of potential environmental effects related to this type of activity from previous environmental effects monitoring and existing literature, monitoring and follow-up requirements are limited. Husky states that they will communicate with Indigenous groups, fishers and other ocean users before, during and after drilling programs, however they do not describe the role of Indigenous</p>	<p>Describe the on-going role of Indigenous groups in monitoring and follow-up plans, including for accidents and malfunctions. Provide information regarding the reporting and availability of results of monitoring and follow-up programs.</p>

IR Number	External Reviewer ID	Reference to EIS	Context and Rationale	Specific Question/ Information Requirement
	MTI-19, 21; NG-10		groups in monitoring and follow-up programs specifically. EFN and Nunatsiavut Government stated an interest in reviewing the design of and findings from environmental monitoring and follow-up programs.	
IR-62	KMKNO-04, -38; NCC-03, -04	Section 6.3.7 Significance Definition	<p>Section 6.3.7 of the EIS Guidelines requires a description and analysis of how changes to the environment caused by the Project will affect current use of resources by Indigenous peoples for traditional purposes, as well as human health and socio-economic conditions (including commercial fishing) of Indigenous communities. Underlying environmental changes to be considered in this analysis include any changes to environmental quality, including perceived disturbance of the environment (e.g. fear of contamination of water or country foods), and assessment of the potential to return affected areas to pre-project conditions.</p> <p>The EIS states that the probability of an accidental event such as a large batch spill or a blowout occurring is very low, and that in the unlikely event that such an accident did occur, the oil spill modelling predicts a very low probability of oil moving west, thus reaching the shoreline of Atlantic Canada and coming into contact with any Indigenous communities and activities. Nevertheless, Indigenous peoples may change their harvesting or consumption habits following the announcement of such an accidental event.</p> <p>The KMKNO, and the NunatuKavut Community Council expressed concerns regarding the effects analysis of accidents and malfunctions on the health (both physical and psycho-social well-being) and socio-economics of potentially affected Indigenous communities.</p> <p>In addition, NCC expressed concerns that given the connection among species and environments in an ecosystem, any potential negative effects on one component or species may have direct or indirect effects on other parts of the ecosystem.</p>	With consideration of the concerns expressed by Indigenous groups and other sources (e.g. literature, experiences elsewhere) provide additional analysis on the effects of an uncontrolled well event on Indigenous communities and activities, including potential adverse effects on health of Indigenous peoples from the consumption of contaminated species, or justification for the determination that this assessment is not required.
IR-63	EFN-10, -15, -15; KMKNO-15; MFN-01 MMS-04; NG-06; PNIN-03, 12	Section 2.2.2.4 Technological Innovations and Scientific Knowledge	Due to existing data gaps, several Indigenous groups indicated the importance of the proponent actively supporting research opportunities and initiatives related to migratory species of importance to Indigenous groups such as American Eel and Atlantic Salmon. Section 2.2.2.4 of the EIS states that Husky has supported increases in scientific knowledge through funding to the Environmental Studies and Research Fund for numerous studies. It is not clear in the EIS whether Husky may consider supporting research to address these data gaps, potentially in collaboration with research partners, Indigenous groups, or within the context of regional initiatives. The Agency understands that potential collaborations continue to be explored and additional information may now be available on future initiatives.	Provide an update on research collaborations that have been identified, and agreements that are in place, if any to improve understanding of Atlantic Salmon, American Eel or other migratory species in the marine environment and their potential interaction with oil and gas activity in the offshore of Newfoundland. Elaborate on the research areas that are being studied, by whom, how this data will/may improve certainty with respect to impact predictions, for the current and future projects, and how Indigenous groups may be engaged in developing research plans. Indicate how data will be disseminated, including whether results of research initiatives will be shared with other operators in the Newfoundland offshore, Indigenous communities, and the public.
IR-64	EFN-05		Table 3.5 of the EIS states that “Husky will develop an Indigenous Fisheries Communications Plan with Indigenous groups to provide continued information-sharing throughout the lifecycle of the Project.” However, the EIS does not provide any further detail about the Fisheries Communications Plan. More detail about the proposed plan is needed. It is unclear whether this	Provide additional information on the Indigenous Communities Fisheries Communication Plan, including a discussion of the following:

IR Number	External Reviewer ID	Reference to EIS	Context and Rationale	Specific Question/ Information Requirement
			plan would allow adaptive management strategies specifically for Indigenous fisheries should issues arise in the future that were not predicted within the EIS.	<ul style="list-style-type: none"> whether the Indigenous Communities Fisheries Communication Plan would include measures to ensure that issues and concerns can be raised by Indigenous groups during the life of the Project and how this could occur; whether an adaptive approach would be used to allow for a harvester feedback mechanism to report changes in harvesting (e.g. access, quality, quantity) over the life of the Project and how this could occur; and the frequency of updates to Indigenous communities about planned activities given potential for changes in operations, and the potential need for frequent communication over the life of the Project, for example monthly updates throughout Project execution to fishers.
IR-65	MTI-10b	Section 6.1.12, 6.2.12, 6.3.12, 6.4.12 and 6.5.12, Follow-up and Monitoring	It is noted throughout the EIS (Sections 6.1.12, 6.2.12, 6.3.12, 6.4.12 and 6.5.12) that Husky will provide annual updates to the C-NLOPB, regarding project activities that will be conducted in the project area in a given year. It is stated that the update will include any applicable changes to species of conservation concern, species at risk and critical habitat.	Discuss the availability of the annual report to Indigenous groups. If the report will not be distributed, confirm if it would be available upon request.
Commercial Fisheries				
IR-66	DFO-14	Section 6.2.10.2 Mitigation	<p>As mitigation, to minimize effects on commercial fisheries, in Section 6.2.10.2 of the EIS Husky proposes the implementation of a Vessel Traffic Management Standard to manage communication relevant to the movement of vessels during Project-related activities (including OSVs, survey vessels, and MODU), with operators and fishers.</p> <p>However, the proponent provides limited detail related to the communication mechanisms, and the frequency of communication. For example, the proponent does not indicate whether there will be communication with fishers through One Ocean, FFAW-Unifor, the NAFO Secretariat, or whether a single point of contact would be established.</p> <p>Procedures for communication in the Vessel Traffic Management Standard are required to enable evaluation of effects assessment.</p>	Provide a description of the components of the Vessel Traffic Management Standard, including the frequency of reporting, possible communication mechanisms to be utilized and identification of parties that will be involved in and notified through the Vessel Traffic Management Standard.
IR-67		Section 6.2.10.3.1.5 Well Abandonment	<p>Section 2.5.5 (Decommissioning and Abandonment) of the EIS indicates that following drilling, wells may be suspended or abandoned. If suspended, the suspension cap protrudes above the seabed.</p> <p>Section 6.2.10.3.1.5 of the EIS discusses wellhead abandonment, and the potential effects on commercial fisheries, however there is no discussion on the potential effects on commercial fisheries if the well is suspended.</p>	Discuss the potential effects of a suspended wellhead on commercial fisheries, as well as any mitigation measures that may be implemented to minimize effects.
IR-68	DFO-09, -CL-26	Section 4.3.1.2 Historic Overview of Domestic	Section 6.1.9.2 of the EIS Guidelines require baseline information to describe current and historical use of waters, including commercial fisheries activities. Figures 4-35 and 4-36 in the EIS	Revise Figures to include all available data up to and including 2016, for all NAFO Divisions which overlap with the project area and study area.

IR Number	External Reviewer ID	Reference to EIS	Context and Rationale	Specific Question/ Information Requirement
		Fisheries (Eastern Grand Banks)	<p>illustrate data from 1990-2010. Up to date data is available from 2011-2016 and should be represented in the figures.</p> <p>In addition, Section 4.3.1.2 of the EIS indicates that there is overlap between the study area and NAFO Divisions 3Kf, 3Kg, and 3Kk, however data from NAFO Division 3K is not represented in Figures 4-35 and 4-36, which illustrate harvest from NAFO Divisions 3LMN between 1990 and 2010.</p> <p>Further, Fisheries and Oceans Canada noted that in Table 4.46 in the EIS the reported total quantities of species harvested appear to represent catch for 3LMNO and 3K, but the title only refers to 3LMNO.</p>	<p>Confirm if the data presented in Figure 4-35, Figure 4-36 and in Table 4.46 includes harvest from NAFO Division 3K. If catch data from NAFO Division 3K has not been included, revise the related figures and tables, to present information on the harvest from all NAFO Divisions which overlap with the study area.</p>
IR-69	DFO-10, -13, -CL-18	<p>Section 4.3.1.1 International Fisheries;</p> <p>Section 4.3.1.5 Fishing Gear and Vessels;</p> <p>Section 6.2.8 Commercial Fisheries</p>	<p>Section 4.3.1.1 of the EIS states that fish catch data are sourced from the NAFO STATLANT 21A database, which provides fishing information in relation to year, species, unit area, country and weight. However, the terminology and discussion related to NAFO's STATLANT data is not clear throughout the EIS. For example, it is unclear if table 4.45 and figure 4-58 in the EIS are referring to catches only by non-Canadian vessels in the NAFO Regulatory Area or otherwise. The discussion on international fish catches focus primarily on harvested species in 3LMNO, which includes Canadian-managed fisheries, then back to NAFO (discussing vulnerable marine ecosystems).</p> <p>Fisheries and Oceans Canada noted that STATLANT database reports Canadian catches both inside and outside the Exclusive Economic Zone (EEZ) and that in Section 4.3.1.1 in the EIS, it is unclear whether the catch data presented from STATLANT was considered in the assessment to include Canadian catch data from both inside and outside the EEZ. Examples of inaccuracies observed include:</p> <ul style="list-style-type: none"> the statement "These data indicate that Canadian fleets have been harvesting more than any other NAFO state within the NRA [NAFO Regulatory Area]", appears to attribute to the assumption that NAFO's STATLANT data includes Canadian catches outside the EEZ only; the statement that "the principle fisheries harvested by NAFO states [Contracting Parties] include northern shrimp and groundfish species." However, Northern shrimp in 3L has been under a directed fishing moratorium since 2015, and Northern Shrimp in 3M has been under a directed fishing moratorium since 2011. Similarly, it was noted that Section 6.2.8 incorrectly states an active commercial northern shrimp fishery in 3L; and Figure 4-57 in the EIS, which is intended to show the harvest of NAFO managed stocks by Canadian vs international fleets within the NRA and shows greater catches by Canada versus the other nations. Most of the Canadian fishing activity for NAFO-managed stocks occurs within the Canadian EEZ. <p>If it was assumed that the STATLANT data includes catches only outside the EEZ, then this may impact the analysis and conclusions outlined in this section.</p>	<p>Address inaccuracies identified, and provide clarity regarding the use of NAFO's STATLANT data to describe international fisheries. Confirm if the Canadian harvest data included harvest from within the EEZ. If harvest from the EEZ was included, indicate the percent or quantity of harvest that was within the EEZ, and revise statements related to harvest, as necessary.</p> <p>Review information in relevant sections of the EIS, related to the stock status and current management of Northern Shrimp, to ensure information presented is the most recent, in particular with respect to areas under moratorium.</p> <p>Based on the re-analysis of the data, update effects analysis, proposed mitigation and follow-up, as well as significance predications, as applicable.</p>

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			Fisheries and Oceans Canada noted that the NAFO Annual Compliance Review (https://www.nafo.int/Fisheries/Compliance) may provide key overview information on number of vessels, gear type, fishing activity in the NAFO Regulatory Area.	
Accidents and Malfunctions – Descriptions, Types of Accidents				
IR-70		Section 7.2 Accidental Event Probabilities and Models	Section 7.2 of the EIS states that two categories of accidental events were assessed, batch spills and blowouts, as they represent the most consequential scenarios. The EIS does not describe other types of accidents and malfunctions related to the project, such as equipment loss or structural stability.	Comment on the probability of other potential types of accidents and malfunctions, including a dropped object, and provide an analysis of associated environmental effects.
Accidents and Malfunctions – Descriptions, Blowouts				
IR-71		Section 7.2.1.2 Blowouts During Drilling	Section 7.2.1.2 of the EIS describes the 2010 well blowout of the Macondo well in the Gulf of Mexico, where an estimated 5,000,000 bbl were spilled over 91 days. The EIS states that the investigation resulted in lessons learned in terms of improved technology, operational, safety and environmental procedures.	Discuss lessons learned from Macondo and their specific application to Husky Oil Operations Limited's offshore exploratory drilling projects, generally and specifically in the offshore of eastern Newfoundland.
IR-72		Section 7.2.1.3 Shallow Gas Versus Deep-well Blowout	<p>Section 7.2.1.3 states that the vast majority of blowouts and well releases are of the shallow gas variety; however, other possible causes of blowouts, i.e. loss of well control, are not described, nor is there a discussion of the likelihood of encountering shallow gas or the other factors that may cause a blowout in the Newfoundland and Labrador offshore.</p> <p>Section 7.2.1.3 states that shallow gas blowout frequencies in the North Sea and in the Gulf of Mexico have been on the decline in recent years; however, the relevance to the proposed Project of a source focused on the North Sea and Gulf of Mexico is not explained. Data from 1980 to 1997 is presented.</p> <p>Section 7.2.1.3 of the EIS is titled Shallow Gas versus Deep-well Blowout; however, there is no discussion or comparison made. The comparison between shallow gas and deep well blowout is not clear.</p>	<p>Describe the potential causes of loss of well control that result in a blowout, including encountering shallow gas.</p> <p>Explain why shallow gas blowout frequencies in the North Sea and in the Gulf of Mexico have been on the decline in recent years, and the applicability to the proposed Project. Consider updated information (post 1997) if available.</p> <p>Clarify the comparison between shallow gas versus deep-well blowout and applicability to the proposed Project.</p>
IR-73		Section 7.2.1 Oil Spill Risk and Probabilities	<p>Section 7.2.1 of the EIS, includes a categorization of hydrocarbon spill sizes in Table 7.2, defined as:</p> <ul style="list-style-type: none"> extremely large – greater than 23,850 cubic metres very large – greater than 1,590 cubic metres large – greater than 159 cubic metres small – less than 0.159 cubic metres. <p>However, the EIS does not discuss the sources and causes of large spills.</p>	<p>With respect to large spills as defined in the EIS, discuss the following:</p> <ul style="list-style-type: none"> the sources and causes of large spills, based on records for Atlantic Canada; and the plausible worst-case scenario release volume for each of crude oil, hydraulic oil, diesel, diesel and formation fluids, and mixed oil.

IR Number	External Reviewer ID	Reference to EIS	Context and Rationale	Specific Question/ Information Requirement
Accidents and Malfunctions – Descriptions, Batch Spills				
IR-74		Section 7.2.1.4 Platform Spills Involving Small Discharges	<p>Section 7.2.1.4 of the EIS states that small spills are the most probable spill events that could occur during a drilling program. These spills include crude oil, hydraulic oil, diesel, diesel and formation fluids and mixed oil. The EIS provides the frequency of small spills in four size ranges (less than on bbl, 1 to 49.9 bbl, 50 to 99 bbl, and 99.1 to 500 bbl) from exploration platforms for the Newfoundland and Labrador offshore from 1997 to 2016; however, neither sources nor causes of the spills are identified.</p> <p>The EIS states that half of the spills in the 1 to 49.9 bbl range occurred in the first three years that spills were recorded. It is unclear if the proponent has drawn a conclusion from this.</p> <p>In addition, the EIS did not assess the potential for the spill of whole SBM in Table 7.9.</p>	<p>Discuss the following:</p> <ul style="list-style-type: none"> sources and causes of batch spills of crude oil, hydraulic oil, diesel, diesel and formation fluids and mixed oil; typical sources of releases, based on the records for Atlantic Canada; potential impacts to the modelling results if a greater spill volume was considered; and plausible worst-case scenario release volume of batch spills of each of crude oil, hydraulic oil, diesel, diesel and formation fluids, and mixed oil <p>Clarify the conclusion drawn, if any, from the statement that half of the spills in the 1 to 49.9 bbl range occurred in the first three years that spills were recorded.</p> <p>Provide an expanded analysis of the potential effects of a whole SBM spill on relevant valued components, including sensitive benthic species. Provide information related to the behavior of spilled SBM and the potential maximum area that could be affected by a large-scale spill.</p>
Accidents and Malfunctions – Descriptions, SBM Spills				
IR-75		Section 7.2.2 Synthetic-based Whole Mud Spill Trajectory Modelling	<p>Table 7.10 of the EIS presents the number and volume of spills from exploratory wells in Newfoundland and Labrador of synthetic-based drilling fluids. This table does not account for spills from exploratory wells in Nova Scotia such as the Marathon Crimson spill which, if included, would show spills with greater volumes (i.e. 354,000 litres).</p> <p>BP Canada Energy Group ULC (BP Canada) reported on June 22, 2018, an unauthorized discharge of synthetic based drilling mud (SBM) from the West Aquarius Drilling Unit. A preliminary estimate of the volume discharged is approximately 136 cubic metres (136,000 litres).</p> <p>Section 7.2.2 describes the synthetic-based mud spill trajectory modelling completed for the White Rose Extension Project approximately 50 kilometres from the exploration licenses for this Project, however, no figure is provided. The EIS states that the potential synthetic-based muds spill release scenarios modeled were the following: surface tank discharge, riser flex joint failure, and blow-out preventer disconnect. The Agency notes that the cause of the June 2018 spill from BP Canada’s West Aquarius drilling installation has been determined to be a loose connection in the mud booster line. With respect to potential synthetic-based mud spills, Section 7.2.2 describes the four release spill scenarios that were modeled. Section 7.3.4.3.3 states “Synthetic-based whole mud spills, if they accidentally occur, have some potential to form a sheen on the water’s surface. However, the most likely scenario would be a release at depths greater than usually used by migratory birds.”</p>	<p>Provide a figure with the synthetic-based mud spill location modelled for the White Rose Extension Project in the project area of the proposed Project and in relation to the project ELs.</p> <p>Considering the recent spill of whole SBM from the West Aquarius Drilling Unit, discuss the following:</p> <ul style="list-style-type: none"> what volume of whole synthetic based mud is within the drilling system at any given time; what volume would be considered a plausible worst-case scenario release; potential scenarios (other than those described in Section 7.2.2 of the EIS), including a malfunction in the connection of the mud booster line, that could release a “greater” volume (“worst-case scenario” volume), and the likelihood of their occurrence in this Project; and qualitative evaluation of anticipated impacts to the modelling results if a greater spill volume had been used. <p>Provide an explanation of why subsurface synthetic-based whole mud spills are more likely than a surface tank discharge.</p>

IR Number	External Reviewer ID	Reference to EIS	Context and Rationale	Specific Question/ Information Requirement
			This suggests releases at depth would be flex joint failure or Blowout Preventer (BOP); however, no explanation of why the flex joint failure and blowout preventer disconnect scenarios are more likely than a surface tank discharge is provided.	
IR-76	DFO-29	Section 7.2.2 Synthetic-based Whole Mud Spill Trajectory Modeling	<p>Synthetic-based whole mud spill trajectory modeling for the White Rose Project (Husky 2012) were presented in the environmental impact statement stating that “As all the ELs in this assessment are on the Grand Banks in similar water depths as the WREP, the likely dispersion of whole SBM from an accidental release is applicable to the ELs in this assessment.” Fisheries and Oceans Canada advised that while the modelled spill sources are only approximately 17 to 48 kilometers from the centroid of the ELs under assessment, ocean conditions (e.g., currents) may change considerably in the region.</p> <p>Model equations in this report (i.e., pages 14-15 in Husky 2012) are unclear and results cannot be assessed.</p>	<p>Discuss differences in ocean conditions (e.g. currents) between the proposed Project and the White Rose site with respect to the synthetic-based whole mud spill trajectory modeling, and provide a qualitative evaluation of anticipated impacts to the modelling results based on ocean conditions in the ELs.</p> <p>Provide the equations for the completed synthetic-based mud spill trajectory modeling for the White Rose Extension Project.</p>
Accidents and Malfunctions – Model Inputs, Blowouts				
IR-77	DFO-30; PNIN-19	Section 7.3 Accidental Events Environmental Effects Assessment	<p>Figures provided in the EIS with respect to the spill trajectory probabilities are truncated by the boundaries of the numerical domain (Figures 7-12 – 7-14). No further information is provided in the EIS on the when ecological thresholds are reached, nor the probability of shoreline oiling is reached.</p> <p>In addition, Section 7.3 of the EIS states that “subsea and surface blowout rates of 40,476 bopd were modelled for 120 days or until the oil evaporated and dispersed from the surface.” If oil was discharging for 120 days, then presumably, oil would require more than 120 days for evaporation and dispersion. The text for the worst case scenario is unclear.</p>	<p>Provide a rationale for the selection of boundaries for stochastic modelling. Discuss the limitations of the truncated spatial extent of spill dispersion results, including the implications for shoreline contact, including Sable Island and any international lands.</p> <p>Provide a discussion on the selection of duration of model simulations, including details on time required for oil to evaporate and disperse. Provide a rationale for not having a model duration in excess of spill duration.</p>
IR-78	DFO-32	Section 7.2.1 Offshore Spill Model Scenarios	The Proponent states that “At the exploration stage it is not possible to define all possible factors needed to calculate blowout rates, blowout duration, and expected release volume.” The EIS does not contain rationale of how the model represents a “worst case” scenario.	Provide a rationale of how the model represents a “worst case” scenario.
Accidents and Malfunctions – Emergency Planning and Response				
IR-79		Section 2.4.3 Logistical Support	<p>The EIS explains that Husky is the operator of the White Rose development project also off the east coast of Newfoundland. It involves a floating production, storage, and offloading (FPSO) facility, the SeaRose FPSO.</p> <p>Section 2.4.3 of the EIS states that Husky currently maintains logistical support to the SeaRose FPSO facility and to MODUs operating within the White Rose field and Table 7.1 (Oil Spill Response Equipment) states that Tier 1 response equipment, out-rigger arms, booms, skimmers and spill tracker buoys, are stored on the SeaRose FPSO.</p>	Clarify what emergency response equipment and services will be made available from the SeaRose FPSO versus the drilling installations and vessels of the proposed Project.

IR Number	External Reviewer ID	Reference to EIS	Context and Rationale	Specific Question/ Information Requirement
			<p>Section 7.1.8 of the EIS states that Tier 2 response level equipment, including producing operator-owned equipment such as the Norweigan Standard System, are available. However, the location of producing operator-owned equipment is unclear with respect to this project.</p> <p>With respect to the necessary equipment and services for emergency first response, it is unclear what will be made available from the SeaRose FSP versus the proposed Project drilling installation.</p>	
IR-80		Section 7.1.3.2 Net Environmental Benefit	<p>The EIS Guidelines require that the environmental effects of spill response measures outlined in the emergency response plan be considered (Section 6.6.1).</p> <p>Section 7.1.3.2 of the EIS states that a Net Environmental Benefit Analysis will be used to assess and compare the feasibility and environmental and socio-economic impacts of employing different oil spill response techniques (including but not limited to dispersant application) to prevent or reduce contact of the oil with resources most likely to be affected. However, the EIS does not explain how the Net Environmental Benefits Analysis is conducted, what is included in the assessment, how it enables spill responders and stakeholders to choose the best response option, nor how it achieves the objectives of maximizing benefits and minimizing potential environmental effects.</p> <p>The EIS also states that a Net Environmental Benefits Analysis was submitted jointly by Husky, Suncor and ExxonMobil to the C-NLOPB in December 2013 and that the operators are currently preparing a response to review comments received from the C-NLOPB in 2016 (refer to Section 7.1.10.3.3).</p>	<p>Describe the Net Environmental Benefits Analysis, including the following information:</p> <ul style="list-style-type: none"> • explain how a Net Environmental Benefits Analysis is conducted; • explain what is included in the assessment; • explain how it enables spill responders and stakeholders to choose the best response option; • identify who the stakeholders are; • explain how it achieves the objectives of maximizing benefits and minimizing potential effects to the environment; • describe the updates to the joint Husky, Suncor and ExxonMobil NEBA based on the 2016 comments from the C-NLOPB; and • describe what measures for shoreline protection will be included in the Net Environmental Benefits Analysis, and provide information on the engagement of assessment teams for systematic surveys of impacted shorelines, who will determine appropriate clean-up tactics and when this would take place.
IR-81		Section 7.3 Accidental Events Environmental Effects Assessment	<p>Section 7.3 of the EIS describes the potential environmental effects of diesel batch spills, hydrocarbon blowouts and synthetic-based mud spills.</p> <p>Section 7.1.2 of the EIS states that spill response options include surveillance and monitoring, testing and application of a spill treating agent; mechanical dispersion, containment and recovery, and wildlife measures. However, any differences in the applicability of the identified response options to the three accidental event scenarios (i.e. diesel batch spills, hydrocarbon blowouts and synthetic-based mud spills), is not described.</p> <p>The EIS states that Husky has an established corporate Incident Coordination and Response Management Plan (EC-M-99-X-PR-00003-001) and an Oil Spill Response Procedure - East Coast Oil Spill Response Plan (EC-M-99-X-PR-00125-001). It is not clear whether these are existing documents for the existing Husky development project or documents that will be prepared for the proposed exploratory project.</p>	<p>Describe the spill response tactics to be utilized in the event of a synthetic-based mud spill.</p> <p>Discuss the differences in spill response equipment and strategies to be utilized in the event of a diesel spill versus a hydrocarbon spill vs a synthetic-based mud spill.</p> <p>Clarify what emergency management documents will be individually prepared or the proposed Project versus documents that exist for the proponent in a broader sense.</p>
IR-82	ECCC-12	7.1.4.4.3 Oiled Wildlife Response	Section 7.1.4.4.3 of the EIS states “Husky maintains an oiled seabird treatment facility, along with a number of trained responders and a wildlife veterinarian. For longer-term rehabilitation, Husky sponsors a local rehabilitation facility.”	Provide information on how a potential incident that would affect more than 10 recoverable individuals would unfold as the carrying capacity of the local rehabilitation facility is limited to 10 affected individuals at one time.

IR Number	External Reviewer ID	Reference to EIS	Context and Rationale	Specific Question/ Information Requirement
			<p>Environment and Climate Change Canada advises that the facility mentioned in the above statement is only permitted to host up to 10 affected individuals at one time.</p> <p>The discussion in Section 7.14.4.3 Oiled Wildlife Response only focuses on measures to be taken with respect to avian species.</p>	<p>Provide information on the response measures to be taken for non-avian species following an accidental event.</p>
IR-83	ECCC-24;14	<p>Section 7.1 Spill Prevention and Response;</p> <p>7.1.4.4.3 Oiled Wildlife Response</p>	<p>Section 7.1.4.4.3 of the EIS discusses oiled wildlife responses. Environment and Climate Change Canada that all emergency incidents can potentially affect wildlife and that during these incidents ECCC acts as a Resource Agency, which sets wildlife emergency response standards and guidelines related to Migratory Birds and Species at Risk under its jurisdiction. As such, Wildlife Response requires a Wildlife Emergency Response Plan (WERP), which is a component of the Incident Command System for pollution incidents affecting wildlife, and should address all of the various procedures and strategies required to mount an effective wildlife response. No information on Wildlife Emergency Response Plans is provided in the EIS.</p> <p>At minimum, a WERP must include the following information:</p> <ol style="list-style-type: none"> 1) Information on the wildlife potentially at risk in the area; 2) Mitigation measures to deter non-affected wildlife from affected areas; 3) Mitigation and response measures to be undertaken if wildlife and/or sensitive habitats become contaminated by the incident (including treatment of oil-affected wildlife); and 4) The type and extent of wildlife monitoring that would be conducted during and following a pollution incident. <p>In these situations, Environment and Climate Change Canada advises that in Tier 2 and Tier 3 responses a third party wildlife response organization with trained and dedicated observers should be used to implement the Wildlife Response Plan, including conducting at-sea surveys, implementing deterrence measures, and oiled wildlife capture and treatment, under the oversight of Environment and Climate Change Canada.</p> <p>ECCC advises that it should be consulted when developing WERPs and that they are available to review WERPs prior to their implementation.</p>	<p>Describe the preparations of a Wildlife Emergency Response Plan, including the timing of its preparation, standard content including likely mitigation measures, and how data and information collected during its implementation would be used.</p> <p>Describe how Wildlife Emergency Response Plans would be implemented during Tier 2 and 3 responses.</p>
Accidents and Malfunctions – Dispersants, Capping Stack, Relief Well and other Response Options				
IR-84	KMKNO-31	7.1.9.3 Tier 3 Response to a Well Blowout	<p>The EIS describes the timelines involved with the mobilization and installation of a capping stack, but no information has been provided on their expected operational lifespan, the timing of decommissioning, nor on any follow-up monitoring activities that would be required if the capping stack is removed from a wellhead.</p> <p>It is important to understand the lifespan and decommissioning implications for wells that may become compromised due to blowout events so as to better understand and characterize any longer-term environmental effects that may occur, and may therefore need to be monitored for, at blowout-affected well sites.</p>	<p>Given that a capping stack may have to remain affixed to a wellhead for an extended period of time should dynamic well kill measures prove unsuccessful, provide information on the operational lifespan of capping stacks and any contingencies in place to either extend their service or replace them.</p> <p>Provide information on when a capping stack system may be decommissioned and describe any potential wellhead integrity monitoring efforts that would follow, including expected timeframes of such.</p>

IR Number	External Reviewer ID	Reference to EIS	Context and Rationale	Specific Question/ Information Requirement
IR-85	KMKNO-31	Section 7.1 Spill Prevention and Response	<p>Section 7.1 (Spill Prevention and Response) of the EIS provides information related to the complement of tools and strategies for spill response. However, in several instances additional information is required.</p> <p>Figure 7-3 (Capping Stack Installation Timeline) outlines “best response timeline” and “nominal response timeline”. The meaning of “nominal” in this context is unclear. Factors that would contribute to the difference in “best response” versus “nominal” timelines are not described.</p> <p>The EIS does not describe whether additional equipment would be required to be brought to the site for the subsea or debris clearance activities.</p> <p>The EIS states that the mobilization of the capping stack from Norway to the wellsite is expected to range from 13 to 24 days; however, the assumptions made in calculating this range are not described. Further, the EIS does not describe the steps included in mobilization (e.g. final equipment preparation and testing, shipment to a port facility; loading on a vessel) in Norway, and what the timeframes may be for each step.</p> <p>Figure 7-3 of the EIS shows the mobilization of the capping stack would begin on day one post-incident. However, no further discussion is provided confirming that the decision to initiate mobilization of the capping stack from Norway taken immediately.</p> <p>It is important to understand the response measure timeframes involved with the deployment of all subsea incident response apparatus so that well control preparation activities and associated timeframes can be fully appreciated and the magnitude of environmental effects resulting from any extended timelines can be properly determined and characterized to the greatest extent possible.</p>	<p>Provide information on steps and timeframes involved in the deployment of subsea incident response equipment, such as the capping stack, including the following:</p> <ul style="list-style-type: none"> describe the difference in the “best response timeline” and “nominal response timeline” presented in Figure 7-3, and discuss the factors that are likely to influence the timeline in an actual event, including harsh weather; describe the worst-case response timeline; clarification on whether additional equipment would be required to be brought to the wellsite after a blow-out for use before the capping stack can be installed (e.g. for debris removal); a description of the decision making processes and timeline associated with the deployment of the capping stack; clarification on whether a contingency capping stack is available in another location.
IR-86		Section 2.3 Project Location	<p>The EIS Guidelines require a discussion on the use and feasibility of a capping stack to stop a blowout and resultant spills. Section 2.3 of the EIS states that water depths range from approximately 87 meters to 211 meters within the project area. While the proposed wells are located in shallow water, less than 500 meters, there is no discussion of the possible limitations of the capping stack in shallow water, or the additional equipment that may be required when affixing a capping stack in shallow waters.</p>	<p>Provide additional information on the technology available to cap a shallow-water well, including information available to support the effectiveness of the technology, with respect to the potential shallow depths in the ELs.</p> <p>Discuss limitations associated with the use of a capping stack in particular in shallow water environments, including any differences in the steps taken to affix a capping stack in shallow water that may not be required when capping a deep water well (e.g. use of dispersants to reduce flow rate). Explain how the limitations of the technology could affect the length of time it may take to effectively cap a well.</p> <p>If applicable, update the effects analysis to reflect these additional considerations.</p>
IR-87		Section 7.1.9.3 Tier 3 Response to a Well Blowout	<p>Section 7.1.9.3 of the EIS describes the mobilization and installation of a capping stack as the response to a subsea blowout; however, while Section 7.1 states that relief well plans are within the scope of the contingency plan, no description is presented in the EIS on relief wells as a response option.</p>	<p>Provide information on relief wells as a response option to a subsea blowout, including the following:</p> <ul style="list-style-type: none"> circumstances under which a relief well would be considered; factors considered in the decision to drill a relief well; timelines for drilling a relief well, including securing and mobilizing a rig transit;

IR Number	External Reviewer ID	Reference to EIS	Context and Rationale	Specific Question/ Information Requirement
				<ul style="list-style-type: none"> • site preparation; and • factors that are likely to influence the timeline in an actual event, including harsh weather.
IR-88	KMKNO-32	Section 7.1.9.3 Tier 3 Response to a Well Blowout	Section 7.1.9.3 of the EIS states that a capping stack could be mobilized from Norway to the wellsite within 13 to 24 days from initiation. The KMKNO stated that recent innovations have resulted in the design of a lighter capping stack that can be transported via aircraft, the RapidCap™ Air Mobil Capping Stack. The KMKNO indicated that the lightweight capping stack can be flown from Houston within 24 hours, decreasing the time to cap a well, and it can be deployed by a locally available vessel of opportunity with suitable crane capacity.	Discuss the economic and technical feasibility of options for decreasing capping stack response times, taking into consideration the possibility of shipping a capping stack by air. Also, discuss if there has been any recent or ongoing innovations in capping stack technology and availability, and application to the Project.
IR-89	ECCC-15, -16	7.1.9.4 Dispersants; 7.3.4.3 Assessment of Residual Environmental Effects on Migratory Birds; 7.3.4.3 Assessment of Residual Environmental Effects on Migratory Birds; 7.3.4.3.2 Subsea and Surface Hydrocarbon Blowout	<p>Section 7.1.9.4 of the EIS states the following: “In general, results showed that in an event of an accidental event, the use of dispersants offered a clear net environmental benefit in all cases (SL Ross and LGL Limited 2013). An untreated spill in the Grand Banks pose a substantial risk to globally important populations of a number of marine bird species and commercially important fisheries, as well as some risk to marine mammals and very limited risk to local finfish and shellfish populations. In summary, the risks to bird, mammal, turtle species, and in certain cases commercial fisheries can be greatly reduced by using dispersants.”</p> <p>This section discusses the net environmental benefits of dispersants with reference to SL Ross and LGL Limited (2013), which indicated a net benefit for birds. However, Environment and Climate Change Canada advises that since this report, there are new studies indicating possible negative impacts of dispersants on birds, including Fiorello et al. 2016 and Whitmer et al. 2018.</p> <p>Further, Section 7.3.4.3 of the EIS states the following: “While surface dispersant operations may not be 100% effective, subsea injection of dispersants can be expected to be more effective. Even if dispersant operations are only 50% to 70% effective, they will reduce the anticipated large impact on birds by 50% to 70% (SL Ross and LGL Limited 2013 (draft)).”</p> <p>The EIS presents an estimated number of affected birds by group of species, along with a proportion of affected population for different blowout scenarios (i.e. by time of year and whether dispersants are used or not); however, the draft document cited (SL Ross and LGL Limited 2013), is not available for review.</p> <p><u>References</u></p> <p>Fiorello, C.V., Freeman, K., Elias, B.A., Whitmer, E., and Ziccardi, M.H. (2016). Ophthalmic effects of petroleum dispersant exposure on common murre (<i>Uria aalge</i>): An experimental study. <i>Marine Pollution Bulletin</i>. 113:387-391.</p> <p>Whitmer, E.R., Elias, B.A., Harvey, D.J., and Ziccardi, M.H. (2018). An Experimental Study of the Effects of Chemically Dispersed Oil on Feather Distribution and Waterproofing in Common Murres (<i>Uria aalge</i>). <i>Journal of Wildlife Diseases</i>. 54(2): 315-328</p>	<p>Taking into consideration information and references provided by Environment and Climate Change Canada, update the effects assessment of dispersants on birds, including mitigation and follow-up, as applicable.</p> <p>Provide SL Ross and LGL Limited (2013) for review.</p>

IR Number	External Reviewer ID	Reference to EIS	Context and Rationale	Specific Question/ Information Requirement
IR-90		Section 7.1.9.4 Dispersants	The EIS Guidelines require that the environmental effects of measures outlined in the emergency response plan should also be considered in the EIS. While Section 7.1.9.4 of the EIS outlines effects of dispersant use, the EIS does not discuss other possible response options that may have effects, such as in situ burning.	Provide a discussion of the potential environmental effects of response measures on VCs. With respect to in situ burning specifically, describe the potential for incomplete burning and resulting oil in the water and assess associated effects. Describe proposed mitigation and follow-up, as applicable for response measures
IR-91		Section 7.1.9.3 Tier 3 Response to a Well Blowout	Section 7.1.9.3 of the EIS states that both injection (subsea) and application (surface) of dispersants may be used as a response tool in the event of a blowout. However, no description is provided of when one versus the other may be required. The assessment of potential effects of dispersants on applicable VCs does not distinguish between injection and surface application of dispersant, which may present considerably different risks, effects, and benefits.	Describe subsea versus surface use of dispersants, including likely scenarios when one method versus the other may be considered. Discuss differences in potential effects between subsea and surface dispersant application.
IR-92	DFO-28	Section 7.1.9.4.1 Dispersant Effects	Fisheries and Oceans Canada advises that deep-water corals have not fully recovered following the Macondo blowout (Girard and Fisher 2018). Many of the observed effects are attributed to the use of dispersants, but such effects have not been addressed in the EIS.	Discuss potential effects of dispersants on sensitive benthic habitat/species.
Accidents and Malfunctions –Effects and Mitigation				
IR-93	DFO-34	Section 7.3.1.1 Project Pathways for Effects	Section 7.3.1.1 of the EIS discusses potential effects of an accidental event on plankton including phytoplankton and zooplankton. Fisheries and Oceans Canada has advised that additional information should be provided on potential effects given literature following the Deepwater Horizon oil spill. Some literature suggests that the effects of oil spills on phytoplankton and the microbial food web can vary in response to the specific composition of crude oil from a site. Additionally, Fisheries and Oceans Canada has indicated that mixing depth of the water column and water temperature are a concern as they can interact to affect the length of time needed for microbial action to degrade crude in the water column.	Provide additional discussion on the effects of oil spills on zooplankton and phytoplankton.
IR-94	DFO-35	Section 7.3.1.3.1 Diesel Batch Spill from MODU and OSV	Section 7.3.1.3.1 of the EIS discusses the residual environmental effect on fish and fish habitat, however Fisheries and Oceans Canada has indicated that most of the analysis regarding effects of a diesel spill is focused on benthic organisms. There is little discussion in the EIS as to how a diesel spill would affect pelagic organisms.	Discuss potential effects of a diesel spill on pelagic organisms.
IR-95		7.3.2.3.2 Subsea and Surface Blowout	Section 7.3.2.3.2 of the EIS indicates that in the event of unmitigated subsea or surface blowout, a slick would likely reach an active fishing area, and that fishing would likely be halted because of the possibility of fouling gear and fishing vessels. It is stated that “if the release site is some distance from snow crab fishing groups, there would be time to notify fisheries of the occurrence and prevent the setting or hauling of gear and thus prevent or reduce gear damage.” However, there is no detail on the timeline for this, nor is there is a discussion of alternatives if gear can not be hauled.	Provide information related to what ‘some distance’ may be defined as, if there is not a pre-determined distance, discuss the factors that would be considered when determining if gear could be hauled. Discuss the measures to be taken if there is insufficient time, or if other factors result in gear not being able to be hauled. Discuss how this scenario would be addressed in any

IR Number	External Reviewer ID	Reference to EIS	Context and Rationale	Specific Question/ Information Requirement
				developed fishery compensation plans, and the effects of the spill on a target species if gear could not be retrieved.
IR-96	KMKNO-35, -37	7.3.1 Fish and Fish Habitat	<p>The KMKNO expressed concerns with the indirect effects of oil spills on fish and fish habitat. Concerns included:</p> <ul style="list-style-type: none"> • Effects of oil spills on primary and secondary productivity of water bodies, which in turn may effect fish food supply; and • Effects of an accidental event on water quality including changes to chemical composition, temperature, oceanographic conditions, etc. 	Provide an expanded discussion of the potential for contamination of fish and fish habitat following an oil spill through indirect pathways, such as decreased water and contamination in the food chain.
IR-97	EFN-27	Section 4.1.6 Climate Change	Section 4.1.6 of the EIS provides information on the effects of climate change on concentration of greenhouse gases in the atmosphere, increasing temperature, and an increase in sea levels, storm intensity, sea surface temperatures and the number of icebergs observed. The EIS also states an increase in the number of hurricanes and tropical storms in hitting the province of Newfoundland and Labrador. However, there is no discussion throughout the EIS regarding the influence that an increase in storm frequency and intensity may have on the potential for accidental events.	Discuss the effect of climate change, and storm frequency and intensity and the potential for accidental events.
Effects of the Environment on the Project				
IR-98		Section 8.2.2.1 Extreme Weather Conditions	<p>On November 16, 2018 the SeaRose production platform experienced a loss of pressure from the subsea flowline while preparing to restart production. At the time of restarting, waves were recorded at 8.4 metres. Based on data from Table 4.9 in the EIS, an 8.4 metre high wave would occur less than every 10 years in November.</p> <p>Section 8.2.2.1 of the EIS details the 100-year extreme significant wave height ranges and describes how extreme weather conditions such as waves and wind may affect the Project. Section 8.2.2.1.1 states that extreme wave and wind conditions could result in suspension or delay of Project activities.</p> <p>However, there is no information pertaining to specific extreme weather condition parameters (e.g. wind speed or wave height) that could affect Project activities through either suspension or delays. It is also not clear under what conditions Project activities would be modified as a result of extreme weather conditions.</p>	Discuss parameters for extreme weather conditions for which Project activities could be modified, suspended or delayed. Include limits for routine operations in extreme weather conditions, superstructure icing, sea ice and icebergs.
IR-99		Section 8.2.2.1. Extreme Weather Conditions	Section 8.2.2.1.1 of the EIS states that in the unlikely event of a spill, extreme weather could affect spill response operations. This section also refers to Section 7.1 as this section details how delays due to weather or sea states have been included in the estimated maximum timeline for response to accidental events. However, the information as to how weather and sea states impact spill response timing does not appear to be located in this section.	Taking into consideration the spill event of November 16, 2018, provide additional information on the effects of extreme weather on spill response based on the learnings from this event (e.g. limitations and delays on spill response). Provide timelines and responses and lessons learned, where applicable.

IR Number	External Reviewer ID	Reference to EIS	Context and Rationale	Specific Question/ Information Requirement
			On November 16, 2018, a spill event occurred at the SeaRose production facility and spill response measures had to be carried out during extreme weather.	
IR-100		Section 8.3.3 Sea Ice and Icebergs	<p>On March 29, 2017 an iceberg came within 180 metres of the SeaRose production platform. CNLOPB completed a report on the incident and found that Husky did not:</p> <ul style="list-style-type: none"> • follow its Ice Management Plan, including disconnecting; • ensure that the Ice Management Plan was followed; and • have the order given by the Offshore Installation Manager to disconnect the production platform in accordance with the Ice Management Plan. <p>The CNLOPB report also identified numerous contributing factors.</p> <p>The EIS does not provide information pertaining to this incident nor the changes to Husky's procedures and protocols that resulted from it.</p>	<p>Describe any changes made to the Ice Management Plan and emergency response plans as a result of the March 29, 2017 incident and their applicability to the proposed Project.</p> <p>Provide details related to lessons learned resulting from the incident.</p>
IR-101	C-NLOPB-15	Section 8.3.3.3 Physical Management	C-NLOPB advises that the discussion of physical measures to manage pack-ice is not appropriate in the context of a semisubmersible MODU (column-pontoon rigs) unless it is "ice-classed" in accordance with the class society rules (ex. <i>ABS Rules for Building and Classing Steel Vessels, Part 6 Optional Items and Systems</i> or the <i>ABS Guide for Building and Classing Vessels Intended for Navigation in Polar Waters</i>). These installations will generally depart the well site prior to the arrival of pack ice.	Confirm if Husky intends to utilize an ice-classed MODU. If not, provide a description of sea ice management practices appropriate for semisubmersible MODUs that are not "ice-classed".
IR-102	NRCan-01	Section 8.2.1 Marine Geology - Sediment and Seafloor Instability	Section 8.2.1 of the EIS discusses slope instability, seismicity, sediment loading, venting of shallow gas, gas hydrates, seabed instabilities and ice scour; however, Natural Resources Canada advises that the importance of elevated or excess pore pressure in slope stability is not included. Examples of slope instability are provided for the Orphan Basin, Flemish Pass, and the Storegga slide in Norway on page 8.2. The connection the between Storegga slide and the proposed Project is unclear.	Discuss the role of elevated or excess pore pressure in slope stability for the proposed Project. Clarify the applicability of the examples of slope instability at the Orphan Basin, Flemish Pass, and the Storegga slide in Norway for proposed Project.
IR-103	NRCan-02	Section 8.2.1 Marine Geology - Sediment and Seafloor Instability	<p>Section 8.2.1 of the EIS discusses seafloor stability, however Natural Resources Canada advises that post slope failure where the sediment may appear to be stable has not been considered. There are numerous instances where these failures have been re-mobilized. In order to assess the slope stability, the proponent should determine the slope angle, unit weight and shear strength of the sediment at a minimum.</p> <p>NRCan has provided a paper (Loloi, 2004) which presents an analysis of sediment slope instability of the southern part of the Orphan Basin for consideration.</p>	Discuss the probability of any re-mobilization of the slope failures and present information on the slope stability. Discuss factors including slope angle, unit weight and shear strength of the sediment expected at the proposed drilling sites.
IR-104	NRCan-03	Section 8.2.2.3 Seismic Events and Tsunamis	Section 8.2.2.3 of the EIS states the probability of a major seismic event or tsunami occurring during the life of the Project is considered low. Notwithstanding, there is the possibility that an earthquake or landslide outside of Canadian waters could generate a tsunami. The effects of a tsunami on the Project should be considered and discussed.	Provide a discussion of whether long distance tsunami waves would break when they hit the relatively shallow waters on the Grand Banks and the effects this would be expected to have on the Project.

IR Number	External Reviewer ID	Reference to EIS	Context and Rationale	Specific Question/ Information Requirement
Cumulative Effects				
IR-105		Section 9.2.5 Assessment of Cumulative Environmental Effects on Marine Mammals and Sea Turtles (including SAR and SOCC)	<p>Section 9.2.5 of the EIS states that underwater sound may temporarily reduce, habitat availability within the study area (i.e. due to the potential for temporary avoidance of multiple areas at once) and that this may disrupt reproductive, foraging and feeding, and/or migratory behavior of marine mammals and sea turtles if the availability of important habitat areas is affected, the likelihood of this cumulative interaction is considered low given the localized nature of potential residual project effects. No further information is provided to support the statement that effects would be localized. Underwater sound can travel hundreds of kilometres.</p> <p>Consideration should be given to how mapping could be used to illustrate the potential for overlapping cumulative effects on valued components as a result of several projects exerting discrete areas of influence simultaneously.</p> <p>The Agency's Technical Guidance document on Assessing Cumulative Effects under CEAA 2012 (April 2017 draft) identifies methodological options for analysis of cumulative effects, including quantitative models and spatial analysis.</p>	<p>Update the assessment of potential cumulative environmental effects on marine mammals using appropriate methodology (e.g. mapping, quantification and/or otherwise) taking into account:</p> <ul style="list-style-type: none"> the spatial extent of effects from activities (e.g. noise on whales) and associated cumulative effects of creating multiple zones of avoidance in the project area; the spatial range of populations of marine mammals, recognizing that effects on individuals from the same population in different areas would result in cumulative effects to the species; and that marine mammals would be affected by multiple activities (e.g. noise from drilling units, production facilities and seismic operations, as well as vessel interactions). <p>Include consideration of various underwater noise sources occurring at the same time (e.g. multiple exploration units operating simultaneously, exploration drilling occurring at the same time as geophysical activities, marine shipping etc.) and associated cumulative effects on marine mammals, including how and where thresholds for behavioral modifications or injury may be exceeded. Consider the potential accessibility of unaffected corridors between areas of influence on marine mammals and provide figures to illustrate potential projects/activities and associated zones of influence (e.g. range of effects) to which they could be exposed.</p> <p>Discuss the need for mitigation and monitoring or follow-up, and update predictions regarding the significance of effects accordingly.</p>
IR-106	CIE-03; DFO-36; EFN-28; FFAW; PNIN-23	Section 9.23 Assessment of Cumulative Environmental Effects on Fish and Fish Habitat (including SAR and SOCC)	<p>Section 9.23 of the EIS concludes that the residual cumulative environmental effects on fish and fish habitat are predicted to be not significant and that the conclusion has been determined with a high level of confidence based on an understanding of the general environmental effects of exploration drilling and other physical activities in the study area, as well as the effectiveness of standard mitigation measures. Fisheries and Oceans Canada has advised that no analysis is provided to support this statement.</p> <p>Several Indigenous groups, Première Nation des Innus de Nutashkuan, Conseil des Innus de Ekuanitshit, and Elsipogtog First Nation, expressed concern related to the cumulative effects of the Project on fish and fish habitat, in particular the cumulative effects associated with sediment contamination from multiple projects.</p>	<p>Provide an updated analysis to support the conclusion that the residual cumulative environmental effects on fish and fish habitat are predicted to be not significant and that the conclusion has been determined with a high level of confidence.</p>
IR-107	ECCC-18	Section 9.2.1.2 Offshore Exploration Drilling and	<p>Environment and Climate Change Canada has advised that it is important to acknowledge that in addition to migratory birds being attracted to offshore exploration and production facilities, the cumulative effects of artificial light have created a significant footprint¹ in the offshore which did not exist a few decades ago. The deterioration of the physical offshore environment due to light</p>	<p>Taking into account the information provided by Environment and Climate Change Canada related to cumulative effects of artificial light, update the assessment of potential cumulative environmental effects on migratory birds with how the presence of the new MODUs and other support vessels in the project area will contribute to the</p>

IR Number	External Reviewer ID	Reference to EIS	Context and Rationale	Specific Question/ Information Requirement
		Production Projects Table 9.4 Potential Residual Effects Associated with Offshore Exploration Drilling and Production Projects in the Study Area	<p>pollution needs to be considered beyond the immediate vicinity of each individual installation. The addition of the Project's exploration drilling MODUs will contribute to the overall footprint of projects in the Newfoundland and Labrador offshore that produce artificial light that attract migratory birds. More specifically, the cumulative impact of multiple artificial light footprints in a previously pristine environment needs to be taken into account, particularly with respect to how this may be altering the behaviour of nocturnal species (e.g. millions of Leach's Storm-petrels that regularly forage in and migrate through the area).</p> <p>Consideration should be given to how mapping could be used to illustrate the potential for overlapping cumulative effects on valued components as a result of several projects exerting discrete areas of influence simultaneously.</p> <p>¹Reference: Cizano, P., Falchi, F., and Elvidge, C.D. (2001). The first World Atlas of the artificial night sky brightness. <i>Monthly Notices of the Royal Astronomical Society</i>. 328(3): 689-707.</p>	<p>overall amount of artificial light currently present in the offshore, and how this increase could impact migratory birds.</p> <p>Identify mitigation measures and monitoring or follow-up if needed, and update predictions regarding the significance of effects accordingly.</p>
IR-108	WNNB-11	Section 9.2.6 Assessment of Cumulative Environmental Effects on Migratory Birds (including SAR and SOCC)	<p>Section 9.2.6 of the EIS provides an assessment of the cumulative environmental effects of the Project on Migratory Birds, including SAR and SOCC. With respect to the analysis, WNNB indicated that potential changes or alterations to seasonal migration routes were not considered in the EIS. WNNB indicated that birds use a variety of sensory and environmental cues during migration and can be impacted by changes to visual, auditory or olfactory cues (Newton 2008). As such, the numerous existing offshore projects in the project area, along with additional Project-related MODU and drilling activities, have the potential to interfere with these cues. Altered or disturbed migration routes can impact migratory bird populations.</p>	<p>Discuss the potential cumulative environmental effects of the Project on migratory birds, with respect to how migration routes could be altered or disturbed of birds travelling through the study area.</p>
IR-109	ECCC-17	Section 9.2.6 Assessment of Cumulative Environmental Effects on Migratory Birds (including SAR and SOCC)	<p>Section 9.2.6 of the EIS states that "in consideration of the various physical activities that have been, are being, and will be carried out in the study area, the Project is expected to result in a relatively small, incremental increase in cumulative residual environmental effects on migratory birds in comparison with the future scenario without the Project. With the application of proposed Project-related mitigation and environmental protection measures, residual cumulative effects on migratory birds are predicted to be not significant. This conclusion has been determined with a high level of confidence based on an understanding of the general environmental effects of exploration drilling and other third party activities in the study area, as well as the effectiveness of standard mitigation measures." Evidence regarding the effectiveness of mitigation measures has not been provided.</p>	<p>Provide a rationale supporting the appropriateness of the selected mitigation measures, or identify a broader range of potential mitigation measures to address potential cumulative effects on birds.</p>
IR-110	DFO-15	Section 6.2.10.1.1 Change in Availability of Fisheries Resources	<p>Section 6.2.10.1.1 identifies multiple pathways of effects on commercial fisheries including underwater sound, water and sediment quality and use of explosive charges; however, there is no information provided on cumulative effects predictions in section 9.2.4 of these effects pathways.</p>	<p>Discuss the potential cumulative effects on commercial fisheries from underwater sound, water and sediment quality and use of explosive charges.</p>

Required Clarifications

Clarification Number	External Reviewer ID	Reference to EIS	Context and Rationale	Required Clarification
Project Description				
CL-01	CNLOPB-02, -03; DFO-CL-33; TC-01	Section 1.3.1 Offshore Petroleum Regulatory Regime; Section 1.3.3 Other Applicable Requirements and Resources; Section 6.5.2 Regulatory and Policy Setting; Section 7.1.9.4 Dispersants	Table 1.1 of the EIS (Summary of Key Relevant Offshore Legislation and Guidelines) lists relevant regulations and guidelines that fall under the jurisdiction of the C-CNLOPB. However, the list is incomplete. Similarly, Table 1.2 Summary of Key Relevant Federal Legislation does not refer to the <i>Canada Shipping Act, 2001</i> and regulations, which govern marine transportation, including requirements for safety and protection of the environment, and the Canadian Aviation Regulations. Section 6.5.2 of the EIS states “Regulatory protection of marine sensitive areas is provided by Canada’s <i>Oceans Act</i> which authorizes DFO [Fisheries and Oceans Canada] to provide enhanced protection to marine areas of ecological or biological importance”. This statement requires further clarification as there are other legislative mechanisms, outside of Fisheries and Oceans Canada, which may be used to protect marine sensitive areas (e.g. Parks Canada Agency National Marine Conservation Areas, marine components of National Parks, Environment and Climate Change Canada National Wildlife Areas and Marine National Wildlife Areas).	Revise Table 1.1 to refer to other guidelines relevant to the Project environmental assessment, including but not limited to: <ul style="list-style-type: none"> • Measures to Protect and Monitor Seabirds in Petroleum-Related Activity in the Canada-Newfoundland and Labrador Offshore Area; • Safety Plan Guidelines; • Incident Reporting and Investigation Guidelines; and • Physical Environmental Programs Guidelines. Revise Table 1.2 to include the <i>Canada Shipping Act</i> , the <i>Canadian Aviation Regulations</i> , and any other relevant federal regulations. Provide information related to any legislative mechanisms, in addition to Canada’s <i>Oceans Act</i> , which may be used to protect marine sensitive areas.
CL-02	C-NLOPB-06	Section 2.5.4 Well Testing	Section 2.5.4 of the EIS states that wells may be tested by multiple methods to gather additional details on any potential reservoir. The proponent then states that two drillstem tests may be expected to be required from 10 exploration wells. It is unclear if any wells tested will be tested by drillstem testing or if there are other tests (e.g. core sampling or well logging) that may be utilized to determine the if there are enough hydrocarbons to produce the well.	Confirm if any formation flow testing methods, other than drillstem testing will be conducted to determine the presence and quantity of hydrocarbons. If so, confirm whether those other methods would require flaring. In addition, confirm if Husky Energy would limit its number of well tests to two drillstem tests or is there a possibility that additional drillstem tests may be conducted.
CL-03	CNLOPB-01	Section 1.2.1 Offshore Experience	Section 1.2.1 of the EIS states that Husky has drilled a total of 87 wells to date. However, It is not clear whether these wells are within the Newfoundland and Labrador Offshore Area, or elsewhere.	Confirm whether the referenced 87 wells were drilled in the Newfoundland and Labrador offshore. If a portion of the 87 wells were drilled elsewhere, indicate how many wells Husky has drilled in the Newfoundland and Labrador offshore region.
CL-04		Section 2.1 Project Purpose, Rationale, and Need; Section 2.4.2 Offshore Exploration Wells	Section 2.4.2 of the EIS states that up to 10 single vertical and/dual side-tracked wells are proposed within the project area, and that the number of wells is contingent on geophysical/ geotechnical surveys, drilling results and whether new ELs are acquired. However, no further information is provided on side-tracking. Under Section 2.1 of the EIS Guidelines, the designated Project is the mobilization, operation and demobilization of MODU(s) designed for year-round operations for the drilling, testing and abandonment of up to ten wells (exploration or delineation).	Provide the following information on Project activities: <ul style="list-style-type: none"> • a description of the project component side-tracking; and • confirm whether 10 wells is the maximum number of wells that would be drilled. Update the effects analysis as appropriate.

Clarification Number	External Reviewer ID	Reference to EIS	Context and Rationale	Required Clarification
Fish and Fish Habitat / Marine Mammals and Sea Turtles				
CL-05	DFO-CL-02, CL-41	Section 4.2.2 Benthic Habitat	Based on Table 4.19, EL 1155 does not contain many of the species present in ELs 1151 and 1152. The statement “[a]s shown in Table 4.19, the benthic organisms within the ELs are similar among the three licence areas...” is not consistent with the information in Table 4.19. Fisheries and Oceans Canada advises that there are many errors in Table 4.19. The table should include taxon, not spp., as many taxa are identified to high levels only.	Clarify the species likely to be present in ELs 1151, 1152, and 1155.
CL-06	DFO-27	Section 4.2.2 Benthic Habitat	Benthic species presence-absence data are presented in Table 4.19 of the EIS. Data are trawl-derived and aggregated over long distances. Fisheries and Oceans Canada advises that while in many cases trawl-derived benthos data are all that are available, it should be recognized that this sampling method underestimates both benthic abundance/biomass and species richness. In an earlier study on sandy bottoms of the Grand Banks, only approximately 0.5% of standing benthic biomass is captured by the trawl. More accurate estimates of benthic biomass on the Grand Banks can be found from grab samples collected during the course of a three year trawl impact experiment (Prena et al. 1999, Kenchington et al. 2001) and a three year grab sampling program (Gilkinson 2013).	Taking into consideration the referenced grab samples, discuss benthic abundance/biomass and species richness. Provide an updated effects assessment, as applicable.
CL-07	DFO-06; Public Comment	Section 4.2.5 Marine Mammals	The EIS Guidelines require baseline information on marine mammals that may be present, including the times of year they are present. Some information in Table 4.27 is inconsistent with other parts of the EIS. For example: Potential of occurrence in the study area is low for Northern Bottlenose Whale, Sperm Whale, Harbour Porpoise and Killer Whale in Table 4.27; however, Figures 9 (page D-37), 15 (page D-51), 16 (page D-53) and 17 (page D-55) suggest a greater potential of occurrence. Potential occurrence for Minke Whale in Table 4.27 is noted as High is not consistent with information presented within Appendix D which notes that “none have been observed within the area from 2004-2014”. Time of presence for the Hooded Seal is December to April in Table 4.27, but on D-43, it is noted that these seals may be present in the study area up to June. Potential for Occurrence for the Northern Bottlenose Whale is low in Table 4.27, but high in both Table 4.28 and 6.12. The description provided in Appendix D (see Figure 8) would suggest that occurrence is likely low.	Clarify the information in Table 4.27, Table 6.12 and Appendix D to remove inconsistencies.
CL-08	DFO-CL-07	Section 4.2.5 Marine Mammals	With respect to Grey Seal, Table 4.27 notes potential occurrence in the study area to be “low to moderate” while information presented within Appendix D notes that Grey Seal are rare in the area.	Clarify the potential occurrence of Grey Seal in the study area.
CL-09	DFO-CL-10	Section 4.2.6 Sea Turtles	Figure 4-31 of the EIS shows sea turtle sightings in the study area, however does not present data on a per species basis and therefore does not show species-specific range and occurrence.	Provide information to support Figure 4-31 to allow for species-specific sea turtle analysis.

Clarification Number	External Reviewer ID	Reference to EIS	Context and Rationale	Required Clarification
CL-10	DFO-18	Section 6.3.10.4 Summary of Project Residual Environmental Effects; Section 11.3 Residual Environmental Effects	Fisheries and Oceans Canada noted that Table 6.16 Project Residual Effects on Marine Mammals and Sea Turtles found in Section 6.3.10.4, shows that the frequency of the presence and operation of the MODU is an irregular event (IR). However, the presence and operation of the MODU will be on a regular basis throughout drilling for each well, as stated in the EIS on page 6.53, Section 6.3.10.3.1.1 Presence and Operation of MODU “These activities could occur at any time of the year and would be continuous during the time it takes to drill each well.” Effects on habitat quality and use including effects on prey species, behavioral changes and physical injury (i.e. hearing impairment through temporary threshold shift) from noise are possible for the duration of the drilling operation.	Clarify the residual effects characterization for the presence and operation of MODU as R (regular) and confirm that this characterization was considered in the effects analysis.
CL-11	CNLOPB-08	Section 6.1.10.3.2.3 Waste Management	The C-NLOPB indicated that there are inconsistencies in Section 6.1.10.3.2.3 of the EIS with respect to the magnitude of residual environmental effects associated with waste management and change in habitat quality and use for fish and fish habitat. Section 6.1.10.3.2.2, page 6.21 of the EIS states that residual environmental effects associated with waste management on a change in habitat quality and use for fish and fish habitat are predicted to be moderate in magnitude. However, table 6.5 states that these effects will be low in magnitude. Page 6.22 of the EIS states that changes to habitat quality and use for fish and habitat are predicted to be low in magnitude; however residual environmental effects of waste management are predicted to be moderate in magnitude on page 6.21	Provide clarification of the predicted magnitude of residual environmental effects associated with waste management on a change in habitat quality and use for fish and fish habitat. Revise the summary statement on page 6.22 to accurately reflect the magnitude of project residual environmental effects, if required.
Species at Risk				
CL-12	DFO-CL-09	Section 4.2.6 Sea Turtles; Appendix D, Section 3.0, Sea Turtles	Some information in Table 4.29 is inconsistent with text found in Appendix D of the EIS, in relation to what is known about sea turtles: <ul style="list-style-type: none"> Table 4.29 indicates moderate potential occurrence for the Leatherback Sea Turtle, but page D-59 states that they are uncommon in the study area; and Table 4.29 indicates low potential occurrence for the Loggerhead Sea Turtle, but page D-61 states that they are common in the far eastern portion of the study area. Based on footnote 2 of Table 4.29, some information in this table is outdated and should be updated accordingly.	Provide updated information in relation to sea turtles that corrects inconsistencies between the information presented in Section 4 and Appendix D. Where there are inconsistencies between information, update to reflect the most recent available information. Update the effects analysis following the information update, as required.
CL-13	DFO-CL-36	Section 7.3.1.3.1 Diesel Batch Spill from MODU and OSV	With respect to the effects of a diesel batch spill, Section 7.3.1.3.1 of the EIS states that “[p]roposed critical habitat has been identified for the wolffish in the study area; however, any effects from a diesel spill is expected to be minimal.” Fisheries and Oceans Canada noted that there is not sufficient rationale to support the conclusion. While Fisheries and Oceans noted that proposed critical habitat for wolffish is characterized by depth, and benthic and temperature features rather than surface or pelagic features that would more likely	Provide a rationale to support the conclusion stated regarding the minimal effects of a diesel batch spill on proposed Northern and Spotted Wolffish critical habitat.

Clarification Number	External Reviewer ID	Reference to EIS	Context and Rationale	Required Clarification
			be affected by a surface MODU or OSV diesel spill, it is not clear that this is associated with the statement that a batch diesel spill is expected to have minimal effect on wolffish.	
Special Areas				
CL-14	CNLOPB-12	Section 6.5 Special Areas	<p>In the EIS, the residual effects summary with respect to special areas does not always provide the same information as that presented in the Residual Effects Summary Tables. Examples include:</p> <ul style="list-style-type: none"> • Section 6.5.10.4 states that the Project will occur within an undisturbed ecological and socio-economic setting and Table 6.26 indicates that the Project will be within a disturbed setting; • residual effects of MODU operation are predicted to be medium-term on page 6.92 and medium-long term in Table 6.26; • residual effects of waste management on a change in habitat quality are predicted to be low-to-moderate in magnitude on page 6.95, but negligible magnitude in Table 6.26; • residual effects of waste management on a change in habitat quality are predicted to be medium-long term, but medium-term in Table 6.26; and • residual effects of well abandonment on a change in habitat quality are predicted to be negligible in magnitude on page 6.96, but low in magnitude in Table 6.26. 	Confirm the residual effects conclusion with respect to special areas.
Commercial Fisheries				
CL-15	DFO-CL-32, -CL-22	Section 6.2.8 Summary of Existing Conditions for Commercial Fisheries	The statement that Roughhead Grenadier is a main foreign fishery in 3L is inconsistent with information provided in Table 4.46 in the EIS.	Provide clarification with respect to the main foreign fishery in 3L. If Roughhead Grenadier is a main foreign fishery in 3L, include information available on the harvest quantity of Roughhead Grenadier in Table 4.46.
CL-16	DFO-CL-22	Section 4.3.1.6.3 Groundfish	There are several locations throughout the EIS that refer to halibut, not specifying if it should be Atlantic Halibut or Greenland Halibut/Turbot. For example, it is stated on page 4.147 "...likely for deepwater species such as Halibut and Grenadier."	Review the EIS for references to "halibut," and clarify if the information presented is related to Greenland Halibut/Turbot or Atlantic Halibut, or both.
CL-17	DFO-CL-20,-CL-24	Section 4.3.1.6.3 Groundfish	<p>Table 4.44 includes the status of existing groundfish moratoria in offshore Newfoundland and Labrador and indicates the "Last Year of Assessment." The table indicates that assessments between 2010 and 2016 were considered for Atlantic Cod, American Plaice, Witch Flounder, Grenadier, and Haddock. Fisheries and Oceans Canada noted that more recent stock assessments have been published for several of these stocks, including but not limited to Atlantic Cod.</p> <p>Similarly, the management area for Greenland Halibut is 2+3KLMNO, this TAC is not the most recent, and if using the NAFO quota table as a source should refer to Divisions 3LMNO only.</p>	Recognizing that there are up to date stock assessments available for some of the species listed in Table 4.44, confirm that results of the new assessment do not have an impact on the commercial fisheries effects assessment for these species.
CL-18	DFO-CL-46	Section 4.2.4.1 Groundfish	Fisheries and Oceans Canada noted that the European Union also conducts RV surveys annually in the summer, which include NAFO Division 3M and the portions of NAFO Divisions 3L, 3N and 3O which	Consider and discuss data available from the European Union RV surveys in the analysis of occurrence and timing of groundfish species in the study area that are of commercial, recreational or Aboriginal value.

Clarification Number	External Reviewer ID	Reference to EIS	Context and Rationale	Required Clarification
			are outside Canada's 200 mile limit, however the data from the surveys was not considered in Table 4.23.	
CL-19	DFO-25; Public Comment	Section 4.3.3 Marine Research	Section 4.3.3 of the EIS provides an overview of research surveys conducted by Fisheries and Oceans Canada and fishing industry representatives (through FFAW-Unifor), both inside and outside Canada's EEZ.	Provide a discussion of research that may be conducted inside or outside Canada's EEZ, that may be conducted by organizations other than Fisheries and Oceans Canada or FFAW.
Accidents and Malfunctions				
CL-20		Section 7.3.4.4 Determination of Significance	Tables reporting a summary of residual project-related environmental effects on valued components have the frequency of diesel batch spills from OSV and MODUs, of 10 bbl and 100bbl in size as single events. However the data provided in Table 7.6, 7.7 or 7.10 is not refined to confirm the frequency. In addition, while the number of spills and total volumes are presented, the number of wells drilled in the given year are not presented. Section 7.3.4.4 refers to "infrequent batch spills", with no definition of "infrequent".	Provide information on the number of spills per year less than 10 bbl, rather than presenting data as 1 to 49 bbl. In addition where data is provided on the number of spills and/or spill volume, provide the number of wells drilled in the corresponding year. Define "infrequent" as used to discuss the frequency of batch spills.
CL-21	DFO-19	Section 7.2.3 Nearshore Marine Diesel Spill Model; Section 7.2.1 Offshore Spill Model Scenarios	The diesel properties for the nearshore spill model which are provided in Appendix G differ from the diesel properties listed in Table 7.17 "Oil Property Parameters Used in Spill Modelling". There is no explanation provided why diesel fuels with different properties were modelled for the nearshore and offshore.	Provide an explanation for the differences in diesel properties for the nearshore and offshore batch spill modelling scenarios.
CL-22		Section 7.2.1 Offshore Spill Model Scenarios	Results of the White Rose Extension Project's batch fuel oil (diesel) spill modeling presented in the EIS are inconsistently presented: <ul style="list-style-type: none"> Section 7.2.1.1 of the EIS states instantaneous batch spills of 1.6, 16, 100, and 350 cubic metres were modeled for marine diesel for the White Rose Extension project. Table 7.18, Spill Flow Rates and Volumes Used in Modelling, lists 1.6, 0.16, 100 and 350 cubic metres. Section 7.2.1.5 states spill volumes of 1,600, 16,000, 100,000, and 350,000 litres were modeled. Figure 7-16 presents spill volumes of 16, 16, 100 and 300 cubic metres.	Provide correct batch fuel oil spill volumes. Provide a figure showing the White Rose Extension Project modelled sites for fuel oil spills in the project area of the Project and in relation to the project ELs.
CL-23		Section 7.2.1.4 Historical Spill Trajectory Assessment	Section 7.2.1 of the EIS states that White Rose Extension Project model originates near the middle of the current Project, with the centres for the proposed Project ELs each approximately 45 kilometres from the modeled spill source; however, no figure is provided showing the location of the modelled spill scenario sites relative to the project EL areas.	Provide a figure showing the White Rose Extension Project modelled sites for blowout scenarios in the project area of the Project and in relation to the project ELs.W

Clarification Number	External Reviewer ID	Reference to EIS	Context and Rationale	Required Clarification
Effects of the Environment on the Project				
CL-24		Section 8.2.2.3 Seismic Events and Tsunamis	Table 8.1 and Figure 8.1 in Section 8.2.2.3 in the EIS provide a description of earthquakes within 500 kilometres of the White Rose field from 1988 to 2010. This section also provides information related to the earthquake that was recorded on September 2, 2018, however the proximity of this event to the Project is not clear.	Confirm whether the earthquake from September 2, 2018, was within 500 km of the White Rose Field. Update Table 8.1 and Figure 8.1 with earthquake data from 2010 to present, as applicable.
CL-25		Section 8.3.2.2 Seismic Events and Tsunamis	Section 8.3.2.2. of the EIS states that drilling installations have the capability to disconnect the riser from the well in a “very short time period.” It is not clear what constitutes a very short time period.	Define “very short time period” in reference to disconnecting the riser from a well.
CL-26	DFO-CL-01	Section 4.1.4.2 Icebergs	Section 4.1.4.2 of the EIS states that “A monthly analysis (Figure 4-19) shows that icebergs have been spotted within the region from January to September and they are most prominent during the month of May.” This is inconsistent with Figure 4-19, which shows April to be the most prominent.	Clarify the month in which icebergs are most prominent, and update the text and figure appropriately.
CL-27	ECCC-19	Section 4.1.2.1 Wind Climatology; Section 8.2.2 Atmospheric and Physical Oceanography Environment	Environment and Climate Change Canada has requested clarification on the stated number of grid points used for the calculation of wind speeds. Section 4.1.2.1, page 4.9 of the EIS states that “[m]ean wind speed statistics are provided in Table 4.1. Wind roses of the annual wind speed for Grid Points 12214 and 11422 are presented in Figures 4-5 and 4-6, respectively. As indicated in Table 4.1, wind speeds are consistent for all four grid points in each month.” Likewise, Section 8.2.2.1 (page 8.3) of the EIS states that “[a]s noted in Table 4.1 in Section 4.1.2.1, the wind speeds recorded at MSC50 grid point 12214 and 11422 are consistent for each grid points in each month. The mean monthly wind speed varied by 0.1 to 0.2 m/s between all four sites.” While the proponent makes a reference to four grid points in these two sections (page 4.9 and 8.3) there are only two MSC grid points chosen in the study.	Confirm if the number of MSC grid points chosen in the study.
CL-28	ECCC-20	Section 4.1 Existing Marine Physical Environment; Section 4.1.2.1 Wind Climatology	In Section 4.1 of the EIS, the proponent presents wind statistics (Table 4.4) and wave height statistics (Table 4.7). Environment and Climate Change Canada noted that each table contains data for two MSC grid points and two offshore platforms within the project area. However, the proponent did not provide any metadata (or references) for the data used in the statistical analysis from either of the two offshore platforms (i.e. Terra Nova and White Rose).	Provide the metadata or references for the operational conditions, including: For the wind analysis the proponent should reference operational conditions including the following additional information: <ul style="list-style-type: none"> a. instrument location (i.e. latitudinal and longitudinal coordinates of the offshore platform) for wind analysis and wave statistics, b. number of observations used in the analysis and/or the frequency of measurements for the period of coverage for both wind analysis and wave statistics, c. anemometer height for wind analysis, and d. sampling time of the wind measurements.

Clarification Number	External Reviewer ID	Reference to EIS	Context and Rationale	Required Clarification
Cumulative Effects				
CL-29		Section 9.2.1.2 Offshore Exploration Drilling and Production Projects	<p>Section 9.2.1.2 of the EIS describes potential exploration drilling projects in the Newfoundland and Labrador offshore that may result in cumulative effects; however, ExxonMobil's Southeastern Newfoundland Offshore Exploration Drilling Project is not included. Also, EL 1134 is not included as part of ExxonMobil's Eastern Newfoundland Offshore Exploration Drilling Project.</p> <p>Table 9.8 of the EIS provides information related to potential spatial and temporal overlap between the Project and other physical activities including exploration drilling and production projects; however, not all exploration projects identified in Section 9.2.1.2 are included in the discussion of spatial and temporal overlap.</p>	Update the description of spatial and temporal overlap of potential effects of the proposed project and residual effects of each of the past, present and future exploration and production projects outlined in Section 9.2.1.2 (including ExxonMobil's Southeastern Newfoundland Offshore Exploration Drilling Project and EL 1134 as part of ExxonMobil's Eastern Newfoundland Offshore Exploration Drilling Project). Include a figure showing the proposed project in relation to the exploration and production projects, as well as information on the distances between the proposed project and the ELs of the present and future exploration and production projects.